

## I N Q U E S T

TOUCHING THE DEATH OF HAYLEY ELIZABETH FULLERTON

Held at :

HM CORONER'S COURT, BIRMINGHAM

on :

Thursday, 26th April, 2012-----  
B e f o r e :MR AIDEN COTTON  
(THE CORONER)

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MR ADAM WEITZMAN appeared as counsel on behalf of HAYLEY FULLERTON.

MS TRACEY LUCAS appeared as solicitor on behalf of BIRMINGHAM CHILDREN'S HOSPITAL NHS TRUST.

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Transcribed by :

JOHN LARKING VERBATIM REPORTERS  
Suite 91 Temple Chambers  
3 - 7 Temple Avenue  
London EC4Y OHP  
Telephone : 020 7404 7464

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F U L L P R O C E E D I N G S  
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Thursday, 26th April, 2012

**THE CORONER:** I am Her Majesty's Coroner for Birmingham and Solihull. We were going to deal with the inquest into the death of Hayley Elizabeth Fullerton, but I understand that we have a new event. Let's just check the advocates, first of all. Mr Weitzman, you are of counsel and you are instructed by Irwin Mitchell and you are for the family.

**MR WEITZMAN:** Yes, sir.

**THE CORONER:** Ms Lucas, you are a solicitor from Capsticks, representing the

Birmingham Children's Hospital Trust.

**MS LUCAS:** Yes, sir.

**THE CORONER:** Are you also representing each of their employees who is listed as a witness?

**MS LUCAS:** I am, sir.

**THE CORONER:** At the moment.

**MS LUCAS:** At the moment, sir, yes.

**THE CORONER:** Now, what I need, Ms Lucas, is for you to start by giving me some information. First, has an order actually been made or only a draft order?

**MS LUCAS:** The judge has agreed the draft order. I have not got a sealed copy this morning, but she has agreed the draft order, as you have a copy of it, sir.

**THE CORONER:** So, it will be an order in these terms.

**MS LUCAS:** Yes, sir.

**THE CORONER:** And tell me the circumstances in which she made that order.

**MS LUCAS:** Yes, sir. Further to your letter yesterday saying that you were going to continue with the inquest, we made an application to the High Court last night, that we wanted a compromise, that the evidence be put off for a couple of days, of the factual witnesses, to enable us to go through with them the report of the doctor, and then an adjournment to enable us to get our own expert report that we would disclose to you and to the family. And an application was made last night and the judge agreed the order.

**THE CORONER:** What time was it made last night?

**MS LUCAS:** I think it was around about 9.35.

**THE CORONER:** At night?

**MS LUCAS:** 7.35. Sorry, 7.35 at night, yes.

**THE CORONER:** 7.35. Thank you. I am just going to read through the terms of the order so we all know what it is. "Upon hearing from Anna Morris, of leading counsel on behalf of the claimant, over the telephone, it was ordered that: (1) the inquest touching upon the death of Hayley Fullerton listed to start at 10 a.m. on the 26th of April 2012 be adjourned, to start on the 30th of April 2012; (2) the evidence to be heard at the inquest to start on the 30th April 2012 be factual only; (3) the remainder of the inquest concerning expert evidence be adjourned to a later date to allow the claimant, Birmingham Children's Hospital NHS Foundation Trust, to instruct an expert to deal

with the expert report served late on behalf of the family of Hayley Fullerton; (4) there be no order as to costs." So, that is the order. Have the two advocates discussed between yourselves what is likely to be a sufficient and reasonable time for that expert's report to be obtained and considered?

**MS LUCAS:** Yes, sir, we have discussed outside court - I discussed with my clients how quickly they can get an expert report for us to - an expert for us to instruct. We think a reasonable period would be three months, a short time after which, for consideration, we could come back to the court. One of the things that myself and my learned friend did discuss was whether it would be of assistance to the court for the two experts (the family's expert and the Trust's expert) to meet up prior to the inquest to narrow down the issues where they are in dispute, *Karen – but there was nothing to dispute. Both doctors agreed as they had the same findings.* so that we know where they do not agree, to enable you to have that information prior to the inquest, if you would find that of assistance.

**THE CORONER:** That is the step commonly taken in civil litigation.

**MS LUCAS:** Yes, sir.

**THE CORONER:** This, of course, is not civil litigation.

**MS LUCAS:** We thought it may assist the court. We are happy if you do not want that to happen.

**THE CORONER:** Yes, I appreciate that. Mr Weitzman, if I agree three months, how long would you need in order to consider that report, put it to your expert and your expert to come back?

**MR WEITZMAN:** We would only need a short period.

**THE CORONER:** Sorry?

**MR WEITZMAN:** A short period, sir. Certainly, I do not think any longer than four weeks. My only concern is, it would be difficult, I suspect, if those four weeks fell in the month of August because of availability of experts, counsel and solicitors.

**THE CORONER:** Have you had an opportunity to take availability instructions from your expert?

**MR WEITZMAN:** No, not yet. Can I just deal with the issue of the further expert?

**THE CORONER:** No, let me just deal with timing first and then I will come back to you and you can all make whatever points you want.

**MR WEITZMAN:** I can certainly take instructions about the availability of the expert.

**THE CORONER:** But if we were talking about three months, that is May and June - I will apologise this time but not in future: I have a cold and every now and then I cannot talk. You just have to wait until I have finished. Okay?

**MR WEITZMAN:** Certainly, sir.

**THE CORONER:** So, that takes May, June and July. If you are going to have four weeks, and if your expert was to go on holiday in August, that makes a nonsense of your four weeks, presumably?

**MR WEITZMAN:** That is the point. If we could have until mid September, then we can work around the August period.

**THE CORONER:** So, let's say for the moment we also take out August and September, so we are then looking at a continuation date some time in October?

**MR WEITZMAN:** Yes, sir, on those timings.

**THE CORONER:** And are the family intending to return for that next hearing?

**MR WEITZMAN:** No, sir. Paula Stevenson, who is domiciled in Australia, may not. Her father, who is domiciled in Northern Ireland, may. Obviously, Paula's convenience in Australia is the concern, but I have spoken to her outside, and once she has given her evidence and heard the lay witness evidence, she would be happy for it to go on at an adjourned date without her being present. There has been canvassed the possibility of some form of video link. I am not sure if that is appropriate given that she would not be a witness, but we could turn our minds to that at a later date.

**THE CORONER:** And you have both, of course, considered the possibility that the new expert might raise questions or possibilities on which we need information from the family? Okay. And how long do both of you think that the court should allow to hear evidence from those two experts?

**MR WEITZMAN:** Sir, in our discussions outside, we thought the reconvened hearing would last no longer than two days. Can I build in a caveat? At some point ----

**THE CORONER:** I think we have already learned that there is always a caveat, so do not worry about putting in your caveats at the moment, okay? So, by Monday you will have availability from your expert.

**MR WEITZMAN:** Yes.

**THE CORONER:** So, on Monday when we restart, we will be able to have definite

information. By then, Ms Lucas, you may also have identified an expert and got closer timing from him. I say "may".

**MS LUCAS:** We will certainly work towards that, sir.

**THE CORONER:** So, if we can fine tune those dates by Monday, that would be an improvement. What I am anticipating is that by Wednesday of next week we will have agreed a firm date for the inquest to resume. Okay?

**MR WEITZMAN:** Yes, sir.

**THE CORONER:** It is highly likely to be, in effect, September/October.

**MR WEITZMAN:** Yes, sir.

**THE CORONER:** And I do not doubt for one moment that you are all at least as busy as me, but in that period I shall probably have dealt with another 700 inquests, and I am going to be expected to recall in detail all the evidence that was given. Okay? As will you. So, we need to be considering whether we order a transcript at the joint and equal expense of everybody involved, or not bother with one. But it seems to me it is going to be a difficult, not impossible but difficult for everyone to remember accurately evidence *Karen – maybe this is where the hospital staff got the idea from to conveniently forget the details* over that length of period. I simply do not have the resources to provide a transcript, even if you were all to say that you would pay for my staff. I simply have not got the resources. I have not got the staff who can do it. So, rather than have two separate transcripts prepared, which undoubtedly will not be identical, you may be thinking about getting a transcript. I do not need your decision on that until Monday because it will all be tape recorded, whatever the decision is, and the transcript will be taken from that. I do not see any justification in getting an expert firm in to take shorthand in court and then to prepare it, but, of course, if either of you wanted to do that, I would not object to it, but I am not paying for it. Just so you understand, the cost of that will probably be about £12,000. Okay? Is that an accurate cost? Mr Weitzman?

**MR WEITZMAN:** I do not know, sir.

**THE CORONER:** No idea. Okay. The last one I had actually quoted was £15,000, but this is slightly shorter, but it is a lot of money. So, you need to be thinking about that and we need to have that answer by Monday. Now, let me just run through where we have got to so far and then you can address me on what you wanted to say. The order was obtained last night at about 7.35. The order will be prepared in proper form -

I want something other than just a draft order, or if there is not going to be anything, I need to know it is only a draft order, but I would actually prefer a proper order. Ms Lucas thinks that she needs a period of three months in which to identify an expert, check availability, bring him up to date and get a report. Mr Weitzman thinks that he needs a further four weeks from the date he receives that report, which of course may well be inside the three months, but from when he receives the report, for his expert to be ready. So, we are probably looking at a hearing date somewhere in October, and that will last for two days, ignoring, of course, submissions, which will no doubt take an additional period, but two days for expert evidence. Paula will not be returning and her father will be returning. If that causes difficulty with the experts, they both need, of course, to understand that I have no power to order Paula to come back; they just have to accept it. And we will consider whether or not a transcript can be made available. So, I have got other points to make, but let's hear what you wanted to say.

**MR WEITZMAN:** As I understand the order, it is to allow the Trust to obtain expert evidence.

**THE CORONER:** Well, it does not actually say that, but it seems a fair assumption. Yes.

**MR WEITZMAN:** Sir, can you repeat the precise wording of the order?

**THE CORONER:** Yes. "It is ordered that: (1) the inquest touching upon the death of Hayley Fullerton listed to start at 10 a.m. on the 26th of April 2012 be adjourned to start on the 30th of April 2012; (2) the evidence to be heard at the inquest to start on the 30th of April 2012 be factual only; (3) the remainder of the inquest concerning expert evidence be adjourned to a later date to allow the claimant to instruct an expert to deal with the expert report served late on behalf of the family of Hayley Fullerton. No order as to costs."

**MR WEITZMAN:** Sir, as you have made plain relation to Dr Russell, it is your power to allow that witness, that expert witness to give evidence, and that order does not, in my submission, compel you to allow expert evidence from the Trust. You would have to see the report first to be convinced that it was appropriate and relevant that you should call that expert. I can see well why it might, but until we have the evidence the family cannot express a position. We have no objection to the Trust getting an expert report. I think it likely that we would have no objection to the expert report, but I have

not seen it and I do not know what it contains.

**THE CORONER:** I accept that point, but you must bear in mind the point that I made yesterday: if a witness appears at the door of the court and asks to be allowed to give evidence, I have never yet turned a witness away. **I let people who are obviously under the influence of alcohol come in.** *Karen – this can't be an accurate translation. This puts question into other translations.* Okay? I let people come in who say they happen to be a friend of the deceased. So, I am afraid I have a very simple rule, that my job is to hear evidence and if people want to attend and give me evidence, then I will listen to them - for at least as long as it takes to realise that it is irrelevant. So, if an expert turns up and asks, almost certainly I would let it be heard.

**MR WEITZMAN:** And I suspect, given that we are calling an expert, and there must be, and you have kindly given us permission - well, you have kindly given permission to hear evidence from the expert we have instructed, I suspect, given the principle of equality, we may not object, but I reserve the position, so that it is clear. And, similarly, while I can see that there may be benefit to this, I am not going to commit the family until I know what the expert report is.

**THE CORONER:** Yes, we will reserve that until the day it happens. Okay? I would find it difficult, having been served an order in these terms, to say, "Well, I'm not going to hear the expert now it's been done" but we will cross that bridge if and when we come to it.

**MR WEITZMAN:** The point is, sir, we did not have the opportunity to be heard at that hearing; it was ex parte. I did email my learned friend for the Trust but, unfortunately, by the time she received my email, and I am not casting any blame here, the hearing was already going on. So, that is an ex parte order and, of course, the judge, as I understand it, said that the Trust should have an opportunity to get expert evidence. If the expert evidence was self-evidently not relevant to the issues in the inquest, and we were there to make that submission and the judge agreed, then she would not make that order. But I do not want to prejudge the issue. I simply raise it now so that you know.

**THE CORONER:** We will cross the bridge if and when we come to it.

**MR WEITZMAN:** Thank you, sir.

**THE CORONER:** One or two other things. What concerns me, Ms Lucas, is: is two days going to be long enough for you to see all the members of the staff, make sure that

they read and understand the expert's report and make sure that they understand that they do not have to use your firm, that they are entitled to separate legal representation if they want?

**MS LUCAS:** Yes, sir, I think it is not ideal but we will be able to see all of the witnesses, give them the advice, go through the report with them today and tomorrow - we have arranged to, if this all went ahead, to meet with them all over the next day and a half.

**THE CORONER:** So, let me pre-warn both of you and everyone else. If they come to me late and say, "We want fresh legal representation" and I have a lawyer in front of me saying, "I haven't got time, I know it's difficult but I haven't got time", I would find it very difficult to refuse an application for an adjournment. Okay? I sincerely hope it will not happen, but you have to understand it is possible and they have got a right to separate legal representation. Now let's come to a matter on which I do not want the advocates to comment on at this stage but I want you both to consider it, so that we know where we are. I have got to go through the legal authorities again in more detail, but I am going to assume for the moment, just assume, that in law the family are right in saying, "We do not have to disclose our instructions to counsel or our correspondence." But I repeat what I said on earlier occasions and what I have been saying in this court for many years: I think it is very, very unfortunate to have advocates in front of me who have information which may be relevant and who say, "You can't see it. We appreciate that this is an inquiry, not a trial, we appreciate that your job is to try and find out the truth, but you're not going to see it." I have spent a lot of my time trying to make sure that the full truth comes out, and it is very difficult when people say, "You can't see things." I had a case where a family did produce the correspondence and there was in that correspondence a letter which was of huge importance and, if it had not been disclosed, that item of truth would not have come out. My position is that I wonder why, if the correspondence, the instructions, notes of meetings are all entirely consistent, why it has not been revealed? There may be reasons - it may be for fear of setting a precedent. But I do not like it. So, what I am asking is for both of you to consider your position, and this goes equally, of course, to Ms Lucas as to Mr Weitzman. I cannot see where the difficulty is because my understanding is that you simply write to someone who you consider to be an expert, which is usually a matter of taking a name out of a

list, and say, "We would like your expert opinion and this is for use at an inquest. We are not talking about blame. We simply want to know what you think." And where the difficulty is, I do not know. So, I would like you both to consider it. Meanwhile, I will look at the authorities again.

We also need to deal with witness availability. You all know, because I presume all correspondence has gone to everybody, that various members of the Trust have had difficulty in making themselves available, and I have tried to act reasonably and say, "Okay, you don't have to come this day and that day." But now we are on a reduced timescale, we need to be a little more precise, and what I am hoping is that the two advocates can spend half an hour together and start sorting out the list so that when we start on Monday, we all know what we are aiming at. I appreciate that whatever we agree can go dramatically wrong, and I am not saying if you agree something you are stuck with it, but I want to have a pretty clear idea and I want witnesses to be told, "You don't necessarily have to attend before this date", but I need them to be on alert, so that if things go quicker than we anticipate, we can get them here.

I have just done a brief run through myself, and let's just run through it so that you know where I am coming from and you can work out whether you think it is appropriate. Looking at the list, if you take Paula and her father and Dr Marton, Dr Casey, Dr Jadczyk, Mr Brawn and Dr Stumper, it seems to me that we are probably talking about the first day, when you take into account my opening.

**MS LUCAS:** Sir, as you know, Mr Brawn is not able to come until the Thursday in any event because he is on holiday.

**THE CORONER:** I thought he was available on Monday.

**MS LUCAS:** No.

**THE CORONER:** Sort it out with your friend and tell me where we get to. If he is not available, then what I would do anyway is to have his statement read by someone else, so that the evidence is in front of everybody. He will still be called, so he can be questioned on it, but we will have it read and then we have got it in context. And I was proposing to get Dr Stumper to read it because Mr Brawn's letter is, from my point of view, not very helpful, and Dr Stumper will be able to explain it better. It is not helpful because he keeps saying, "I refer to my operation notes", which are all fairly technical. So, we will have it explained. The last two witnesses, Winnall and Debenham, I can see

no point in calling them until we hear from the experts because, depending upon what they say, they may have to reconsider whatever conclusions they have reached, and so your two days are going to be slightly longer. So, then it is a matter of you splitting the remaining witnesses between Tuesday, Wednesday and Thursday, and my own view is that, as we have written off those days, and we have set them aside anyway, there is no point in trying to get through all of them in a day and a half. So, it will be more reasonable for them to spread it out and make sure that everyone has good time to do everything and nobody is rushed. If we finish on Tuesday lunchtime, it is really not going to make much difference, is it? I presume you have got your flight back booked, anyway.

**MRS STEVENSON:** It's an open ticket.

**THE CORONER:** So, what I want the advocates to do is to find that half hour when I have finished talking and go outside and sort it out as best you can between you, taking into account all the other things that you have already written to me about.

**MS LUCAS:** Sir, we wrote to you and the family the other day and suggested that Dr Dawaker, the medical officer, the chief medical officer, would be able to tell you about changes at the Trust since. He is probably more appropriate than Bryony Winnall, who is a junior manager in the cardiac services team.

**THE CORONER:** Any suggestions you want to make, just add it on to the list, but whoever I call, whether I call both of them or just one of them, it still will not be until the adjourned hearing. There is no point in doing it until we have got the experts' view. statement. Are you content for it to be read or not? So, I need both of you to think about it, there is no need to talk about it publicly at the moment, but to think about it and let me know. I am assuming, Ms Lucas, that all the witnesses have seen the family statements. If they have not, just make it clear to them, I shall be expecting them to have been through it before they come in the witness box to give evidence.

**MS LUCAS:** Sir, they are going to see them at the same time as the report.

**THE CORONER:** Sorry?

**MS LUCAS:** We received the statements on Monday, so they were going to go through the statements at the same time as the reports, and they will have seen them, yes.

**THE CORONER:** The final point I want to make before the advocates say what they wish to say is that I have got your submissions, for which I thank you, but I am a little

surprised that neither of you have mentioned Hare v. The Coroner for Staffordshire South. I would have thought that it at least required a mention, if not an endorsement. Have you got the reference or do you want me to give it to you?

**MR WEITZMAN:** If you could give it to me, sir.

**THE CORONER:** The reference is [2010] EWHC 2580 Admin. Are there any points that either of the advocates wish to raise at this stage?

**MR WEITZMAN:** No, sir.

**MS LUCAS:** No, sir.

**THE CORONER:** So, 10.35, so we will adjourn until 10 o'clock on Monday.

**MR WEITZMAN:** Sir, do you want us to come back in with our timetable once we have done it, so that you know which witnesses are going to be called on Monday?

**THE CORONER:** I am hoping that you are going to sort it out between yourselves, then tell the court usher or the clerk and she will bring it through to me. Having done all of that, I shall still work on my own list, but at least I will know what you are thinking of. Sorry, is that clear? Although you do all the work, at the end of the day it is still my decision.

**MR WEITZMAN:** I understand that entirely, sir. I just wanted to make sure that our views were communicated to you, in order to work out how that was to be done.

**THE CORONER:** Thank you all very much. There are a couple of meeting rooms outside, so you can use that. We are now adjourned but everyone is going to be doing some more work before they go. So, if we have one group in the hearing room and one group in the room outside and we will keep this court clear, so that when the advocates need to talk to each other privately, they can come in here and do it.

**MR WEITZMAN:** Thank you, sir.

(Adjourned until Monday, 30th April, 2012)

## I N Q U E S T

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Transcribed by :

JOHN LARKING VERBATIM REPORTERS

Suite 91 Temple Chambers

3 - 7 Temple Avenue

London EC4Y OHP

Telephone : 020 7404 7464

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F U L L P R O C E E D I N G S  
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30th April, 2012

**THE CORONER:** I am the District Coroner for Birmingham and Solihull. I now formally reopen the inquest into the death of Hayley Elizabeth Fullerton. I will just confirm the advocates. Mr Weitzman of counsel from London instructed by Messrs Irwin Mitchell for the family.

**MR WEITZMAN:** Yes.

**THE CORONER:** Ms Lucas, you are a solicitor from Capsticks representing the Birmingham Children's Hospital and their staff.

**MS LUCAS:** Yes,

**THE CORONER:** I will just deal with some preliminary matters following on from the hearing on Thursday. First, Ms Lucas, has the court order now come through?

**MS LUCAS:** It has, sir. I have a standing copy for you here. I am waiting for the formal copy to come through.

**THE CORONER:** Good. Can I have that handed up, please? (Handed) Thank you very much. Have you identified the experts you are proposing to use?

**MS LUCAS:** Sir, we have not at the moment. The two we were proposing are not able to do it so the Trust is still looking for an expert.

**THE CORONER:** But that will definitely be done by the end of this hearing, by the end of the four days.

**MS LUCAS:** We certainly hope so, sir. We are trying to get the dates when the court is available in September and that is proving more difficult at the moment.

**THE CORONER:** Do not let the September date be a conclusive factor. There is no reason why you should be limited in your choice of expert and if necessary we will have to lose that date.

**MS LUCAS:** Yes, sir.

**THE CORONER:** I would expect you to be able to sort it out.

**MS LUCAS:** Yes, sir.

**THE CORONER:** Mr Weitzman, have you confirmed that Dr Russell would be available during July and August to consider the report when it is ready?

**MR WEITZMAN:** Yes, we have checked that, sir. He is available during July and August to consider that.

**THE CORONER:** Good. And the dates of 12th, 13th and 14th September: that is confirmed for everybody, is it, apart from the expert who has not yet been identified.

**MR WEITZMAN:** No, sir. We are still trying to get that confirmation from Dr Russell.

**THE CORONER:** Dr Russell is the only one.

**MR WEITZMAN:** I can do it, yes.

**THE CORONER:** You are clear.

**MR WEITZMAN:** I am clear.

**THE CORONER:** And Mr Stevenson is clear.

**MR WEITZMAN:** And Mrs Stevenson.

**THE CORONER:** Paula is not coming. Ms Lucas, you are clear.

**MS LUCAS:** I am, sir.

**THE CORONER:** So we need to have that confirmed by Thursday.

It is a fairly unusual situation so let us just spell it out so everyone understands. We were due to start on the 26th and we hoped to conclude by Thursday this week. That has been changed by the court order from the High Court, so we have now started today and this court has been told to limit the evidence it hears to matters of fact. The other evidence, the opinion evidence, will only be heard at a later date. We hope that that later date will be 12th, 13th and 14th September but that is for consideration.

Hayley Elizabeth Fullerton was born on 6th October 2008 in the Royal Victoria Hospital in Belfast. Her parents, Paula and Bobby Fullerton, live and work in Australia but Paula was visiting her family in Ireland when Hayley was diagnosed before birth with a life-threatening congenital heart defect. Paula and Bobby therefore decided that Hayley should be born in Belfast in the care of the doctor who had diagnosed her condition.

She was safely born on 6th October 2008 and Hayley remained in hospital for the first nine and a half weeks of her life. During that time she underwent surgery to insert a shunt. She went home for the first time on 10th December 2008. It was known from the beginning that there would have to be significant major surgery. It was decided that that should be carried out at the Children's Hospital here in Birmingham and Hayley was admitted here on 12th October 2009. The heart surgery was carried out successfully on 14th October 2009 but sadly Hayley died in hospital 28 days later. Her death was reported to me and I ordered a post mortem examination.

Birmingham Children's Hospital carried out an internal investigation after

her death and **the hospital concluded that there were failures in the medical care that**

**Hayley received and that she may not have died if things had been done differently.** *Karen – there's your conclusion.*

We are going to hear evidence from a significant number of witnesses, but

before I call any of them I propose to take a few minutes to explain why we are here and what procedures we will follow. First and foremost, let me emphasise that this inquest, like all inquests, is an inquiry, not a trial. We are not here to blame or apportion blame. Coroners do not determine either civil or criminal liability. I am going to read to you what Sir Thomas Bingham said in the Court of Appeal on 25th April 1994 so that you understand that this belief and an inquest is an inquiry not a trial is not something that I thought of for Birmingham. Sir Thomas Bingham said:

“It is not the function of a coroner to determine or appear to determine any question of criminal or civil liability, to apportion guilt or attribute blame. This principle is expressed in Rule 42 of the 1984 Coroners’ Rules. This prohibition in the rules is fortified by considerations of fairness. Our law accords a defendant accused of a crime or a party alleged to have committed a civil wrong certain safeguards rightly regarded as essential to the fairness of the proceedings. Among them, a clear statement in writing of the alleged wrongdoing, a right to call any relevant and admissible evidence, and a right to address factual submissions to the tribunal of fact. These rights are not granted and the last is expressly denied by the rules to a party whose conduct may be impugned by evidence given at an inquest.”

That is Sir Thomas Bingham in the Coroner for *North Humberside v. Scunthorpe (ex parte Jamieson)*. The Court of Appeal is saying very clearly that coroners should not appear to determine any question of criminal or civil liability, shall not apportion guilt or attribute blame, and it would be unfair to do so.

So my job as coroner is to determine facts. The facts I am concerned with are set out in Rule 36 of the Coroners’ Rules, limited to who the deceased is, how, when and where she came by her death, and the particulars required for the time being by the Registrar of Births, Deaths and Marriages. “How” means by what means did Hayley come by her death.

The facts that I deal with are limited to those, because the inquest is just one of several different processes which the State has put in place to enable a family to obtain full information about the death of a loved-one and justice.

The family in this case have the following additional avenues in addition to

the inquest. First, under the Access to Health Records Act 1990 they are entitled to obtain and have obtained copies of all the medical records. Secondly, they are entitled to have a copy of the hospital internal investigation report and I know that was disclosed to them as soon as it was ready. Thirdly, under the NHS Complaints Regulations 2008, they are entitled to raise any concerns they have direct with the hospital, and they have the Ombudsman for Health to ensure that that is dealt with appropriately. If it is thought that there is negligence and that is dealt with by civil litigation in the High Court, Paula and Mr Stevenson, you need to understand that if when I have heard all the evidence over the next week and then at the reconvened hearing, I was to be 100 per cent sure that there was negligence and that negligence had caused Hayley's death, I would not say so, nor would I even hint that that is what is in my mind. The law says I must not. The law says I must not for two good reasons: first, this is an inquiry so it is not a fair way to determine it and, secondly, I am one of Her Majesty's coroners; I have neither the training nor the ability of a High Court Judge. So negligence, blame, is not what we are here for. But if you think there is negligence when you have heard all the evidence, then you proceed with civil litigation in the High Court. If you think that a doctor is incompetent and needs to be looked at by his professional body, then you refer to the General Medical Council. They are the ones who decide that, not me. In the same way, if you have concerns about a nurse you go to the Nursing and Midwifery Council. If you have concerns with the running with the hospital, you go to the Care Quality Commission. It would be nice to think that I was sufficiently wise and knowledgeable to deal with all those matters, but I am not. It is not my job and I am not competent to do it.

That is why Lord Phillips said in the Supreme Court last year:

"The inquest is designed to perform a fact-finding role. It is not intended necessarily to be the final stage of the investigation."

That is why the President of the European Court of Human Rights in Strasbourg said in 2007:

"The essential principle is that the key facts should be brought out for public scrutiny and that procedures provide for effective accountability.

It cannot be said, the applicant, Jean Pearson, suggested, that there should be one unified procedure satisfying all requirements. The aims of

fact-finding and accountability may be carried out by or shared between several authorities, as long as the various procedures provide for the necessary safeguards in an accessible and effective manner.”

So what we are doing is a limited job. Within that limited job, though, it has to be thorough. I am going to quote again from Lord Bingham. He said:

“It is the duty of the coroner as the public official responsible for the conduct of inquests to ensure the relevant facts are fully, fairly and fearlessly investigated. He is bound to recognise the acute public concern rightly aroused where deaths occur. He must ensure the relevant facts are exposed to public scrutiny particularly if there is evidence of foul play, abuse or inhumanity. He fails in his duty if his investigation is superficial, slipshod or perfunctory.”

So a narrow remit but thorough within it. Lord Bingham went on to say:

“But the responsibility is his. He must set the bounds of the inquiry, he must rule on the procedure to be followed.”

Having said all of that, having explained to you we are not here to blame or apportion blame, I have to explain to you why I deal with neglect and what neglect is. Neglect has a special meaning in a coroner’s court. It means a gross failure to provide basic medical attention, shelter or warmth to a dependent person, and any such gross failure must have sufficient causal connection to Hayley’s death. I will go through that again; I assume your lawyers will have explained this to you, but **neglect is a gross failure to provide basic medical attention, shelter or warmth to a dependent person, and any such gross failure must have sufficient causal connection to Hayley’s death.**

I will have to come back and consider all those matters when we have heard the evidence, but I am not expecting to have any difficulty in deciding that Hayley was a dependent person; nor am I expecting to have any difficulty in deciding that what people did for her must come within the definition of basic medical attention. If you do need to note, that it has to be a gross failure. We are not talking about the sort of failure which means that somebody might be negligent. We are not talking about negligence. We are talking about a gross failure, and that gross failure must have causal connection to Hayley’s death.

We have already had more than one pre-hearing review and I have made it

clear that I do not consider that the circumstances of Hayley's tragic death are such that I need to interpret the word "how" in rule 36 of the Coroners' Rules 1984 as meaning by what means and in what circumstances Hayley came by her death. Although nobody has asked me to sit with a jury, I have also considered whether I am required to under section 8(3) of the Coroners' Act or whether I should exercise the discretion given by section 8(4). I have decided to do neither of those things and I will, of course, keep both of them under review and if, when the evidence is given, it turns out that I have got either of those wrong then we will adjourn if necessary and put it right.

The procedure that will be followed is that each witness in turn comes into the witness box and gives their evidence either on oath or affirmation. We have split the witness list so that large numbers of hospital staff do not have to attend when they are not actually required to give evidence, so I am going to have to repeat each day when we have new witnesses what I am going to say now. When the witnesses give evidence, it does not matter whether they choose to do it on oath or affirmation; in law they are both exactly the same. **Anybody who, for any reason, tries to mislead the court commits perjury.** In a coroner's court, the coroner asks most of the questions and he asks them first and he also asks them last. Subject to that, of course, the advocates are very welcome to ask questions. I normally suggest that the family's advocate goes first except when your own witnesses are in the witness box.

I shall be trying to explain to the witnesses pleasantly, but unpleasantly if necessary, that when they give their evidence, that is what they are doing. They are not talking to you as advocates. They are not chatting to you or arguing with you; they are giving evidence to the court and therefore they must talk to me. It is difficult enough in both cases – in this case we already know that it is going to be some five or six months before I am able to sum-up, and I am going to have to go through all the notes again at that stage, and so the witnesses must talk to me and they must make sure that I am keeping up with them. I expect the advocates to assist me so that if the witnesses start talking to you, you stop and politely direct them to face me.

The other thing I want to make clear to the advocates is that as this is not a criminal court, you do not have to challenge everything simply because you disagree with it. I appreciate in a criminal court if a witness says something and you do not challenge it, then you are deemed to be accepting its truth, but this is not a trial. So you

do not have to challenge everything. It is a matter for me to decide on the evidence what I think is appropriate.

Dr Marton, you are the only witness so I can actually talk to you like that, but you have the general idea.

Rule 37 provides that certain statements can be read. In this case the family and the hospital have both had a list of the statements I propose to read and I note also that you are both happy that I should read Mrs Stevenson's evidence. Evidence that is --

**MS LUCAS:** Sorry, can I make a representation in relation to Mrs Stevenson's evidence?

**THE CORONER:** Yes, of course you can. Can I suggest that you do it during the coffee break? We will not reach it before the coffee break. You can raise it then. Mr Weitzman, just so you understand, we are usually pressed for time at the coroner's court, and what I dislike is having advocates address me at length, or shortly, when we could be getting on with the work and so I try to keep legal matters to be discussed during the coffee break, lunch break, or early in the morning or late at night. That does not stop the flow of evidence.

**MR WEITZMAN:** I understand, sir.

**THE CORONER:** Anybody who wants to stay is, of course, very welcome to. Rule 43 provides that coroners in certain circumstances should write letters to appropriate authorities. I do not propose to discuss that more at this stage other than to say to the advocates I am happy to accept submissions from you – I know that there is some doubt as to whether you are entitled to in law but I am happy to accept submissions from you on Rule 43, but you do not make them until after I have completed the inquest and returned the conclusion, the verdict.

So far as the housekeeping matters are concerned, everything is tape recorded. I discussed with the advocates on Thursday the possibility of sharing the cost of providing a transcript. Perhaps you will let me know during the course of the day your feelings on that.

The media are present. Media are, of course, entitled to attend all inquests and they are very welcome. Just remember, they can report on anything they see or hear and it is not just in this courtroom, it is in and around the court.

We normally break after every hour and a half, so we normally break at half

past 11 for a quarter of an hour; lunch time from one until two; and in the afternoon at about half past three to a quarter to four, but those times are not set in stone. If the family want breaks at any other time, just tell me. There is absolutely no point at all in getting to the stage when the words are just drifting past like a lecture. If you reach that stage, tell me and we will take the break early.

Does anybody want to address me at this moment or can it wait until the coffee break?

**MR WEITZMAN:** It can wait until the coffee break, sir.

**THE CORONER:** Good. So, we will start, please, with Paula. Would you like to come to the witness stand. I want you to bring with you, please, your statement and any other papers you want to bring with you.

MS PAULA STEVENSON, Sworn

Questioned by THE CORONER

**Q.** Tell the court, please, your full name.

**A.** Paula Stevenson.

**Q.** I do not need your home address given in open court. Just tell me whether or not you still live at the address at which I last wrote to you.

**A.** Yes, I do.

**Q.** Confirm for me your daughter's full name.

**A.** Hayley Elizabeth Fullerton.

**Q.** Tell me where she was born.

**A.** She was born at the Royal Victoria Hospital in Belfast, Northern Ireland.

**Q.** And her date of birth?

**A.** Is the 6th of the 10th 2008.

**Q.** And the home address that is recorded for her.

**A.** Yes. 115 Newcastle Road, Kilkeel, County Down, Northern Ireland.

**Q.** And sadly Hayley died at the Children's Hospital on 11th November 2009.

**A.** Yes.

**Q.** What I am going to suggest is that you read through the statement that was prepared with the help of your advocates. I am emphasising that because I have had various other papers from you.

**A.** Yes.

**Q.** Quite a lot of other papers from you.

**A.** Yes.

**Q.** But this is what we are going to work from.

**A.** Okay.

**Q.** There is just one other thing I want to mention. You wrote to your solicitors and you put some comments in it which I found very touching but it made it sound as though I had actually been talking to the family in some personal way, and I just want to be absolutely clear so that the hospital staff all understand: I have never met you or either of your parents at any stage apart from in open court.

**A.** Yes.

**Q.** Yes?

**A.** Yes, that's correct.

**Q.** So, let us go through your letter.

**A.** To actually confirm all the address?

**Q.** Start at number 1: "I live at the above address."

**A.** All right.

"I live at the above address with my husband Bobby Fullerton. I make this statement following the death of my child Hayley. This statement summarises my concerns about the treatment my daughter received at Birmingham Children's Hospital. I have a significant number of concerns in respect of Hayley's treatment and how my complaint has been managed by the Trust but I have confined myself to the key issues in respect of the treatment only for the purposes of this statement.

Hayley was born on 6th October 2008 and passed away on 11th November 2009. My daughter was born at the Royal Victoria Hospital, Belfast, Northern Ireland, with pulmonary atresia and VSD. She had to stay in hospital for nine and a half weeks following her birth.

She had a planned operation on 1st December 2008 at the Royal Belfast Hospital. During this operation she had a BT shunt fitted into heart. She was then referred to Birmingham Children's Hospital for further management by Dr Frank Casey, because Dr Gladstone, the Belfast surgeon, was retiring. I was informed that I could either send Hayley to

Dublin, Brisbane or Birmingham. I chose Birmingham because of its excellent reputation and I was thrilled to think that my daughter was going to be in the hands of the best experts in the UK.

Hayley was admitted to Ward 12 at Birmingham Children's Hospital on 12th October 2009 for corrective heart surgery. The surgery took place on 14th October 2009 and it was performed by Dr William Brawn. The operation was a success and I was relieved."

**Q.** In the next paragraph there is a slight typing error. It should be October, not November.

**A.** Sorry. Okay.

"Hayley then remained in the paediatric intensive care unit (PICU) until 31st November 2009."

**Q.** October.

**A.** Sorry.

"...October 2009. Hayley's stay in intensive care had to be extended because of two failed attempts to take her off the ventilator. A problem also arose when those treating Hayley attempted to insert a tube into her lungs. I was informed that the tube used was too long. An initial X-ray was taken which revealed no damage to her lung. However, five hours later following another X-ray, I was informed that Hayley's right lung had collapsed. I discussed this incident with a number of people including Justine Kidd, the cardiac liaison sister, Dr Adrian, the Clark Clinic, who wondered why Hayley had been in intensive care for so long, and I also informed the Ward 11 staff when Hayley was later transferred."

**Q.** Just tell us who the Clark Clinic are.

**A.** The Clark Clinic are the ward on the Royal Victoria Hospital who nursed Hayley for nine and a half weeks.

"I specifically told Dr Adrian that I was not happy about the tube causing Hayley's lung to collapse, but that I appreciated that sometimes mistakes can be made. I genuinely thought that it was an honest mistake. I made it clear that if the tube was to be inserted or removed again, I would like

a more senior member of the team to do it. I also asked if I could be present at the time. I was told that points were taken on board.

As a consequence of the collapsed lung, the PICU then placed Hayley on CPAP and kept a careful eye on her lungs. Hayley hated the mask and kept trying to pull it off so I started staying with her overnight to pacify her as much as possible. She was not sleeping through the night at this stage and it was horrible but I persevered and we got through it. I was very proud of my little girl.

On 31st October 2009 Hayley was discharged from PICU. We were all very excited and I was looking forward to being able to take Hayley back to Australia with me to be with my husband as a proper family. Before we left, Dr Brawn came to my family and asked whether Hayley had ever had respiratory problems in the past. I explained that she never had a cough or cold as I had been very cautious with (inaudible) following her nine and a half week stay in hospital after birth. I also explained that Hayley was a very strong baby and was only in intensive care for 23 hours following her shunt operation. I got a feeling by what Dr Brown was saying that he was unaware of the tube incident which collapsed Hayley's lung. Despite this, I was fond of everyone in PICU and was really happy that Hayley was being discharged.

Because Hayley was doing so well, I subsequently decided not to mention it as I did not want to get anyone in trouble or point fingers.

Looking back, I wish I had told him about the incident but I did not want to cause any trouble as Hayley seemed to be recovering well and she was my only priority.

When Hayley was discharged from the PICU she was transferred to Ward 11 and I was told that she would be going into high dependency. Hayley had the dressing on her wound changed before we left as it was a bit yellow and sticky.

When we arrived on the ward Hayley was placed on the open ward.

They said that she was actually next door to the high dependency unit but was closest to the nurses' station. I was a little apprehensive and worried

but Hayley loved the open ward. She was excited to be with the older children on the ward. It was lovely to see her being her normal bright and bubbly self. She was a very nosy little girl and thrived on Ward 11. *Karen – this should be Ward 12*

On 1st November 2009 a nurse informed me that Hayley would have to be moved to Ward 11. I told her that Hayley absolutely loved Ward 12 and asked if there was any way that we could stay. I was also confused as to why they wanted to move us, as the day before they told me that she had to be in Ward 12 near to the nurses' desk. I explained that Hayley was supposed to be in high dependency and she wasn't, and now you want to move her. She was settled for the first time in a while and I asked if we could stay. I was told that we were able to stay and we were so grateful.

On 2nd November 2009 the nurse told my mum that we would have to change wards again. I was at the hotel getting some rest but my mum rang me straightway to inform me. I immediately rang the ward to find out what was happening. Again I explained Hayley loved Ward 12 and that I had been told the day before that she was able to stay. I was really upset, I even cried, which is really out of character for me, but I knew how settled Hayley was and how well she was doing and I did not want anything to jeopardise that. I was scared if she was moved from her home ward no one would know her medical history, especially her repeated lung collapse in PICU. I was told that Hayley needed to go to Ward 11. I subsequently agreed, even though I was not happy about the situation, but I felt as though I had no other option.

When the ward manager on Ward 12 rang me, she promised me that Hayley would be put in high dependency in Ward 11. I was relieved.

This was the first time since Hayley spent 16 days in PICU that she would not receive the high dependency care which she required.

I returned to the hospital at about 6.30 p.m. that evening and was horrified to find Hayley (inaudible) to the door the furthest away from the nurses' station. Hayley was not in high dependency and I knew I had been right too. Hayley was much further away and was not monitored as

much as she was in Ward 12, which I thought was ironic considering what I had been assured. I was extremely upset and felt as though Hayley was being punished and placed as far out of the way as possible because I was reluctant for her to be transferred to the ward. I felt as though I could not say anything to the staff on Ward 11 because I did not want to cause any trouble and did not want Hayley to suffer because of my complaints.

I had originally planned to stay on the ward 24 hours a day. However, when she was transferred this all changed. Hayley was so far away from the nurses' station and barely monitored. No one took any notice of Hayley's monitors, even when they alarmed. It was a common occurrence for the alarm to go off for 15 to 20 minutes and no one would come.

The family made a decision that I would stay up with Hayley throughout the night and my parents would stay with her during the day while I slept. We even flew Hayley's 19-year old cousin over to play with Hayley for five days because she seemed very unhappy in the ward. I was becoming increasingly worried about Hayley and tried to express my concerns to the staff but they did not seem interested. I even went out and bought a nurse a £ 100 gift voucher in a desperate attempt to buy her to provide better care to Hayley. I hoped that the other staff would hear about it and also want to help her. I know it seems like a desperate thing to do but I was desperate as no one was listening to me.

Hayley seemed to improve following her cousin's visit. At this point there were four of us looking after her and she loved the attention.

Hayley started back on her bottle feeds and was eating toast, Cheerios and beef stew. She was gaining weight and I was happy with her progress. She was even playing peek-a-boo with her bib. It was nice to see her playing and happily babbling away.

After a while I started to notice the deterioration in Hayley's condition. She had previously had a staph wound in her chest incision and had been on oral antibiotics for over 11 days but her wound was not healing. In

fact, it was getting worse. The infected area was full of pus and had to be cut open by the surgical team.

On 6th November 2009 Hayley was started on a concentrated course of antibiotics in an attempt to shift the infection. Her oxygen levels were increased and we were informed that this was due to the fact that her body would be working harder to fight the infection. I immediately noticed a difference in Hayley. She went off her food, refused her bottle, and became lethargic. All she seemed to do was sleep and she was really struggling to breathe. Her head was also bobbing. I asked those involved with her care if she was okay and whether she was suffering from an adverse reaction. Dr Ben Anderson informed me that she was merely resting more as small babies take longer to recover so that her body could fight the infection. I accepted this advice.

On 7th November 2009 Hayley's condition had become even worse. She was now sleeping all day and all night and her head bobbing had become worse. My mother and father both expressed their concerns to the medical team and told them about the head bobbing and the difficulties with breathing but they were told that it had already been put in her notes. I was extremely concerned by this, as when Hayley had been in hospital in Belfast I was constantly asked about Hayley's breathing and told that I should be aware of any changes in her breathing. The family were aware of changes in her breathing and my mother and father and I had all expressed our concerns, yet nothing was done. It was very distressing to see my daughter like that.

My mother and father continued to express their concerns during the day and they kept being told that Hayley was just catching up on some sleep. My mum even said to Dr Anderson that Hayley was a very poorly little girl. To this he responded that he had seen worse and that she had done well to get off CPAP so quickly and recover from pneumonia. The family were completely shocked by this as it was the first time we had heard that Hayley had pneumonia. My mum explained this to Dr Anderson and he provided a very brief explanation of pneumonia to my mum and then just

said that Hayley was fine.

Mum and dad were worried about Hayley retaining fluid. She had become very puffy. Mum said she felt like a cold water bottle. They kept on asking for Hayley to be weighed as this would be a simple way to see if Hayley was retaining too much fluid. Hayley did eventually get weighed and it showed Hayley had put on 500 grams from 1st November 2009 to 9th November 2009, despite not eating and only on minimum fluids. None of the staff were worried and did not even record the weight on the patient daily plan notes. I was very worried, as it was always very hard for Hayley to put on weight and to me it was a sign of heart trouble. Although we were being assured that Hayley was fine, it was obvious to me and to my parents that she was really struggling to breathe. Even a complete stranger who saw Hayley said that she was struggling with every breath. We were very upset that a complete stranger could see that Hayley was in difficulty but the medical professionals merely said that she was fine. We could also see that Hayley was in trouble.

That night I continued to express my concerns and when the staff changed over at 8 p.m. I told a member of the support personnel about Hayley's lung collapsing in PICU and explained that she was still vulnerable. She then checked Hayley and again told me that she was fine. I was confused. The Clark Clinic at the Royal Victoria, Belfast, had always warned me to look out for differences in Hayley's breathing and communicate them. I always felt as though my opinion was valued because a mother knows her child the best, whereas here my concerns were just ignored. It was so painful to watch Hayley's head bobbing around and her struggling to breathe.

On 9th November 2009 Dr Stumper was doing his ward rounds. Dr Ben Anderson told him Hayley was doing fine. By this stage the whole family were worried sick that our concerns were not being taken seriously and my father stood up and stated that Hayley was clearly not fine. My father is not usually the type of man to interfere with people or interrupt people but we were all so worried and concerned that we were

resorting to desperate measures. My mum also repeatedly asked whether there was a problem with Hayley's lungs. 'Her lungs, her lungs, I'm embarrassed to ask them about her lungs.' In response to this, Dr Stumper listened to her chest and told us that she was fine and that it was clear.

The family continued to express their concerns and eventually an X-ray was arranged. The X-ray was taken between 2 p.m. and 2.30 p.m. After that, my mum and dad waited a long time for someone to explain the finding but no one came. At approximately 6 p.m. the senior house officer stood in the doorway of the room and did not enter the room. My mother and father were informed that Hayley had a collapse in her upper right lung. They said that they were not overly worried about it and that there was no need for concern. They advised us that Hayley's gases were fine and that they would organise physiotherapy for her but they did not say when. They just walked off, leaving my parents feeling upset and even more worried.

When my father informed me about Hayley's lung I was worried and upset that it had taken so long for us to find out about her lung, bearing in mind that we had been complaining about her breathing and general condition for days. I was also appalled that the senior house officer did not even have the decency to explain the finding to my mother and father in detail and merely stood in the doorway and then left when they explained the findings."

Sorry, it says "he"; it should be "she".

"I was so upset but all I was bothered about was getting physiotherapy arranged for Hayley as soon as possible. My dad then asked when it would start and we were told she could wait until the morning. I was furious, as she had already been left for too long, but I said nothing as I did not want to cause a fuss. I was scared to ask the staff to arrange for physiotherapy because the last time I made a fuss Hayley was dumped at the door instead of being put in high dependency. I wish I had.

My father and I were also getting very agitated about the state of

Hayley's wound and the lack of care of it. We were worried that her dressing was not being changed often enough. It was only being done once per day and it was becoming nasty looking. We expressed our concerns and the wound had to be opened by the surgical team for the second time. My father was constantly asking for the dressing to be changed but it was still only changed once per day, although ideally it needed to be changed much more often as it was becoming soaked with pus. The top half of the wound was healing well and we were concerned that the dressing covered in pus would cause that part of the wound to become infected also. My father was becoming so frustrated that again no one was listening that he asked for a special note to be made requesting that the dressing be changed at least twice per day. Every time he asked for it to be changed, the nurses would tell him they could not do it until the tissue viability nurse attended. My family and I never saw the tissue viability lady.

On 23rd October, she refused to see Hayley because I started to put Sudacrem on Hayley's nappy rash as it was plain to see whatever creams the hospital staff used were not working as Hayley was in agony. Staff Nurse Lisa Poole informed me. The tissue viability lady said it was not worth her while coming to see Hayley if I was not going to rethink hospital policy. For the rest of the day Hayley slept."

**Q.** I think you got that wrong. "It was not worth her while coming to see Hayley if I was going to rethink hospital policy."

**A.** "If I was not going to rethink hospital policy." She said she would see Hayley if I did rethink it.

**Q.** Sorry?

**A.** She said she would see Hayley the following Monday if I did rethink the hospital policy and not use the Sudacrem. Sorry.

"For the rest of the day Hayley slept. She hardly opened her eyes and refused her bottle. We had to feed her through her nasal tube by gravity feed. She just lay there and struggled to breathe. She did wake up once and guzzled 30 to 40 ml of water in one go, which was extremely

unusual for her.

At the time of staff changeover (inaudible) Staff Nurse Hayley Stretton took over and she was like a breath of fresh air. I explained about Hayley's breathing difficulties and she was understanding and checked her at the start of the night and regularly through the night. I was so relieved that someone had finally started to listen to me.

At about 1.30 a.m. the following morning I gave Hayley her gravity feed because she was too exhausted to have her bottle. She also guzzled 30 ml of water. I gave her the gravity feed while she sat in my lap, as I was able to give it to her slowly.

However, when I placed Hayley back into the bed she vomited. I cleaned her up and noticed that her breathing had started to become noticeably worse. I called for the Staff Nurse Hayley and she fetched the senior house officer Pam Dawson, who acted very quickly. An X-ray was organised and PICU contacted.

The X-ray team initially asked if Hayley could be transferred down to the X-ray department but Pam told them that Hayley was in severe respiratory distress and that they needed to get to Ward 11 immediately.

The first X-ray failed so another had to be taken.

Hayley was then placed in a head box of five litres of oxygen. IV fluids were set up and we were instructed that Hayley was now nil by mouth. Pam showed me the X-ray and compared it to the X-ray that had been taken earlier in the day. I was so shocked by the difference in the two X-rays.

There was a massive difference. I could see that from the first X-ray a small part of her upper right lung had collapsed but the second X-ray looked as though the whole lung was now affected. Pam told me that the lung was full of gunk [sorry, she's trying to explain to me in layman's terms] and that there was hardly any black areas of the X-ray which would explain why Hayley was struggling to breathe. She also informed me that Hayley's left lung had also been compromised.

I was so shocked by what I was hearing and I could not believe that Hayley had just been left to deteriorate. Pam informed me that Hayley

would need a hell of a lot of physiotherapy. I asked Pam to ring PICU and make them aware of the situation so that they would be ready for Hayley. She confirmed that she would talk to her senior colleague and told me not to worry as PICU were always ready.

Pam then rang the physiotherapist at 2.30 a.m. to get help for Hayley straightaway, but despite Pam's best efforts nobody came until 8.30 a.m. I could not believe what was happening.

All along, the family had expressed their concerns about Hayley's breathing and had even asked if there was a problem with her lungs. Yet nothing was done. Even though an X-ray was taken which indicated that Hayley's lung had begun to collapse, still nothing was done. In my view, it was bad enough ignoring us, but I consider they ignored the medical evidence.

I knew that Hayley was in serious danger. Hayley was kept in the head box with five litres of oxygen. I stroked her head as much as I could to try and comfort her but I wanted to make sure that her oxygen levels stayed up so I had to shut the porthole in the head box. I missed my little girl so much. All she did was sleep. She was so weak and I felt as though I had not seen her eyes in so long, her big blue eyes. I felt so let down by everyone involved in Hayley's care and I felt as though I needed to start speaking up for my baby to ensure that she got the help that she needed in order to get better. I no longer trusted anyone on Ward 11 except for Senior House Officer Pam Dawson. I was becoming desperate. I am usually quite a strong and focused person but what was happening to Hayley was destroying me. I knew I needed to do everything possible to help my daughter.

At approximately 8 a.m. that morning I informed my mum about Hayley's lung and she said that she was not surprised. I saved her **test**. *Karen – should be text.* I have been asking and asking about her lungs. Doctors, nurses, everyone. Not surprised. [I have a copy of that **test**, if I could show it later.] We had known all along that something was seriously wrong with Hayley's lungs and my mother had even specifically asked about her lungs but we

were told that her chest was clear. I do not understand how things were left to get so bad.

At 8.30 a.m. the physiotherapist arrived and I was relieved. I was out of my mind with worry and (inaudible) thanked God that someone was there to help. I was so upset and exhausted that I told them that I felt no one cared about Hayley and that the family had seen her deteriorate and raised our concerns but no one had taken a blind bit of notice of us. My mum kept asking about Hayley's lungs and we were constantly told that she was fine. The physio wrote in the medical notes: 'Mum very concerned'. Hayley then had one session of physiotherapy and became a lot more comfortable and it helped with her breathing. They physiotherapist arranged to come back at 1.30.

At shift handover I told the new Staff Nurse Sanjet Moore what had happened that night. I explained that Hayley had been overlooked, neglected, and was suffering as she was not receiving proper care. Sanjet was wonderful and went straight to the ward manager, Jackie Clinton. Jackie Clinton then asked Sanjet Moore if I wanted to make a formal complaint. At the time I told them I did not want to make a complaint and that I just wanted them to help Hayley to get better. I did not want to waste my time completing the documentation when Hayley needed me. I was putting all of my energy to looking after her and making sure she was cared for by the medical staff. Looking back, I wish I had made the formal complaint as maybe it would have changed the dreadful outcome for Hayley.

Sanjet continued to make every effort to tend to Hayley's needs throughout the day and I feel that she went above and beyond to try and make me feel better and help Hayley. Later that day I also saw Registrar Zdeaka Reinhardt and told her that Hayley was in a terrible state and I believed that she had been neglected. Zdeaka was very kind and apologised. She told me that Hayley's wound infection was her number one priority and she would organise extra support for Hayley. Again, I was relieved that finally something was being done. I thought that the

extra support would mean we would finally be moved to PICU or at least the high dependency, but I was wrong. Mum remembers Dr Zdeaka saying Hayley might have to be moved back to PICU and this might be perceived as a step backwards. I then asked my dad to get Junior Sister Sheila Bennett, who came in to see Hayley. Despite still being on Ward 11, I was starting to feel more comforted as by this stage everyone was starting to rally around and help Hayley. Sheila Bennett removed Hayley's nasal prongs, stuck down her NG tube and helped us fix Hayley's IV fluid line because it kept occluding. I could not believe that no one on the medical team had the insight to remove the nasal prongs when Hayley was put in the head box because the oxygen with the nasal prongs had been disconnected since 2 a.m. Tuesday 10th November, and they were interfering with Hayley's breathing.

Hayley was always having problems with her lines. I kept telling everyone that she required a broviac line when she was in Belfast as it sometimes took over an hour to put the lines in and nine times out of ten they had to call for someone who was more senior and experienced to ensure that it was done correctly. By this point Hayley's left ankle was swollen and puffy from where the IV fluids had collected where her line had failed. We had to repeatedly asked both Sheila and Sanjet to help us fix Hayley's lines all day.

At 1 p.m. that day my father and I saw Sheila talking to Sanjet and Simone, a student nurse, about Hayley. The conversation looked serious and then I suddenly saw them reach for an isolation sign. Sheila Bennett turned it around and shut the door before walking off. Sanjet then came into the room wearing a plastic apron. She told us that they were worried about infection and mentioned something about swine flu."

Sorry, it should be "MPA swab".

"An MPA swab was taken and we were told that we were to remain in isolation and not to enter the communal areas. We did as we were told. Sanjet didn't take Hayley's MPA swab until 6.30 p.m., which was five and a half hours later. She also told us that they normally had to wear

masks as it was hospital policy, but they didn't.

As soon as Hayley was placed in isolation all of those who were tending to her needs tailed off. Hayley was even more vulnerable. We had also been told that we were not able to leave the room. We were unsure of how we were supposed to go and get help when it was required. Also, as the door was shut, we wondered how anyone would hear the alarm. I was very concerned. I was so confused about why Hayley had been put into isolation and no one was explaining why.

I recall bumping into Sanjet Moore the day after Hayley died and she said that she was told that Hayley had a cough and a cold and that was why she was put into isolation. Hayley did not have a cough or cold and therefore I still do not know why she was put in isolation. Again, this makes me wonder whether my constant pleas for help had caused Hayley to be put in isolation in an attempt to shut me up.

When Senior House Officer Pam Dawson came on the night shift, the first thing she said is: 'What the hell are you doing in isolation?' I was alarmed. I talked to Senior House Officer Pam later that night to try and establish why Hayley was in isolation. I told her I felt as though Hayley was being punished because I had told people that she had been neglected. Pam then went to check Hayley's notes for me and confirmed an entry had been made telling staff to look out for symptoms of the swine flu. Pam explained that there was a case of leukaemia on the cancer ward and therefore they needed to be careful. I trusted what Pam said to me but I still did feel uneasy about the situation."

**Q.** Let me stop you there for a moment. You are about half way through. Do you want a break now or do you want to keep going?

**A.** No, I think I'll keep going. Is that okay with you?

**Q.** Yes.

**A.** Can I sit down?

**Q.** Of course you can.

**A.**

"At 1.30 p.m. I saw the physiotherapist come up to the door of the room.

They looked at the isolation sign. They kept walking. They kept walking on. They stopped a little bit and kept walking on. I was gutted. At 3 p.m. I decided to go to the nurses' station and ask whether Hayley was being left until last for physiotherapy because she was in isolation. Sanjet explained that she would beep them straightaway for me. I was starting to panic about Hayley being shut in isolation.

At ten past three in the afternoon a member of the surgical team came to cut open Hayley's wound again. Sanjet was shocked by what she saw and confirmed that she had never seen such a bad wound infection. Dr Stumper then came into the room and asked if the wound had got better or worse. I was not sure, as my dad knew more about Hayley's wounds, so I asked him. It looked awful but it was not as red on the outside as it was previously. There was supposed to be a wound care chart attached to Hayley's notes so I was surprised that they were unaware of how the wound was. I wish I had taken pictures of it now. When Dr Stumper was looking at Hayley's wound my mum jumped up and asked him how Hayley's lungs were. He then glared at her and said, 'Physio.' My mum then asked: 'Will that make her better?' He shouted, 'Yes, physio' before leaving. We were all shocked by Dr Stumper's behaviour and my mum was upset by Dr Stumper's look of utter contempt. In my view, he was arrogant, rude and evasive. He was also very unprofessional and this really frightened us. No one in the Clark Clinic ever acted that way.

At 3.20 Hayley finally had another session of physiotherapy which went well.

Throughout the day I kept noticing that Hayley's line kept occluding. It was happening at least four times per hour and we were trying our best to fix it ourselves as we were told that we were not allowed to go out of the room as we were in isolation. We all took it in turns to go out and ask for help. We were all very concerned that being in isolation was seriously jeopardising Hayley's access to (inaudible) and support because we were too scared to leave the room and we felt that we were being burdens to the staff when we asked for help. Hayley was very vulnerable.

On 10th November 2009 Hayley had further tests but again no one came to tell us the results of these tests. My mum and dad waited for so long for someone to explain the findings but no one came.

At approximately 5.30 my mum went over to the nurses' station and asked if Hayley's results were back. I appreciate hospitals are very busy places but we thought it was unusual and **acceptable** *Karen – should be unacceptable* that we had not been informed of the findings. When my mum asked the senior house officer she stretched her arm out like she was stopping traffic and she stated she was very busy and she had to do something else. Another member of staff then rolled their eyes at my mum. She was treated very badly. Later on, the senior house officer came to the door, opened it and muttered something about the results being available and there was nothing to worry about, and then she left, just the same as she had done the night before.

At 7.30 to 9 p.m. that day the senior house officer came to the door of the room but did not come in. She told me that Hayley's lung condition was not serious. I told her that Hayley was lying with her head in a box and was in a complete mess and that it should never have gotten to this stage. I told her I no longer had any trust in the hospital. She then walked off explaining she needed to organise the handover. I was not surprised. Everyone had turned their back on Hayley so far, so this was no different. I was upset and angry and I told her this and then she came back to me and kept apologising. She came into the room and she knelt down on the floor. I found this really unusual. I asked her. I said, 'Get up.' I said, 'Get up and speak to me just like an adult.' I told her, 'All you have done is dismiss and treat my parents like shit on your shoe.' I was utterly distraught and did not know what else to do. She tried her best to apologise but by this stage I felt that it was too late and I said she could leave so she could organise the shift handover. I was really scared. Because I had an argument with her I was scared how this would impact on Hayley's care.

At 8 p.m. after the shift handover, the same senior house officer came

back and she explained that Hayley was getting antibiotics to prevent any infection in her lungs. I was overly nice to her to compensate for getting upset earlier on but I was also happy and relieved. She mentioned that Hayley's infection count had doubled, her CPA had increased from 29 to 60. I didn't understand at the time what this meant but I knew – I did – it sounded serious.

At 8 p.m., 8.30 p.m. at handover I then explained all of my concerns to the new staff nurse. I told her, 'Hayley has been overlooked, neglected, and is suffering.' I was really worried about her alarm going off and no one hearing it because the door was shut in isolation. She offered to put the alarm outside but that scared me even more because if I fell asleep I didn't trust the nurses to check Hayley if the alarm went off. I told her I had not slept in 28 hours as I did not trust the hospital. I explained that I was worried about Hayley's line and the fact that she was not getting enough fluid, and she said that we should have made arrangements that day when the doctors were on the ward. The nurse said that she could not bleep the doctors as it was not an emergency. She was being sarcastic. I told her I would not dream of bleeping the doctors. Hayley's lung collapsed the night before and that wasn't an emergency. I said to her, 'Do not make me out like I'm being a bitch.' I said of course I wouldn't dream of disturbing the doctors. I was just extremely worried about how this would impact on the quality of Hayley's care and I was desperate.

Hayley was supposed to be on hourly observations. The staff nurse didn't take her temperature for nine hours. This was a child who was supposed to have the swine flu. The staff nurse didn't fill out the paediatric early warning system properly. I have done extensive research and found various items of literature which suggest that had she done her job properly she could have predicted Hayley's cardiac arrest at least six to eight hours before it happened.

At 8.30 p.m. the new antibiotics were administered. Hayley was given half her IV fluids and half milk after the staff nurse rang Senior House

Officer Pam Dawson. Throughout the night I kept a close eye on Hayley and did not go to sleep at all. I kept clearing water from her tube and wiping the excess from inside of her head box. The oxygen indicator inside her head box showed 39 to 43 per cent of oxygen. I spent the rest of the night being really kind to the staff nurse. I didn't want her neglecting Hayley because we didn't get on.

At 7 a.m. the following morning Hayley was put back on 100 per cent milk feed and her sats dropped from 93 to 88. Hayley's alarm sounded for 15 minutes but nobody came.

At 7.15 a.m. I rang and got the staff nurse to stop Hayley's feed, her milk feed, as she had to work harder to breathe. It had taken 15 minutes to get her sats back up. Pam Dawson, the senior house officer, then came to review Hayley. She said that she could see that Hayley had to work harder so she put her back on half IV fluids and half milk.

At 7.30 a.m. the new staff arrived for the handover. I always liked the changeover in the morning as there was new energy and fresh faces. It was also noisier. I had not slept in 38 hours but I knew that mum and dad were due to arrive at 9.30 so I would be relieved.

At that moment I glanced at myself in the mirror, realising how horrendous and exhausted I looked. I grabbed my wash-bag but then I put it down again. I decided I did not want to leave Hayley alone in the room with the door shut. As I put the bag down I realised that I had taken my eye off Hayley for a split second and I had a dreadful feeling. I turned around in the room and saw that Hayley was really gasping. She was really gasping for breath. Her sats suddenly dropped to 65. The left hand side of her mouth was puckered out but the right hand side was completely sucked in. Her eyes were panic stricken and they started rolling back in her head. I could see that her neck was starting to collapse in. At first I thought she was choking, so I just took off the head box, I put her on my lap and I tried to pat her on the back, and I got the oxygen tube and I put it as close as I could to her wee face to try and give her some oxygen. I knew within seconds that she was in serious trouble

so I put her back on the bed and just put her back really quickly and put the head box on and attached the oxygen tube and I ran. I cried for help, but nobody heard me. The door was shut because we were in isolation. I knew I had to leave. I had to leave Hayley to go and get help but I felt sick. Hayley was scared and struggling to breathe and I was running off. Within seconds I had Hayley back on the bed and put her head box back on, attached the tube and rang for the nurses. They came straightaway. One nurse started to put the oxygen mask on but the other one said, 'Oh dear.' She says, 'I'll call PICU.' They tilted Hayley's head back to open up her airways. She looked awful. She was like a fish out of water. She was gasping, gasping for every breath. She then started turning blue. Hayley was in so much trouble and I knew that she needed help. I was so worried that because we were in isolation, that we would not be able to go to PICU. I was also terrified they would all have to put on plastic aprons and follow isolation protocol. Hayley was in terrible trouble and every second counted. I wish I never had let Sheila Bennett put Hayley in isolation.

But all of a sudden the staff from PICU were in the room. There were about 15 people in the room all trying to help Hayley. I recognised Dr Rich. [Dr Rich is the name the nurses gave him; it's actually Dr Neal.] When Dr Rich went to put the long tube down Hayley's throat I noticed Hayley's new front teeth. It was the first time I had seen them. He then asked for adrenaline. I knew that Hayley's line had failed because I heard someone say something about it being out. 'Is that her line out?' I was always worried about Hayley's lines and now she was in serious trouble I feared for her life. Every time Dr Rich called for adrenaline, Dr Zdeaka tried to administer it but the adrenaline kept squirting out into my face and over her face. I think this happened four or five times. I was concerned that it was not getting to Hayley's heart. The team frantically tried to put Hayley's lines in. All of the time I was stroking her head and telling her she was the best wee girl in the world.

About eight different people took it in turns to try and resuscitate Hayley.

They worked on her chest until their hands hurt. All the time, the colour was draining from her (inaudible) and she looked helpless. All I could see was some monitor flashing 'Arrest'. Her hand became limp. I wasn't sure if it was the life being drained out of her or maybe it was the injection that they had given her to paralyse her when they inserted the tube. All the time I kept squeezing her hand gently just to see if she would squeeze it back. Her wound was leaking pus everywhere from the pressure of the resuscitation. Hayley never squeezed my hand back. It was cold and lifeless.

They took the bars off the top of the bed and they passed it and I helped them. I helped them pass it out of the room and then I checked. I checked underneath the bed so that there would be nothing obstructing her being transferred to PICU. I grabbed Hayley's little hand back and I just kept speaking to her. I just kept saying the same thing. All I could think of was I really wish that we were in PICU as there was so much more support. I was so angry with myself and all of the staff on Ward 11.

After 15 minutes Jackie Clinton came in and asked if there was anyone she could call, but she had to come back into the room as they did not have the numbers of my parents.

After 17 minutes they stopped working on Hayley and very quickly checked her vitals. At this point I asked the doctor, it was Dr Neal, 'How long do we have for brain activity?' and he said, 'They still have time.' So they were (inaudible) the resuscitation.

Jackie Clinton came back into the room. They didn't even have mum and dad's details. They were useless; they couldn't even get that right.

At 18 minutes, one of the doctors said he could feel Hayley's heart.

Everyone sort of gasped and then suddenly numbers appeared on the monitor. It felt like the Lotto. Then all of a sudden he said something about collapse. I leant forward and asked what did he mean? What did he mean, collapse? He just kept resuscitating Hayley and he just turned his head away from me. He could not answer. He could not even look at

me. He just kept giving Hayley chest compressions.

At 19 minutes I noticed everyone had stopped looking at Hayley and they were now all looking at me with pity in their eyes. I also noticed that Hayley had soiled her nappy. One of the doctors was speaking to Hayley and he said, 'Come on sweetheart, come on' while he worked on her.

At 20 minutes Dr Adrian came towards me and he put his hand on the small of my back. He confirmed my worst fears. He said, 'Sorry, mum, we've lost her.' All I could think about was I was no longer a mummy because Hayley was my only child and she was dead. I was in shock and utterly devastated.

The treatment has led me to question how could staff at Birmingham Children's Hospital fail Hayley so abominably? All the crash team took all the leads and lines off Hayley very quickly.

I wanted to say thank you to intensive care. I said, 'Thank you for doing your best for Hayley, I really appreciate all your efforts.' I thanked intensive care as they were professional and caring but I was livid at Ward 11 staff. My family and I had warned them and still they did nothing to help. Poor Dr Zdeaka started howling when I thanked PICU. She threw her arms around Dr Rich [that's Dr Neal] and had to be carried out of the room.

After I thanked PICU they asked if they could do anything to help. I asked them to leave me alone with my daughter and switch the lights off in the room. Hayley always hated bright lights. I picked her up in my arms and wrapped her up in her bunny blanket. I then called Bobby, my husband Bobby, in Australia, who was due to fly in a couple of days to see Hayley. I told him his baby girl was dead. I put the phone to Hayley's ear and I told him to tell her he loved her and to say goodbye while she was still warm.

I believe very strongly that Hayley's death could have been prevented. I truly believe if the medical team had listened to me and my parents Hayley would still be alive today. They turned their backs on her.

I was informed that the hospital would take care of Hayley after her death

but I refused. I explained I did not want the hospital to touch my daughter. I had lost all faith in them and I did not trust them. I explained I wanted someone who was independent to look after her. Hayley was overlooked, neglected and suffered while she was alive. I said, 'I'll be damned if she'll be overlooked, neglected while she was dead.' I did not want her to be neglected and overlooked.

I expressed my concerns to all of the staff on Ward 11 after Hayley's death and I demanded answers but no one could explain. I even spoke with Dr Ben Anderson and asked him why nothing had been done sooner. Again, all he could say was Hayley was fine. His words absolutely failed me. I could not believe that he was still insisting Hayley was fine. I told him, 'Ben, Hayley is dead. She's lying in the morgue.' I said to him that she couldn't be fine and he did not offer any condolences or sympathy.

There was, however, one member of staff at the hospital who admitted the truth. When I told **Ben** *Karen – this should be SHO Nidhi* that Hayley had been overlooked, neglected, and there was no need for her to die, at this point she said, 'I am so sorry.

I completely accept your criticism. I was so shocked when I found out that Hayley had died. I completely accept the criticism.' This was Senior House Officer Nidhi. Initially I didn't want to reveal her identity. I didn't want her to get into trouble or for her to be a scapegoat but I feel now I have no choice.

I cannot begin to explain the impact that this has had on myself and my family. My husband flew over to England when he heard the news and when he arrived all I had to offer him was the babygro that Hayley was wearing at the time of her death, and a lock of her hair. Both Bobby and I are devastated. Hayley's experience at Birmingham Children's Hospital can only be described as brutal.

My mother was also massively affected by her granddaughter's death. She has not been the same person since. She is withdrawn and spends a lot of time in bed, where she used to be a very active and sociable person. She and my father are utterly heartbroken by what has happened and we

are all determined to fight for justice for Hayley.

The matters referred to in this witness statement are within my own knowledge except where stated otherwise. I believe that the facts stated in this witness statement are true.”

**THE CORONER:** Thank you very much. It is now 11.40 and we will break until 11.55.

(Adjourned for a short time)

**MS LUCAS:** I have no questions, sir.

**THE CORONER:** Mr Weitzman?

Questioned by Mr WEITZMAN

**Q.** Can I please ask you, when you were staying at night in the paediatric intensive care unit, how were you staying there? Were you sleeping?

**THE CORONER:** Let me just stop you there. I think it is best if you stand up now, Paula, so you are actually talking to me. Although he is talking to you, he already knows all the answers. You tell me. And the same when Ms Lucas talks to you. Ask the question again.

**MR WEITZMAN:** During Hayley's stay on the paediatric intensive care unit, where were you staying at night when you were there?

**A.** When I stayed on intensive care I sat in a chair by Hayley's bed because I was sleeping in the hotel during the daytime so I made sure that I was there at night time, just extra support.

**Q.** And during the short period on Ward 12?

**A.** In Ward 12 they had more room in Ward 12 and you were allowed a fold-up bed, so it was nice for me to stretch out after sitting in a chair from the 26th to the 31st in intensive care, but I didn't sleep; I was just there. Hayley was a bit upset in the night and I'd look after her.

**Q.** When Hayley was moved from Ward 12 to Ward 11, did you express any desire for facilities for you so you could stay at night?

**A.** No, because at the end of the day Hayley came first. Nobody even came and asked me anything about that.

**Q.** That was my next question. Did you have discussion about how you could be accommodated on Ward 11 before Hayley moved there with any of the staff?

**A.** No, no discussion whatsoever.

**Q.** When you were on Ward 11 during the nights, how did you accommodate yourself?

**A.** The same thing as Ward 12. They would have a little fold-up bed that you would get from a store room, but because I stayed there all the time they just would keep it in the room, just beside the wall.

**Q.** At the time of the move to Ward 11, what were your intentions about night time stays with Hayley?

**A.** I just wanted to be there. I just wanted to give her extra assistance. Initially I was going to just be there during the day. In Belfast I used to go home every night but I was just a bit concerned about the alarm would go off and it wasn't attended to so my level of concern, we had a family meeting and we all decided Hayley would get 24 round the clock care.

**Q.** You were concerned, you told the court in your statement, about Hayley's position on Ward 11.

**A.** Yes.

**Q.** Can you give us a slightly more detailed description of where she was on the ward?

**A.** As soon as you walked in through the doors the very first room where patients were actually located, that's where Hayley was. So Hayley was to the left hand side in the very first room, closest to the door, but it was the fact that she was actually positioned across ---- In the same room there was a little girl who was off all her monitors and basically she was just establishing a good feed routine before she went home, so my Hayley I thought was going to be in high dependency but she was in the same room as the little girl who didn't need any monitoring. They were just getting her feeds.

**Q.** On the ward, on Ward 12, what other type of facilities or levels of monitoring did you observe there to be for sick children?

**A.** They had a high dependency. They had a special high dependency room that they monitored all the children.

**Q.** Where was that in relation to Hayley and the nurses' desk?

**A.** Hayley was just across the way from the nurses' station. They said she was supposed to be in high dependency but they weren't putting her in high dependency but they said: "Listen, she's closest to the nurses' station. We'll keep an eye on her."

**Q.** In your statement you express concern about the level of monitoring on Ward 12 as

compared to Ward 11. Can you be more specific about the types of monitoring which you felt were lacking?

**A.** I was more concerned about the monitoring on Ward 11 than Ward 12. Sorry, can you say the question again?

**Q.** In your statement you say when you moved wards there was not enough monitoring.

**A.** Yes.

**Q.** What type of monitoring were you concerned with?

**A.** On Ward 11 Hayley's alarm would go off and nobody would attend it. The only experience that I had previously was in Belfast. So I compared and contrasted it with the level of care we received there and that's why I wanted Hayley to have 24-hour round the clock care.

**Q.** When you say the alarm, the alarm for what?

**A.** They would have certain parameters for her stats. So if her stats dropped below a certain level the alarm would go off.

**Q.** That is oxygen saturations.

**A.** Yes, oxygen, yes. Then I had concerns about Hayley was being given a large volume of milk feeds. I tried to explain that I worked with the dietician in Belfast and we worked out our own regime and I followed it very carefully. But when Hayley was on Ward 11 I raised a lot of concern. I said: "This is a massive amount of volume to be giving Hayley." I says: "She's a one-year old little girl but she's only 5.8 kilos so she's very little weight." I says: "If we give her this amount of fluid she's drowning in the amount of fluid."

**Q.** When she was on the ward, were you concerned or were there any concerns about the effect of the fluid on Hayley and her appearance?

**A.** Mummy noticed she was getting puffy. I noticed too. Her face was getting swollen and even if affected her eyelids. Here eyelids were puffy. So she felt also too, she felt like a dead weight. Hayley was always a little baby and any time we used to pass her around we'd always make sure: "Have you got her?" because she was so light. So we were very worried that she had gained a lot of excess fluid in a very short period of time.

**Q.** You are familiar with the paediatric early warning system.

**A.** Yes.

**Q.** And you were at the time.

**A.** I wasn't at the time, only after Hayley died.

**Q.** When they were carrying out observations for that system on Ward 11, how frequent were they?

**A.** To tell you the honest truth, it's only until after Hayley died that I became more aware. It was just the general response to Hayley's alarm that I was concerned about.

**Q.** On 6th October, and I think that was a Friday ----

**A.** 6th November.

**Q.** 6th November. You noticed that she was struggling to breathe at times. Can you describe what signs of that Hayley gave?

**A.** She went from sitting up playing peek-a-boo and eating ice-cream and being really quite interactive to she just would lie there. Everything was such an effort. Everything was such hard work. So her little head would bob and she would sort of suck in on her tummy. It was like – you know like a concertina? Everything would sort of go like that and shudder. So she hardly opened her eyes. She was exhausted all of the time. She wouldn't even take her bottle. She didn't have the energy; so you had to use the NG tube.

**Q.** That condition, you told us, continued on until 7th November.

**A.** Yes. It just got worse.

**Q.** You told the coroner in your statement that you expressed your concerns, as did your mother and father.

**A.** Yes.

**Q.** Can you be clear to whom you expressed those concerns, please?

**A.** Any time I came on the shift, it's the first thing I would say. I would say to the – it wasn't the staff nurse, it was personal support who were in charge of Hayley at that stage. That was Saturday and Sunday. I'd always say: "I'm worried about Hayley's breathing. She's been in intensive care for 16 days and there's something just not – it's right." So they would check it and then they would say: "Oh, she's fine." Everything was just: "She's fine."

**Q.** 7th and 8th November were the weekend, Saturday and Sunday. What time were you coming to the ward and what time were you leaving over the weekend?

**A.** I would come on the ward every night at half six, so it would be half six at night time. So I would keep an eye on Hayley during the nights. I would normally do a

handover with my daddy and then I would stay until about half nine, ten, the next morning.

**Q.** On the night of 6th/7th, 7th/8th and 8th/9th, i.e. the Friday Saturday and Sunday nights, did you speak to any of the doctors and did you raise these concerns with doctors as opposed to nursing staff?

**A.** No. It was mainly because at that time of night they had already done their ward rounds, so mummy and daddy had raised their concerns during the official ward rounds, so I really was only escalating my concerns to the immediate staff in charge of the shift.

**Q.** And you told us that on the 8th you raised concerns about the amount of weight that Hayley had gained.

**A.** Yes.

**Q.** Can you tell us again to whom those concerns were raised?

**A.** I can't remember the name of the nurse in charge.

**Q.** So it was the nurse in charge of the ward at that time.

**A.** No, I can't remember.

**Q.** Would it have been a member of the nursing staff.

**A.** Yes. I think it was the personal support. What date was that again?

**Q.** I think it is the night of the 8th and 9th.

**A.** So 9th was Monday, yes. I just said: "She's getting heavy, she's gaining weight. Is that normal?" It always was really hard for Hayley to put on weight because her heart went so fast.

**Q.** You were not present, I think, on what is described as the ground ward round on Monday morning.

**A.** No.

**Q.** And you came back in when on the 9th from your hotel?

**A.** On Monday 9th November I came in at 6.30 p.m.

**Q.** You told us that your father and mother expressed concerns about Hayley's lungs.

**A.** Mum had gone home because she was just exhausted, and it was only dad. So I talked to dad. The monitors had all been switched off. Dad had said the nurse had turned it off. She didn't need to be under observation and the senior house officer had told him Hayley's lung was starting to collapse but it wasn't serious and there was no need for concern, and I just went hot. So the first thing I got was the nurse to turn on the

monitor and I said: "Daddy, could you go and check when Hayley's getting her physio?"

That frightened the life out of me.

**Q.** And who did your father check with? Can you remember?

**A.** It was the senior house officer Nidhi. Was it Nidhi? Yes, yes.

**Q.** Is that Ms Gupta?

**A.** Yes. Gupta Nidhi. Sorry, I'm not looking at you. Daddy came back and he said she said it wasn't serious and it could be put off until next morning.

**Q.** I just want to ask you about the tissue viability. Did you discuss with the tissue viability the use of Sudacrem and it not being worth her coming to see you until you abided by hospital policy, or was it discussed via a third party?

**A.** We never got to see tissue viability. It was through the nurse in charge. It was actually Lisa Poole. She rang tissue viability on behalf of us. We never got to meet her ever.

**Q.** I would like you to have a look at a document, please. It is page 667F. (Handed)

Do you want to call this Exhibit 1?

**THE CORONER:** The first one will be C1, the second one will be C2, the third one will be C3.

**MR WEITZMAN:** So, C1. You were there for the whole day of the 10th.

**A.** Yes.

**Q.** You did not go back to your hotel.

**A.** No. I was too scared. I refused to sleep. I wasn't going to leave Hayley.

**Q.** And you met the physiotherapist who came to see Hayley in the morning.

**A.** Yes.

**Q.** And you can see she makes an entry at the top of the page: "10th November 2009, 9 a.m."

**A.** Yes.

**Q.** These are the actual physiotherapist's notes as opposed to the continuation running notes where there was also a physiotherapy entry.

**A.** Yes.

**Q.** What she says is this: "Mum at bedside. Very anxious and upset that Hayley has been struggling with breathing the last two days and doctors not concerned."

**A.** Yes.

**Q.** So that paraphrases but does it accurately paraphrase some of your concerns?

**A.** I actually said that I had been begging and pleading from Friday but nobody had noticed. I said that Hayley was falling to pieces, she was going to be put back into intensive care and there was no need for that to happen. I said: "She's going to be back on CPAP and we couldn't get anybody to listen." Also too, I had a relationship with the physiotherapist in intensive care so she knew me very well, but when I saw her I was swearing. I wasn't swearing at her but I was swearing about Hayley being in trouble, and she said she'd never heard me swear before and I said: "I'm just so desperate" and I knew that I was safe and she would listen to me and not judge me harshly because we had the relationship in intensive care.

**Q.** So she had been treating Hayley earlier on.

**A.** I knew her really well; we got on really well.

**Q.** You told us that you raised concerns with Nurse Sanjet Moore who was looking after Hayley and she said she reported those to Nurse Clinton, who was the staff nurse. Is that right?

**A.** Ward manager, yes.

**Q.** And you were asked if you wanted to make a formal complaint.

**A.** Yes.

**Q.** You did not do so. Why not and what was your real concern at that point?

**A.** I was so scared because every time I spoke up it had bad effect on Hayley and I didn't know what to do because Hayley's lung had collapsed and I believe it could have been prevented if she had received early physio, but then when I started saying out loud: "My child has been overlooked, neglected and she's suffering; I'm too scared to sleep, I don't trust the hospital", I didn't know what the consequences would be so Sanjet Moore was wonderful. She was very professional. She advised me that if I wanted to make a complaint I could contact PALYS and she said also I could make an official complaint with Jackie Clinton. Then I all of a sudden just went – I just wanted them to help Hayley; I didn't want to make a complaint, so I said I didn't.

**Q.** How much time was Sanjet Moore spending with Hayley during the day of the 10th?

**A.** During the 10th we had a lovely student doctor – sorry, student nurse – called Simone. So Simone actually spent most of the day in the same room as Hayley. Sanjet Moore would be coming and going but it was mainly the student nurse who was in

charge.

**THE CORONER:** Which is the day that Simone spent most of the day?

**A.** That was the 10th. That was Tuesday the 10th.

**MR WEITZMAN:** I think it was at 1 p.m. that you recollect isolation being proposed.

**A.** Yes.

**Q.** How did that affect the nurses who were in attendance upon Hayley?

**A.** Once the door shut and the sign turned around, we were advised that Hayley was suspected of having the swine flu, not to leave the communal area. Actually, I'm not sure Simone left then; I think she still stayed in the room. But I do know that the level of support and the amount of people that came to see Hayley when I first raised the alarm just dwindled. Once the junior sister Sheila Bennett turned the sign around, she walked off and we never saw her again. She just disappeared.

**Q.** Had you seen her during that day prior to then?

**A.** Yes. She had been in quite a few times to remove Hayley's nasal prong and to check on – her IV line was occluding, so there was that increase in help and support before the isolation

**Q.** What about Nurse Moore? Did it affect the amount of time she spent with Hayley to your recollection?

**A.** I don't know about the monitoring but I do know that when she did come in to see Hayley she had to go through the personal protective equipment, so I was wary that if Hayley needed immediate help it did slow things down. We were more scared about leaving the room to get the line fixed. We would panic about we can't leave the room in case we give somebody the swine flu, so we would sort of say among ourselves: "You went last time, I'll go this time."

**Q.** When you were there by yourself during the night of the 10th and 11th, what kind of nursing cover was there during that night?

**A.** It was Staff Nurse Jane Titley. She was the one who looked after Hayley. She would sort of come and go.

**Q.** The following morning I think you saw Dr Dawson at about 7 a.m.

**A.** Yes, I did. About ten past seven.

**Q.** Then there was the emergency at about half past seven.

**A.** Yes, half seven.

**Q.** Did the isolation delay you getting help at that point? Was there any response first of all to the alarm?

**A.** No. I knew there was something wrong with Hayley even before her alarm went off, so I don't know how long the alarm had gone off for but I was trying to – I had taken the head box off and had Hayley on my lap and trying to get the oxygen to her straightaway. Nobody came when her sats dropped to 65. Nobody came to help. There was nothing that was done. Also too, the thing that I worried about the most, because the door was shut because we were in isolation, it made it difficult for you to hear an alarm, so nobody came when Hayley was in desperate need, so I had to leave her.

**Q.** It was not until you left the isolated room and went to the nurses' station.

**A.** I ran.

**Q.** That help was called.

**A.** I ran. Jane Titley was feeding another child and she just looked at my face. I said: "Her sats have dropped to 65" and then she knew by the look on my face and she came running and another nurse came running.

**Q.** When that happened, which was the doctor you saw first?

**A.** I think it was Pam. Pam came first but Dr Neal – I'm not a hundred per cent sure about Pam come first. I know that she took the blood gases and she ran. I remember her running to intensive care. The first doctor to come to help Hayley with the resuscitation was Dr Neal. I called him Dr Rich. That's his nickname. I didn't know the nurses had given him a nickname.

**Q.** As I have understood that piece of evidence, first the nurse is collected by you./

**A.** Yes.

**Q.** Then Senior House Officer Dawson who did the gases.

**A.** I'm not a hundred per cent on Pam, no. Definitely with Dr Rich, Dr Neal, yes.

**Q.** Then ----

**A.** Listen, the room was just heaving. Everyone, the room was just heaving with people; there were so many people in the room.

**Q.** You have been involved in a complaints procedure.

**A.** Yes.

**Q.** I think in July 2011 you had a telephone conversation.

**A.** Yes.

**Q.** And that was taped. Is that right?

**A.** Yes.

**Q.** We have a transcript.

**A.** Yes.

**MR WEITZMAN:** No more questions; thank you.

**THE CORONER:** Paula, I just need you to go back over something for me. You have been saying that nobody would do what you wanted, that people were ignoring you, people were not looking after Hayley properly. On 10th November you told one of the nurses that and she immediately goes and gets the nurse over.

**A.** She did. She was brilliant.

**Q.** And she had had no dealings with you before, this nurse.

**A.** No.

**Q.** Never looked after Hayley.

**A.** No. She was wonderful.

**Q.** And she specifically says to you: "Tell me what your problems are."

**A.** Yes.

**Q.** And you do not.

**A.** I was scared. She was wonderful.

**Q.** This is the bit I am afraid I am not understanding, what you were scared about, because from what you are saying everything had been done badly already.

**A.** Yes.

**Q.** Everyone was already ignoring you. You think they had put you into isolation to keep you quiet.

**A.** Yes.

**Q.** Yet here is somebody coming from the outside.

**A.** I know.

**Q.** And saying: "Tell me what it is. I know you have a problem. Tell me what it is."

And you decide not to.

**A.** Sanjet Moore had asked me. She was lovely, she was gorgeous. I thought if they hear mother speak those words and if they look at the child and see she's suffering, I thought – reason – I thought it was reasonable for them to help Hayley and then the ward manager did ask me if I wanted to make a complaint and I said: "I don't want to

make a complaint, I just want you to save Hayley.” I was trying to diffuse. I was raising concerns, it wasn’t happening, and then I knew there was consequences to speaking up and I was scared. I wanted to diffuse the situation but I still made it clear my child has been overlooked, neglected, and she’s suffering.

**Q.** I am still not understanding it because everything has already happened to you by then.

**A.** I know.

**Q.** You believe ----

**A.** I didn’t know what worse could happen.

**Q.** You believe that the Children’s Hospital deliberately put you in isolation to shut you up.

**A.** Yes.

**Q.** And now someone is coming, a senior nurse is coming to you specifically to say: “I understand you have concerns, I understand you have a complaint, tell me what it is”, and you do not.

**A.** I just said: “Save Hayley.” I thought: “Save Hayley, help Hayley, help her.” I believe people can solve problems and come to a resolution without having to go over their head and write a formal complaint. I believe people, human beings, everyone has the best interests of the child at heart, so I believed that if I raised the alarm and said my child has been overlooked and neglected, is suffering, but if I didn’t take it above their heads, they would be more gracious or more helpful to Hayley. I didn’t want to – the thing was, I was scared. When Jackie Clinton came to see me she didn’t look at Hayley. She spent her whole time over at the other bed where the child had been discharged and she spent more time looking, like I was looking at her, she spent more time engaging with me, trying to diffuse a complaint. She didn’t look at Hayley, so that’s what I was scared of. I didn’t want to go away and make an official complaint because then all the onus was on the complaint and not the baby. And my daddy learned me not to be a moaner. Nobody likes complainers or moaners. So this was very unusual for me to complain about something.

**THE CORONER:** Ms Lucas, is there anything that has been raised that is new that you want to ask questions about?

**MS LUCAS:** No, sir.

**THE CORONER:** Just so you understand, Mr Weitzman, I would come back to you again if there were. (To the witness): Just take a seat, if you would.

(The witness withdrew)

**THE CORONER:** Mr Stevenson, please.

**MR WEITZMAN:** Mr Stevenson has asked if you might read his statement for him, because he has trouble keeping composure while he does certain things.

**THE CORONER:** Yes.

Mr EDWARD STEVENSON, Sworn

Questioned by THE CORONER

**Q.** Tell me, please, your full name.

**A.** Edward Stevenson.

**Q.** I do not need your home address given in open court but confirm you still live at the address which I last wrote to you.

**A.** I do yes.

**Q.** What I am going to do is to read not only your statement but while you are in the witness box your wife's statement as well. I repeat, I am very sorry that your wife has now deceased.

**A.** Paula I think would be willing to do that. Paula wanted to.

**Q.** I am sorry, she cannot; it has to be me. I am sorry.

**A.** That's okay; I didn't understand that.

**Q.** I am going to start with paragraph 2; the first is formal.

"Hayley was the only child of my daughter Paula and her husband Bob.

Her date of birth was 6th October 2008. My family and I have a significant number of concerns in respect of Hayley's treatment and how our complaint has been managed by the Trust but I will confine myself to the key issues in respect of the treatment only for the purposes of this statement.

When Hayley was born at the Royal Victoria Hospital in Belfast she had problems with her heart and was diagnosed with pulmonary atresia and ventricular septal defect and needed surgery. This was carried out in the above hospital and we were informed that Hayley would require more surgery approximately 12 months later.

Hayley had many a near shave in her early life but came through them all and after a nine and a half week stay in hospital she came home to our home for Christmas. We were overjoyed.

Due to the retirement of the cardiac surgeon and the Trust's failure to find a replacement, we were asked which hospital we would like Hayley to attend. My family and I discussed our options carefully and we all decided that Birmingham Children's Hospital was the best option as we felt the surgeon, Mr Brawn, was the best person to perform the surgery. My wife and I travelled over to Birmingham with Paula, Bob and Hayley to help Paula until Hayley was well enough to come home.

Hayley's operation was carried out successfully on 14th October 2009. Mr Brawn did a brilliant job and assured us all was okay and that he was very pleased with Hayley. We were informed there was nothing to stop her living a normal life but she would need another small operation when she was about 17 but it was nothing to worry about. It was fabulous news.

Whilst in the paediatric intensive care unit staff inserted a tube which was too long and caused Hayley's lung to collapse. I was not at all happy about this but decided to say nothing as Hayley was slowly getting stronger.

Hayley continued to show progress until 31st October 2009 when she was moved to Ward 12 and then on to Ward 11 on 2nd November 2009.

Hayley was still on oxygen when she moved in to Ward 11 and for the first few days the staff were bringing down the oxygen levels in an attempt to get her off oxygen altogether. On each occasion when the oxygen level got too low Hayley's sats dropped and it would have to be turned back up again.

Even though Hayley appeared to brighten up a bit, she was still fully dependent on her oxygen supply. The staff assured me and the rest of the family that this was normal as Hayley was small for her age and therefore might just take a little longer than normal. I accepted their explanation as they were the so-called experts.

The nurses in Ward 11 had great difficulty with their monitors. They were going off all the time, even according to nurses when they shouldn't have been. The nurses claimed that they were new monitors and they were not as good as the old ones, but my view was they didn't know how to set them. Their answer to the problem was to turn the alarms off and suggest that I watched the monitors to just make sure the readings didn't fall below a certain level.

During this same period I observed that the wound in Hayley's chest was getting worse. There was a lot more pus coming from it and I was becoming increasingly concerned. I asked the doctors and nurses about this and respectfully requested they change the dressing more often to keep the wound clean and give it the best chance to recover. Dr Ben Anderson assured me that he would put a note on Hayley's chart for the dressing to be changed twice daily. This did not materialise and Hayley's dressing never was changed twice daily. I still to this day do not understand why Dr Anderson did not write in the notes that the dressing had to be changed twice daily. The staff had to call the surgeon from the theatre on two occasions to reopen the wound as the pus had sealed the wound up. If the dressing had been changed more often, this would not have been necessary.

On Friday 6th November 2009 Hayley took a turn for the worse.

Hayley's oxygen had to be turned up as her sats kept dropping. It was very hard to get Hayley to eat or drink. When Paula came that evening she asked, as she always has done, how much Hayley had to eat and drink that day and when I told her she was not amused and she soon noticed that Hayley was not well. The nurse who filled in the observation sheet at 1530 hours noted that Hayley was in mild respiratory distress. I was worried as I left the hospital that night as Hayley's health seemed to be deteriorating when she should have been getting better. When I came back into the hospital on Saturday 7th November, it was clear to see that Hayley had got worse overnight but the odd thing was that the ward staff did not seem too concerned about the state Hayley was

in. I waited until Dr Ben Anderson came to do his round and for the first time I decided to speak up and ask him some questions about Hayley's condition. I asked how much danger Hayley was in, did she need more surgery, what can we do to help Hayley, as she was by this time head bobbing. I was unaware at this time that head bobbing in a child means they are in severe respiratory distress. Dr Ben Anderson assured me that Hayley was fine and he explained that he had seen children with much worse head bobbing in the past. He said it was probably due to the fact that she was so small and had spent a lengthy period of time in paediatric intensive care unit. He informed me that her body was fighting off the chest infection so just going to take her a bit longer to get better and there was nothing to worry about. Against my instincts, I believed him and trusted that he knew what he was talking about, although it was plain to see that Hayley was suffering.

My wife started to notice that Hayley was getting very puffy and might be retaining fluid so we asked about this. Again, the nursing staff assured us it was nothing to worry about. We asked if it was possible to weigh Hayley. This was done and they assured us that all was okay. I talked to my wife about Hayley's weight gain and it seemed quite strange to us Hayley had put on almost 500 grams in eight days. This to me was very unusual as it was very hard for Hayley to gain weight and as she was hardly eating anything. Needless to say, we queried this with the nurses and asked if it could be a build-up of fluid. Again, we just got the standard reply: all was fine and there was nothing to worry about.

When I left that evening, Hayley was in very poor shape and the family were becoming increasingly concerned.

When my wife and I arrived at the hospital on Sunday the 8th I had a long talk with Paula to assure her that it was okay for her to go back to the hotel for some rest. I reassured her that I would re-question the doctor when he was doing his round. Paula was sick with worry. I asked Dr Ben again similar questions as I had asked the day before and again he assured me that Hayley was not in any danger and to just wait a little

longer and she would turn the corner. My wife also asked similar questions and was given the same answer. We had a long talk about what we were told after the doctor left. We were not happy but we assumed the doctors knew what they were doing. Hayley did not improve at all for the rest of the day and continued to deteriorate. On Monday morning 9th November Hayley was even worse. When the doctors came round on the so-called grand round I listened to Dr Ben Anderson as he told Dr Stumper and the rest of the team that Hayley was fine. I could not understand this. You did not need to be a doctor to see that Hayley was far from fine. Anyone could see this. I was really worried for Hayley's health so I did something that I would never normally do. I stood up and said, 'Excuse me, but Hayley is not fine. Her wound is getting worse and her breathing is really bad.' Dr Stumper listened to me and gave Hayley a very quick examination. He then asked when her last X-ray was. I told him that it was on 30th October. He requested another X-ray and for bloods to be taken. He went on to talk about getting Hayley transferred back to Belfast to finish out her recovery there. This was all very reassuring and it finally felt as though something was being done to help Hayley so we felt a little bit better.

I did not know at the time but when I pushed Hayley in the pram down for X-ray that it would be the last time I would ever push Hayley in her pram.

We waited until later that day for the results. At approximately 1800 hours the senior house officer opened the door and said the bloods were fine but Hayley needed some physiotherapy. Again, we were told there was nothing to worry about. The door was then shut and the senior house officer disappeared. We did not get the opportunity to ask any questions and they didn't even ask us if we understood what we were being told or anything. We were even unsure about whether Hayley required physio.

When Paula came in that night I told her about Hayley's results. She wanted to know when the physio would be done so I went off to find the

senior house officer. She told me it would not be until the morning. The family knew that time was of the essence at this stage and we were unsure why action was not taken.

When I left the hospital on Monday night I knew Hayley was in serious trouble but I did not know what more we could do. When I came in on the morning of Tuesday 10th November things had taken yet another turn for the worse. Hayley was in a head box with five litres of oxygen being pumped in to keep her saturations up. After talking to Paula I learned that Hayley had got worse during the night and had to have an X-ray on her lungs. The senior house officer told the X-ray department that Hayley was in severe respiratory distress. The senior house officer had seen the X-rays and had tried to get in touch with the physiotherapist during the night because Hayley was in severe respiratory distress and required urgent treatment. For some reason they were unable to attend. She was also in touch with the paediatric intensive care unit and informed them of the situation. They told her that Hayley needed a lot of physiotherapy. We did not understand why nothing was being done. I suggested to Paula that she should go back to the **hospital** *Karen – should be hotel* to get some rest as it had been a long night for her. I assured her that I would keep an eye on things. But she blankly refused as she was so worried about Hayley. I did manage to persuade her to go out and get something to eat but she did not stay away very long.

The nurse who was assigned to look after Hayley from then on was very good and she did her best to care for Hayley. I heard Paula tell this nurse that she thought that Hayley had been overlooked and neglected and that she would have to start speaking out more to try and get Hayley the care she deserved and needed. The nurse went straight to the ward manager who came to the ward and asked Paula if she wanted to make a complaint. Paula explained to the ward manager all she wanted was for the staff to listen to her concerns and for the hospital to look after Hayley and make her better.

Later on that same day as Hayley lay in the head box struggling for every

breath and nobody was doing anything about it, Paula saw the registrar, Dr Zdeaka Reinhardt, on the ward, and went to her in an effort to get some help and explain the terrible state Hayley was in. Again, she said she felt Hayley had been neglected. The registrar told Paula that she would give Hayley's wound infection number one priority and she would organise extra support for Hayley. Then at about 1 p.m. Paula and myself observed Sister Sheila Bennett and another two members of staff have a discussion outside Hayley's ward and without even a glance in our direction Sheila Bennett reached up to a sign which had got 'Isolation' printed on it and turned it round. Then they all just walked off. I went out to the corridor just to check and make sure that what I had seen was correct, and it was. We were shocked and could not understand why Hayley was put into isolation. Later on a nurse came in and said they were going to send off a sample from Hayley to check for swine flu. Needless to say, this scared the life out of us. We were told not to use the common areas of the ward. It only took a short time for us to figure out that Hayley had being put into isolation was nothing to do with swine flu. Hayley did not have a temperature, no cough or cold, and nobody came to take a sample from Hayley until six hours later. Nobody, including doctors or nurses, had ever mentioned the swine flu to us before. It was plain to us that Sister Sheila Bennett did not want anything more to do with Hayley because we had dared to question why Hayley was deteriorating and state that she had been neglected. The decision by the staff to put Hayley in isolation had a very adverse effect on the care that Hayley received. The level of care Hayley received on Ward 11 was unsatisfactory from the start. However, this made things much worse and we all felt alone.

At approximately 2 p.m. a member of the surgical team came into the ward to open up Hayley's wound for a second time because the dressing had not been changed and it had sealed over again. I again had the job of holding Hayley down while the surgeon opened the wound. It was heartbreaking. Whilst this was happening Dr Stumper came in and

looked over the surgeon's shoulder to see what was going on. He asked if the wound was better or worse. It was still very bad but I was able to tell him that some of the redness around the wound had gone down a little. My wife, who had been sitting down because she could not bear to see Hayley being opened up, stood up and simply said to Dr Stumper, 'What about Hayley's lungs?' He then glared at her and said in a sarcastic voice, 'Physio.' My wife proceeded to ask, 'Will that make her better?' and he actually shouted, 'Yes, physio' at her and gave her a look of utter contempt before storming out of the ward. Sylvia sat down in shock and disbelief at what had just happened. To be honest, I was in shock too. I could see how upset she was as she was laughing nervously. She started gathering up her handbag and started to put on her coat. I asked where she was going but I didn't get a reply. As Sylvia was heading for the door I told Paula to go with her and get her a cup of coffee and that I would stay with Hayley. Hayley's monitor was sounding at very regular intervals but no one would come. I was not even sure that they knew they were going off because we were in isolation. I made sure that I waited at least 20 minutes before going to the nurses' station to ask for help. They would just come in to make sure Hayley's sats were not too bad and reset the monitor before disappearing off again. The monitor would go off again very shortly after they left the room and we did the same thing over and over again. Hayley's line also kept occluding all the time and, despite our efforts, nobody wanted to do anything about it.

Around 6 p.m. Senior House Officer Nidhi opened the door and spoke to Paula. She told her Hayley's lungs were not serious. Senior House Officer Nidhi then went to shut the door and as she did Paula stated that the situation had to be serious as Hayley was still getting worse and was now in an oxygen head box struggling for every breath. Senior House Officer Nidhi was still determined to walk away and said something on the lines of, 'I have to go and organise the handover.' Paula and I were not surprised by her reaction. She was happy to turn her back on Hayley.

Paula subsequently responded and said, 'Just go ahead and do that as it's far more important than my child's health.' At this point Senior House Officer Nidhi came into the room and sat down on the floor and started to apologise to Paula. Paula asked her to get up off the floor and talk to her as an equal. Paula then told Senior House Officer Nidhi some of her concerns over the way Hayley was being treated and that it was too late for apologies. Paula made it clear that all she was worried about was getting Hayley back to full health. Paula then told Senior House Officer Nidhi that she had held her back long enough from her important task and she had better go and do it. I could hear the fear in Paula's voice. She was desperate for someone to help.

I stayed at the hospital a bit later than usual that night and helped to put dry bedding and clothes on Hayley before I left as the head box and oxygen left everything wet. Before I replaced the head box I gave her my usual kiss and told her I loved her and would see her in the morning. Hayley just looked up at me as I replaced the head box with those big eyes as if to say, 'Please help me, granddad.' I left the hospital feeling very useless but not even dreaming of the news I would get the next morning. Even at this stage I felt someone somewhere within the hospital would see what even a lay person could see and do something to help Hayley. I never saw Hayley alive again.

The matters referred to in this witness statement are within my own knowledge except where stated otherwise. I believe the facts stated in this witness statement are true."

It is now five to one and we will break at this stage for lunch. When you go out and when you come back in, there may well be other people in the reception area. If they are, it is because they have been bereaved in the last few days. I know it is difficult when you have all been cooped up in the room for four hours or whatever it is, but please bear in mind their position and do not start talking about things until you get either past them or into the reception area.

It is now five to one and we will start again at five past two.

**MR WEITZMAN:** Can I raise one matter with you, please?

**THE CORONER:** Yes.

**MR WEITZMAN:** It is just to try and make sure that this afternoon runs smoothly.

Where there are documents that are more than one page and form part of a sequence, are they to be one exhibit or is each page to be a separate exhibit?

**THE CORONER:** If there are three or four pages which are all one thing and put to the same witness at the same time, that will count as one.

**MS LUCAS:** Sir, Dr Plunkett is a witness that we were hoping to get to today. He is on call at the Children's Hospital. Would you be content if we did not ask him to come for the whole afternoon but called him in time for him to come and give his evidence today?

**THE CORONER:** So long as he is here when I call him, that is all right.

(Adjourned for a short time)

**THE CORONER:** It is now five past two, so the court is in session again. (To the witness): Would you like to stand up, Mr Stevenson, and we will see if anybody has any questions. Ms Lucas, any questions?

**MS LUCAS:** No, sir, thank you.

Questioned by Mr WEITZMAN

**Q.** Mr Stevenson, in your statement from paragraph 10 onwards starting with 6th November, 7th, onwards, you describe the problems that Hayley had with breathing. Could you give us a full description, please, of what you observed.

**A.** On the Friday just looking not too bad. You noticed that Hayley was going down the hill, and then the time Saturday come it was starting until every breath she was taking she was head bobbing like that, and then it gradually was getting worse and also you would have seen her wee ribs, you know what I mean, because she'd obviously no top on, she's just a wee wound, and where the wound was, was going in like *this* here all the time. The thing was going in. To me it looked very bad anyway, but the doctors didn't seem to be terribly concerned about it, which I find very strange.

**Q.** I am going to ask you to look at three documents which are the PEW's observation kept by the nurses and just if we can look at page 649 and 648 and 650. (Handed)

**THE CORONER:** These four pages will become Exhibit C2. Take me through it.

**MR WEITZMAN:** Yes, certainly, sir. If we look at the first of those pages we see 2nd November in the top left hand corner. Is that right, Mr Stevenson?

A. Yes.

Q. I am now going to ask you to turn to the second of those pages and at the top left, 648 I think, we have the entries for 6th November. Do you see?

A. Yes.

Q. You have talked in your statement about Hayley's increasing oxygen needs.

A. Yes.

Q. If we look at the fifth box down on the left hand side, we have "oxygen".

A. Yes.

Q. We can see 0.3 litres.

A. Yes.

Q. Rises to 0.5 litres.

A. Yes.

Q. At 22 on the 5th going into the 6th November.

A. Okay, yes.

Q. Then as we go along we see at 22 hours on the 6th it rises to 0.75 litres.

A. Okay.

Q. Yes.

A. Yes.

Q. Where it remains through the 7th.

A. Okay, yes.

Q. Into the 8th, 9th, and then if you see at the 10th, the entry is not quite clear but I believe it is two o'clock in the morning it rises to one litre and we change from nasal plugs to head box.

A. Yes.

Q. And that takes us right through to Hayley's death on the 11th, does it not?

A. Yes.

Q. And are those the increased oxygen needs that you describe in your statement?

A. It would appear to be along those lines, yes.

Q. In your statement you also dealt with the issue of a complaint on the 10th. You were present during the day of the 10th. Is that right?

A. Yes.

**Q.** And at one point your daughter Paula raised her concerns with the nursing staff.

**A.** That's correct, yes.

**Q.** And she was asked whether she wanted to make a formal complaint. Is that correct?

**A.** That's correct, yes.

**Q.** And I think she declined to do so.

**A.** That's correct, yes.

**Q.** Did the fact that she declined to make a formal complaint mean she ceased to raise the concerns she had about Hayley's physical condition?

**A.** Absolutely not, no. Absolutely not.

**Q.** Was she still raising those concerns with the medical staff, albeit she did not wish to make a formal complaint?

**A.** She was surely, yes.

**Q.** Did she discuss with you why she preferred to deal with it directly with the staff rather than a formal written complaint?

**A.** She did surely, yes. We had lots of discussions along those lines because what good's it do to make a complaint? Then you have to go through a whole procedure, so therefore you lost what you're supposed to be doing really and you move on to something that's going to take up time, and time was a thing we didn't really have, at least we thought we didn't have or we know we didn't have at that time. It was more important to get the child fixed than it was to complain about something, and all we wanted was somebody to do something. Simple as that.

**Q.** Although you did not make a formal complaint, what steps did you take to try and make sure the child got fixed?

**A.** Kept doing what we were doing before, which was simply asking for help, trying to get explanations as to why the child was deteriorating every day, and everybody just kept telling us the child's fine, which didn't to me make no sense, if you know what I mean. I'm a lay person; I don't know doctors' things round about but it was very plain to see. It didn't need a medical record to see the child was deteriorating. That's the way I look at life, you know. I mean, I didn't need all this writing, all these figures, all these. We just simply looked at the child and the child's deteriorating. I think with those oxygen levels and the child ending up in a head box, it sort of was very simple to be looked at, if you know what I mean. The child was deteriorating all the time.

**MR WEITZMAN:** No further questions, sir.

**THE CORONER:** That is all; thank you very much. Take a seat, if you would.

As the court has already heard, sadly Mrs Stevenson has died, so we are going to read the statement which she made. Her statement is dated 3rd February 2011.

She says:

"I live at the above address with my husband Edward Stevenson. I make this statement following the death of my youngest grandchild, Hayley Elizabeth Fullerton, at Birmingham Children's Hospital.

I am deeply traumatised by the treatment Hayley and our family received at the hospital. I begged for Hayley's life to be saved but no one listened.

Paula arrived home in Northern Ireland in June 2008 to show me her baby bump. I had been in Australia when she got pregnant and I was concerned from the onset that something was wrong so I arranged for her to have a scan that included a heart check on the baby with Dr Frank Casey, consultant paediatric cardiologist. Hayley was diagnosed with a pulmonary atresia with VSD and she would need medical intervention at birth and subsequent surgery.

Paula decided to stay and have her baby in Northern Ireland. She had absolute trust in Dr Frank Casey and Paula's husband Bob entrusted us to look after them both. I was thrilled to bits. My grandchildren were aged 17 and 18 and I had helped rear them. A little baby in my home for Christmas – what more could I want?

Hayley was born on 6th October 2008. She was a little bundle who would change my life for ever. She spent nine and a half weeks in the Clark Clinic at the Royal Belfast Hospital for Sick Children where she received excellent care from all the staff. I learned a lot about babies with congenital heart problems. I knew that if there were any changes in breathing to inform the staff. Anyone with a cold or infection had to stay away, particularly other children.

When Hayley had the operation for her shunt and came home, we adhered to the guidelines that the Clark Clinic had taught us and Hayley never had a day's sickness in her short life.

We were never daunted or scared of looking after Hayley and she was never left on her own. It was a privilege and a pleasure to care for her. I was her playmate and I enjoyed every minute I spent with her. The Clark Clinic provided a monitor in case Hayley needed help. We never needed it because we paid such close attention to her and knew her inside out. The only time it was used was when the hospital wanted to check on Hayley.

Up until this point all of Hayley's care was provided by the Clark Clinic but due to the fact the surgeon was retiring we were told that Hayley would have to go elsewhere for her surgery. The family decided it would be best for Hayley to have the surgery at the Birmingham Children's Hospital because of its outstanding reputation. We finally got the phone call which confirmed Dr William Brawn was able to perform the operation and we were thrilled. Dr Prawn Karen – Brawn performed a miracle on my wee Hayley. I felt inadequate thanking him. We as a family thought we were blessed and that we were the luckiest people in the world.

Following surgery, Hayley had a prolonged stay in the paediatric intensive care unit. Hayley's prolonged stay in the paediatric intensive care unit was a worry to me. Her lungs kept collapsing and for the first time in her life she had horrendous nappy rash on her bottom. It was very red and she used to look at me and whimper when her nappy was being changed. It was heartbreaking to watch. She knew I would never cause her to suffer. It was hospital policy not to use Sudacrem but we could not stand it any longer, as their efforts to clear the rash were not working. I therefore bought my own Sudacrem and Hayley's mummy asked them to use it. This caused a lot of problems but Hayley had never cried after her heart surgery and to see her in agony with nappy rash was heartbreaking. Little did we know our decision to go against hospital policy would result in Hayley's chest wound not being treated.

Finally, Hayley was moved to Ward 12 on 31st October. She had been promised a bed in high dependency but that did not happen. Hayley's granddad and I stayed with Hayley during the day while Paula slept at the

hotel and then she stayed at night time. We loved spending time with Hayley. We just wanted her to get better and back home as soon as possible.

On 2nd November I was informed that Hayley was being transferred to Ward 11. I phoned my daughter and she was very upset. Since Hayley had moved to Ward 12 she had stopped pulling her hair out and loved watching the children on the open ward. The liaison lady said that Hayley was being moved to high dependency which was what we had expected, but then she came back a short time later and said that a child had been moved out of intensive care into the high dependency unit bed and it was no longer available. The staff said the reason Hayley did not get a bed in HDU was because Paula had insisted on having a bed beside Hayley to sleep during the night. That was a lie. Paula would never have compromised Hayley's move to HDU as she had a lovely hotel bed to sleep in during the day.

Despite raising our concerns about the move, Hayley was dumped at the door in Ward 11, far away from the nurses' station. I could not understand this. If Hayley needed to be in HDU, why the change? I tried to convince myself that she was expected to get better very quickly and return to Northern Ireland. None of the nurses paid any attention to the monitors going off. I sat looking at them alarming one day and noticed they had been donated by the Midland Bank. I asked the staff what the problem was and I was informed that no one knew how to operate them. I was shocked. This was a ward with seriously ill children recovering from major heart surgery. I felt as though the Midland Bank should have donated gaming machines instead, it seemed like such a waste, and I was concerned by what the alarm meant for Hayley.

One day the alarms went off so much I was becoming very worried. I expressed my concerns and the staff said to me, 'You are here all day anyway, we will just turn them off and you can keep an eye on Hayley.' I was terrified so I got as close to Hayley as I could and put my thumb and forefinger on her neck, checking she was still breathing, for the rest of

the evening. I never felt so scared in all my life. I would have done anything for Hayley. When my daughter arrived she was horrified.

Hayley could have died and I was her only source of lifeline.

I left the hospital that day. My legs and voice had been getting weaker. I could not walk back to the hotel after that. I felt as though my body was going into shock with worry.

Hayley started sleeping a lot after that so I asked why this was. Dr Ben Anderson told me that it was her body recovering after major heart surgery. I believed that for a while and trusted that they knew what they were doing.

After a while I started to notice that Hayley's head was bobbing and she was struggling with her breathing. I did not know then that head bobbing meant respiratory distress. I asked the staff what this meant and they explained that it was in her notes and that they had seen worse.

By this stage I was incandescent with fear. I knew Hayley's lungs were not working, the rest of the family knew her lungs were not working properly, but no one listened to us.

On Saturday 7th November I informed Dr Ben Anderson that I felt Hayley was very poorly. He said he did not understand the terminology as he was Australian so I graphically explained how ill I thought Hayley was. He said she was fine. I could see Hayley was struggling to breathe. I asked, 'What about her lungs?' I was told that they were fine too. My biggest worry was that her lungs were not working and this would cause additional problems for her heart. This was my youngest grandchild and I loved her more than life itself. I was concerned that if the accumulation of fluid was not being cleared she would effectively be drowning. I appreciate that I am not a nurse but I am observant and I have a lifetime of experience with caring for babies. I know when a child is seriously ill. It was not hard to tell, just looking at Hayley.

We had terrible trouble getting Hayley's dressing changed and getting her weighed. We would ask pleasantly and we were always promised but we had to keep on asking. It was awful watching the oozing pus coming

from her wound. What we did not know at the time was that the tissue viability nurse had written on Hayley's notes stating that it was a waste of time as we did not comply with hospital policy and used Sudocrem. I did not understand how using Sudocrem on Hayley's bottom had any effect on her chest wound. We used Sudocrem so that Hayley would not have to suffer the pain of severe nappy rash along with everything else she had been through. I had a big issue with this. I could not understand why the tissue viability nurses refused to change Hayley's dressing because of the cream we used on her bottom. I thought this was very unprofessional and uncaring. I felt as though my poor Hayley was shown no compassion.

I have since spoken to Forest Tosara Limited, the manufacturers of Sudocrem, because I was so confused about the whole situation. When I told them what had happened they were distressed. I received a phone call from the company apologising that their product caused so much grief. I had to console them and explain that their product was a miracle. I received more sympathy from Forest Tosara than the hospital.

On Sunday 8th November I was nursing Hayley when a total stranger came up to me. She was visiting another child on the ward and said, 'Your child cannot breathe.' This shocked me. The family had thought this for some time and had been asking the professionals for help but were assured Hayley was fine. Now a complete stranger, who didn't know Hayley, could see she was in trouble. I went to the nurses' station and told them but they informed me that there was not a problem. I was so frustrated. How could a lay person see that Hayley was in trouble but the staff dismiss it?

Dr Ben Anderson was on duty that day although he now denies having any contact with Hayley leading up to her death, which is a lie. I said to him again about Hayley's lungs and breathing but merely got the same explanation, 'She's fine.'

On Monday morning, 9th November, the doctors arrived for their ward round. I struggled to my feet and said, 'I'm embarrassed to ask about her

lungs.' Dr Ben Anderson was telling Dr Stumper how fine Hayley was when my husband intervened and told her(sic) that Hayley was not fine. As a result, an X-ray was organised. I waited all day to be told the results but no one came. I finally went to the nurses' station at teatime and saw the senior house officer. I asked her had Hayley's results come back as she knew how worried we were. In response, she stretched her arm out at me like a gendarme dismissing me. So back I went to the ward. I was very upset. Finally, she appeared in the doorway and gave a very brief explanation of how fine Hayley was, told us that she needed a bit of physio and then left. My Hayley was dying and yet nothing was being done. She did not stand a chance and the family felt powerless to help her.

Junior Sister Sheila Bennett had put Hayley and our family in isolation. Someone mentioned something about swine flu being the reason for Hayley being in isolation but no one had ever mentioned this to us before and no one came to check her temperature or anything. The whole family felt as though we were being locked away because we dared to ask questions about Hayley's condition. We felt as though we were being punished and Hayley was suffering as a result. Sister Bennett was unprofessional, unsympathetic and often very rude. She looked at us with utter contempt when we dared to ask questions.

On Tuesday 10th November Dr Zdeaka Reinhardt arrived at Hayley's bedside. My daughter Paula told her how ill Hayley was and that she had been overlooked and neglected. I thought she was going to be our saviour. I sat in the corner listening to all the help that Hayley was going to get and I felt relieved that my wee pet was going to be saved, but they were empty promises yet again and nothing happened. She informed us that Hayley may have to go back to the paediatric intensive care unit even though it might be seen as a backward step. My family and I were not concerned about the so-called backward step, we were just thrilled to hear those words. Again, it never happened. Now I regret not carrying Hayley to the paediatric intensive care unit myself.

The day wore on and I got more panic stricken about Hayley's condition. Dr Stumper appeared at Hayley's bedside whilst the surgeon was opening her wound again. I got up from the chair and dragged myself over even though I could not bear to watch. It took all my strength to hold up my face to him and say, 'What about Hayley's lungs?' He barked back at me, 'Physio.' I asked him, 'Will that make her better?' He barked, 'Yes' and left the room. My daughter said I looked like a mother begging for her child's life in a third world country.

Wednesday 11th November 2009 was Hayley's last day on this earth. Hayley had loved life and her family were completely devoted to their little girl. Her daddy had learned how to ride a bike with a little seat attached so he could take Hayley to watch the pelicans being fed. Her mummy was going to take her for lunch at Movie World and I, her granny, could look forward to them coming back to Northern Ireland twice a year to watch her grow and teach her our way of life.

We received a call from the hospital early morning to say Hayley was poorly. I knew in my heart she was dead or dying. When we arrived at the hospital Justine Kidd told us how very sorry she was that poor Hayley was gone. I cannot describe how I felt. Whilst we were still in the corridor, our lives in pieces, there was a nursing auxiliary with a green shirt on gawping at us. I could not believe it. She knew how much we loved Hayley and we felt that this was completely disrespectful. I went into the ward to see Hayley dead in her mummy's arms. My wee pet was gone. I took her in my arms, held her close and told her how much I loved her and how sorry I was for not saving her. I went out to the nurses' station and said to Junior Sister Sheila Bennett, 'What happened to my poor wee Hayley?' She didn't even lift her head and just said, 'I do not know, it happened at the changeover of shifts.' I asked who would tell me and she said the doctor would be round later. She offered no words of sympathy or compassion. I could not believe the type of people they had working on a children's ward. I went back and nursed my dead grandchild. We were given a choice to take Hayley to the

Rainbow Room for dead children in her pram or carry her. Hayley's granddad carried his dead grandchild under his coat. It was utterly devastating for all of us. What a pathetic sight.

As we were leaving Ward 11 in all my grief I was aware of someone watching us again. I turned around to see the nurse wearing the green shirt stood gawping with her hands on her hips.

Birmingham Children's Hospital is supposed to be a centre of excellence, yet we were treated dreadfully. We were made to feel like a burden just for asking about Hayley's condition and for wanting her to get better. It was as if our only crime was that we loved Hayley and wanted her to get better. I am heartbroken by the death of my granddaughter, which was completely avoidable.

The matters referred to in this witness statement are within my own knowledge except where stated otherwise. I believe the facts stated in this witness statement are true."

That is signed by Mrs Stevenson on 3rd February 2011.

Dr Marton, please.

Dr TAMAS MARTON, Sworn

Questioned by THE CORONER

**Q.** Tell us, please, your full name.

**A.** I am Dr Tamas Marton.

**Q.** And your medical qualifications.

**A.** I'm a consultant paediatric pathologist, Birmingham Women's Hospital. I've been there the last 11 years. I'm a medical doctor from (inaudible) University, Hungary. I am registered with the GMC. I'm a first (inaudible).

**Q.** Just tell me how long you have been working with pathology for children.

**A.** That is altogether about 17 years.

**Q.** In your present post you are based at the Birmingham Women's Hospital.

**A.** Yes.

**Q.** Just tell the court how many paediatric pathologists work together in that unit.

**A.** We are four paediatric pathologists.

**Q.** Are you able to share information between each other or do you work very much as

individuals?

**A.** We share the information, especially in complicated cases.

**Q.** You work as a team.

**A.** Yes.

**THE CORONER:** Paula and Mr Stevenson, you both know what is in the report. You have had copies of it and you have been through it with your lawyers. No need for you to stay during this next bit unless you wish to. If you wish to, of course you can. If, when you listen, you decide you actually made the wrong decision, please just get to your feet. The pathologist will immediately stop talking until you have gone out of the room and the usher will come and get you in due course.

(To the witness): Starting if you would, please, Dr Marton, by telling us where and when you carried out this examination for me.

**A.** The post mortem examination was carried out on 13th November 2009, Birmingham Central Mortuary, at 11 o'clock.

**Q.** Before you began your examination were you told in general terms that Hayley had undergone this major heart surgery for the heart problem.

**A.** Yes.

**Q.** That she had been in the intensive care unit for a little longer than was normal.

**A.** Yes.

**Q.** And had then died about 14 or 18 days later.

**A.** Yes.

**Q.** Were you also aware that the family had been expressing very considerable concerns about her treatment?

**A.** Yes, I knew, yes.

**Q.** Specifically they believed that she had been neglected. I am not asking you if you knew all the details but in general terms were you told that?

**A.** In general terms, yes.

**Q.** What I want you to do is to start by giving us the cause of death.

**A.** I gave the cause of death as 1A acute right ventricular failure of the heart, and 1B reconstructed heart, post modified left Blalock interposition shunt, full reconstruction for congenital heart disease for pulmonary atresia and VSD.

**Q.** I shall be getting the physicians to explain about the actual surgery so you do not

need to go through that, but so far as you could tell had the surgery in Belfast, that is the shunt, and the reconstruction that was carried out here, as far as you could see, had those technically been carried out in the proper way?

**A.** Yes, I believe so.

**Q.** Sometimes following surgery things come undone or go bad. Was there anything like that?

**A.** No, I don't think so. There was no complication of the surgery itself.

**Q.** You talk about acute right ventricular failure. Explain to us what the right ventricle is and what right ventricular failure means.

**A.** The heart has a left side and a right side. The left side of the heart pumps the blood out into the body. The right ventricle of the heart pumps the blood into the lungs. There are certain signs, such as dilatation of the right ventricle, consequences of the right ventricle failure such as an enlarged liver, congestion of the internal organs, and those were (inaudible) signs that I saw in Hayley. The right ventricle is responsible for pumping the blood out into the lungs.

**Q.** When you talk about an acute right ventricular failure, what does the "acute" mean?

**A.** "Acute" means recent. I did examine the tissues under the microscope and if you've got chronic hypertension of the lungs then usually you've got histological signs within the lungs that I did not see. Secondly, you also got considerable hypertrophy of the right ventricle, which was also missing. It was dilatation of the right ventricle that dominated the picture.

**Q.** When you talk about "acute" meaning recent, how much more accurately can you describe "recent" for me?

**A.** That is very difficult to establish but certainly what I saw I believed that that occurred after the second operation. In the last couple of days of life.

**Q.** After the second operation, did you say? The last ----

**A.** In the last couple of days of Hayley's life.

**Q.** So you are saying that the failure of the right ventricle occurred in the last couple of days of Hayley's life.

**A.** Yes.

**Q.** And you are saying that because you think that if it occurred any earlier it would have left other marks which you would find in the lungs.

**A.** Yes, that is correct, and/or in the heart.

**Q.** Before we start arguing about the last couple of days, obviously you cannot be saying this is definitely within the last 48 hours or 96 hours.

**A.** Yes, that is difficult to tell, yes. I was aware of the fact that there was collapse of the lungs and if you consider that, the picture that I saw in the mortuary, it can be consistent with that clinical picture of collapsed lungs.

**Q.** Do you know what caused that ventricular failure? Why should it fail?

**A.** In a way, I know and I do not know. What I know, if there is, for example, a collapse of the lungs, there is a sudden increase in the resistance of the pulmonary vessels and right side of the heart is not designed to work against resistance. It works against volume. If there is a raised blood pressure within the lung vessels then that can cause failure of the right ventricle.

**Q.** A collapse of Hayley's lung would cause that.

**A.** Yes.

**Q.** Or could cause that.

**A.** Could cause that.

**Q.** Could that happen on more than one occasion and then right itself?

**A.** Yes, it can fluctuate, as far as I understand it. This is something that you ought to ask my clinical colleagues because they've got more knowledge of that.

**Q.** The clinicians will be able to tell me their side of it. I am trying to work out your side of it. Now take me through, if you would, the summary of your findings at post mortem.

**A.** The female infant whose measurements are less than expected for her age, which means that her body weight is (inaudible) under the third centile and the head circumference was about a fifth centile. There were no external congenital anomalies. There was a reconstructed heart post modified left Blalock interposition shunt (the left subclavian artery and the left pulmonary artery 2008) and full reconstruction (October 2009: VSD closure, and pulmonary artery reconstruction) for congenital heart disease (pulmonary atresia and VSD). A left superior vena cava with rudimentary right superior vena cava. Number four, cardiomegaly and dextrocardia. Dilated right ventricle and pulmonary arteries. Superficial dehiscence of the medium sternotomy wound (no bacterial growth of the wound). Evidence of severe right ventricle failure, gross

hepatomegaly. Adhesions of the left upper lobe of the lung, fibrinous pleuritis of the right lower lobe of the lung. Collapsed lungs. Purulent bronchitis of the right lower lobe of the lung. Purulent effusions about 20, 25 millilitre and ascites and the site is approximately 100. Old subdural haemorrhage on the right parietal-occipital region.

**Q.** Just indicate to us where that region is.

**A.** Roughly *that* part. I'm showing the wrong side. Right. So it was in this area. Then

other investigations. The microbiology. There was no significant growth and the karyotype was a normal female karyotype that I took from the patient's notes.

**Q.** This old bleed in the brain: does that have any relevance to Hayley's death?

**A.** I do not think so. I do not know the aetiology. This was not a thick subdural haemorrhage. It was rather just a film-like very thin layer of old ageing blood that was in resolution changing its colouring to pale brown, greenish. Sometimes it can be a consequence of some infection or something that might sustain during the change of blood pressure, but I don't know what exactly caused that.

**Q.** Can you give us any idea of how old you mean when you say "old"?

**A.** As I indicated, it was changing its colour so it was absorbing. I would say it's up to two weeks old.

**Q.** In your view it has no relevance to Hayley's death.

**A.** Yes, because I did not see any damage to the brain and I examined very carefully.

**Q.** Go back to the superficial dehiscence of the median sternotomy wound. You mean that the scab was coming open. Is that right?

**A.** Yes.

**Q.** And what part in her death did this play?

**A.** We do post mortem examinations after cardiac surgeries and every now and then we do see some superficial insufficiency of the wound and I didn't attempt to try to culture it and try to identify the bacteria that might have caused this (inaudible) and the swab that I took did not grow anything. I also understand from the witness statements of the family that it did show some signs of healing. So at the time of the post mortem I didn't think that that was significant and now having heard those evidence, I still don't think that the wound on its own did play any role in the death.

**Q.** So when you say you do not think it is significant, you are saying it has some connection to the death, or it does not have any connection?

**A.** I can't prove any connection to the death.

**Q.** So now will you read, please, your comment?

**A.** Yes.

"A non-dysmorphic female infant, whose body measurements were small for her age. The post-operative situation was normal with no apparent complication of the operation. The most significant finding was the severe right ventricle failure, dilated right ventricle and pulmonary vessels and hepatomegaly. (There was no liver damage seen on histology) As there was no histological sign of pulmonary hypertension, in my view the right ventricle failure must have been acute.

There was no aspiration, no pulmonary embolism, and I agree with the clinical diagnosis of collapsed lungs. The left lower lobe was congested, left upper lobe pale and the right lung atelectatic [which means there was no air in the airways] There was no pneumonia, but the chronic heart condition resulted in iron laden macrophages in the alveoli."

Shall I explain the iron laden macrophages at this point?

**Q.** Yes.

**A.** Babies with congenital heart disease often got a problem whereby there is a bit of minimal blood entering into the airways and they try to clean those. There is red blood cells, there is small scavenger cells that try to eradicate the red blood cells and the remnants of the red blood cells is iron and this is what you can see under the microscope with a special stain. It's iron laden macrophages.

"The significance of the right subdural haemorrhage is not certain, but obviously was not the result of injury. There were no bruises and no broken bones and the brain did not seem to be damaged (macroscopically or on histology). The brain was not compressed. There was no brain oedema and the old blood clot was thin.

I think that the positive blood culture was the result of contamination of the sample and neither the skin wound nor any other sign of anything significant.

I did not find any further significant abnormalities on histology and I give the cause of death as it follows [as I said before]

1A acute right ventricle failure.

1B the constructive heart.”

**Q.** Let me just summarise it, and stop me if I have got it wrong. I have already heard that Hayley had two surgical events: one, she had a shunt put in when she was very, very young, and that was done in Belfast, and two she had her heart actually reconstructed, and that was in Birmingham.

**A.** Yes.

**Q.** You found clear evidence of both those procedures, that both of them were, so far as you are concerned, carried out as they should be. There is no evidence of anything either having been done wrong at the time or gone wrong since then.

**A.** Yes.

**Q.** No bleeding or inflammation or anything like that.

**A.** Yes.

**Q.** All of that is straightforward.

**A.** Yes.

**Q.** Hayley was generally small or very small for her age.

**A.** I don't think that makes much difference. I would call her very small because she was under the third centile, which means 97 out of 100 babies of her age were bigger than her.

**Q.** The actual cause of death is that the right side of the heart failed, that is the side of the heart which pumps blood round the body.

**A.** Pardon me, right side which pumps blood into the ----

**Q.** Into the lungs, I am sorry. You are satisfied that that must have been a recent event because otherwise there would be other signs you could pick up and they were not there.

**A.** Yes.

**Q.** By “recent” you mean in the last couple of days before her death.

**A.** Yes.

**Q.** You do not know what caused the right ventricle to fail but you do know that if the lung was collapsed that can cause the right ventricle to fail.

**A.** Yes.

**Q.** In this case you know that the right ventricle failed. You also know that the lung did collapse and therefore you think it is quite probable that the one caused the other.

A. Yes.

Q. But there could be other reasons for it.

A. Yes.

Q. Is that fair?

A. Yes.

Q. You confirm that there was a wound. Just indicate for us where the wound was.

A. This was on the lower side of the sternum, roughly this part.

Q. And that was coming apart as a result of infection.

A. Yes.

Q. But you were not actually able to establish what the infection was.

A. Yes.

Q. But in any event, you do not believe that played any part in her death. Is that right?

A. Yes.

Q. Is there anything I have missed out that I should have put in?

A. No, I think that is all, sir.

**THE CORONER:** Let me just spell it out for you, because there are witnesses here who were not here this morning. When Dr Marton gives his evidence in answer to the advocates, he will be talking to me. He is giving evidence to me; he is not chatting to the advocates, so he does not turn his back on me. He also needs to watch my pen because I have to make notes that I can still read and still make sense in September next year. That is what you have to do.

So, Mr Weitzman?

Questioned by Mr WEITZMAN

Q. Dr Marton, can you first help me with the acute episode in relation to the right ventricle? You have timed it in the last couple of days before death. Is it a gradual or a sudden process?

A. Unfortunately I am not able to answer this question. But it occurred gradually.

Especially because what I saw in the mortuary was an end stage, so as I gave the cause of death as the acute right ventricle failure, the right ventricle was very dilated so it might be that there were several events when the right ventricle struggled to pump but at the end the ultimate failure resulted in a significant dilatation of the right ventricle.

Q. To make sure I have understood you, during the last couple of days the ventricle

dilated to the point you saw at the post mortem. That may have been a series of everincreasing dilations or one catastrophic dilation. You are unable to say.

**A.** Yes, that is correct.

**Q.** And you say it is acute because if it had been occurring over a longer period you would have expected to have seen other signs in other parts of the body. Is that right?

**A.** Yes.

**Q.** And they would have been – could you list them again for me?

**A.** Other signs. If you got a chronic pulmonary hypertension then you will see changes within the lung musculature with hypertrophy of the vessels. If it's a long-standing failure of the right ventricle, then the right ventricle is able to compensate in a way with the hypertrophy of the ventricle wall, and very often with a failure of the right ventricle you can see a change in the structure of the liver as a result of the chronic failure to the right ventricle.

**Q.** We know the liver was enlarged but that is consistent with an acute failure rather than a long-standing or gradual failure. Is that right?

**A.** Yes, as I believe so.

**Q.** And you have told the Coroner that this kind of acute failure of the right ventricle is consistent with the collapse of the lungs.

**A.** I said it can be consistent, yes.

**Q.** Can we have a look at your findings in relation to the lungs? There was evidence of adhesions of the left upper lobe.

**A.** Yes.

**Q.** Again, you may not be able to answer the question. It is the same as the Coroner asked you earlier. Are you able to say when those adhesions occurred?

**A.** I believe those adhesions, possibly old, even dating back to the first operation of the baby. You often see adhesions after operation between the lungs and the pleura. So I'm not surprised about that.

**Q.** As far as you were concerned, they were not of any cause or significance. Is that fair?

**A.** Yes, that is correct, sir. We see that very frequently. I mean, we see that almost in every case of post-cardiac surgery.

**Q.** In the pleural cavities – and that is between the lungs and the lining; is that fair?

**A.** Yes.

**Q.** On each side there was 20 to 25 millilitres of clear fluid.

**A.** Yes.

**Q.** So there is a collection of fluid in each lung.

**A.** Pleural cavity, yes.

**Q.** Pleural cavity. My apologies. I suspect 20 to 25 millilitres would not necessarily be significant for someone of my size, but for a baby of Hayley's age who was on the third centile, is that quite a lot of volume?

**A.** Certainly the volume is significantly more than it would be for an appropriately grown child or indeed adult, but having said that, I don't think this collection of fluid was extreme. In my view, that was rather just a reflection of the cardiac failure again.

**Q.** You note that you have fibrinous pleuritis of the right lower lung.

**A.** Yes.

**Q.** Can you explain to me what that is, please?

**A.** That is a sign of more recent process to the pleura, to the surface of the lungs, more recent than those seen in the upper lobe, that were old and chronic and possibly relating to the first cardiac surgery, and that rather relate to the more recent cardiac surgery and/or post-cardiac surgery events, but I did not see any infection I think that can be just rather sterile irritation of the pleura and I don't attribute much more significance to that either.

**Q.** But you did find pleura bronchitis of the right lower lobe of the lung.

**A.** Yes, that is correct.

**Q.** And that is an infection of the right lower lobe.

**A.** That is correct but it was limited to the bronchi, as I describe it, and that was not accompanied by pneumonia.

**Q.** And the same question. Are you able to say how long that had been present, whether it was recent?

**A.** Yes, that is recent and that is something that could have been terminal or preterminal again, just a couple of days prior to death.

**Q.** I think the upper left lobe of the lung was pale. Is that right?

**A.** Yes.

**Q.** Are you able to draw any conclusions from that?

**A.** No, I cannot. All I can say, that that could have been the consequence of the collapse of the lung.

**Q.** And finally we have fluid in the abdomen space. Is that the acetous?

**A.** Yes.

**Q.** Where has that come from, please?

**A.** My view is that that was part of the cardiac failure again because I didn't see any inflammatory response accompanying that so I think that's a common sign of cardiac failure.

**Q.** When you examined Hayley, both lungs were collapsed, and by that you mean that the sacs around the bronchi had collapsed and were not inflated. Is that right?

**A.** Yes.

**Q.** Are you able to say what caused that collapse?

**A.** No, I think that is a clinical question that needs to be answered. I don't know.

**Q.** Were you also able to observe consolidation within the lungs? I draw a distinction between collapse and consolidation which you understand. Is that fair?

**A.** Consolidation in the meaning of pneumonia. I did not see significant pneumonia. I do describe a small area that there was a collection of acute inflammatory cells. In the left lower lobe I did see a very small focus of pneumonia but I did not see any large pneumonia on the scale that would cause a significant consolidation, but I'm not sure that you can tell the difference between a complete atelectation, collapsed lungs, and consolidation on X-ray. I'm not an expert on that so I wouldn't go much deeper into this question.

**Q.** Again, it may be that this is more of a clinical question but we have a situation – the collapse of the lungs: was that also recent? It must have been, must it not?

**A.** I can't address that question. All I saw, that the alveoli, the airways, were collapsed and there is no way to prove it in a morphological basis.

**Q.** But nonetheless you consider it likely that the collapse of the lungs was causative of the right ventricular dilation. Is that fair?

**A.** When we tried to solve the cases, we try to put together the available clinical information and put the morphological findings in the clinical pathological context and this is how I tried to draw my conclusion with the knowledge that a collapsed lung can result in the increased pressure in the pulmonary circulation and this is why I made this

cause and consequence relationship between the two.

**Q.** So if I look at your finding on the second page of your report in relation to cause of death, 1A and 1B, 1B is describing the two operations, the first in 2008 and the second in 2009, but as far as you could judge, both operations successes. Is that fair?

**A.** Yes, that is correct.

**Q.** So far as the causative anatomical physiological mechanism was concerned, you think it was the collapse in the lungs which may or may not have been connected to one or other operation.

**A.** Yes, because this of this “may or may not”, because of this uncertainty that I felt. This is why I did not list the collapsed lungs in the formal cause of death, and if you wish to put the cardiac situation, the post-operative situation, as number (2), I have no objection.

**Q.** In fact, there is no reason to suppose that either operation or even the congenital heart condition which the operations were performed to correct were causative of the dilation of the right ventricle, is there?

**A.** Yes and no is my answer. I do not have the knowledge to be able to tell how frequently you see the collapsed lungs after the cardiac operations and if the collapsed lungs are a known consequence of the cardiac surgery of a baby in such a (inaudible) condition, post-operative condition. In that case, there is still a positive relationship, but otherwise I cannot prove that.

**Q.** Unless the operation led to the collapse of the lungs, there would not be a causative link between the operation and death.

**A.** Yes, I think based on pure logics, yes.

**MR WEITZMAN:** Thank you.

Questioned by MS LUCAS

**Q.** Dr Marton, could you just continue that point there? My learned friend said that unless the operation led directly to the collapse of the lungs and that led to the death, you did not feel that you could put the collapse of the lungs in as one of the causes of death.

**A.** Yes.

**Q.** Have you come across cases before where there have been cardiac problems such as those suffered by Hayley and cardiac surgery where there have been collapsed lungs?

**A.** My brief answer is No. But that doesn't mean that it doesn't exist. I'm sure that my clinical colleagues will be able to explain that, because that might be something, a usually non-fatal complication of an operation but I don't know.

**Q.** We are going to hear evidence in due course from Mr Brawn who did the second surgery at the Children's Hospital, but in his letter to the Coroner he has said that there was a shunt into the left lung with a stenosed narrow right pulmonary artery.

**A.** Yes.

**Q.** If you have a stenosed narrow right pulmonary artery, does that mean that there are problems getting sufficient blood from the heart into the lung, or there could be?

**A.** Yes.

**Q.** If that is the case, could it be that in situations like that the lung does not get an even and full amount of blood throughout the lung tissue?

**A.** Yes, that seems to be obvious, yes.

**Q.** If there is not a consistent and equal amount of blood going round the lungs, does that mean that the lungs can be weakened?

**A.** I think we are getting to a point where I am not able to assist the court on this matter.

**Q.** Can I ask you then, when you did your post mortem did you look at the vessels from the heart to the lung?

**A.** Yes, I did check the vessels. I did(sic) check them microscopically, so those were not examined under microscope but that is not a routine part of the examination.

**Q.** When you looked at the vessels to the lung how did you find them?

**A.** They were patent, so there was no pulmonary embolism or any blood clot or anything obstructing them and all the post-operative situation, as I indicated before, seemed to be normal post-operative situation with no complication whatsoever.

**Q.** So am I correct in understanding from what you said that after the second surgery which you saw the evidence of post mortem, the vessels seemed to be working okay?

**A.** Yes, they did seem to work okay with the only exception that the pulmonary vessels, the pulmonary arteries, were dilated as part of the right ventricular failure and the small acute pulmonary hypertension.

**Q.** You mentioned in your evidence a little earlier that some dilation of the right ventricle can sort itself out and then it can happen again and at some point it may turn out to be fatal, which is what happened unfortunately here.

**A.** Yes.

**Q.** This may be a clinical question but I would be grateful for your views on how often that could occur, if you have any idea, or if it can occur a number of times without causing any damage or whether that would cause damage when it did occur on each occasion.

**A.** I'm afraid I cannot answer your question fully as I'm not an expert on clinical matters. Unfortunately what we see is the fatal cases and those cases that do not make it, unfortunately. What I learned at the university, I know that the right side of the heart can compensate very quickly, especially if there is a high resistance that they got to work against, and that can be just one fatal event. For example, in cases with pulmonary embolism. But at the end stage you cannot tell whether this was one single fatal event or gradual development of the situation or several episodes which finally ended up in the ultimate failure, and I cannot answer that.

**Q.** So am I correct in understanding your evidence that we do know there was right ventricular failure with Hayley but you are not able to say whether this occurred just as one quick immediate fatal event or as a result of a number of other events that came to no concern and then followed by an event that was fatal.

**A.** Yes. This question has already been asked of me and I can just repeat my answer that I don't know and I cannot answer that.

**THE CORONER:** The point I am not understanding is are you saying that all of those events must have taken place over the short period, the two days, or could some of the events have taken place, say, three weeks before the death and then everything righted itself and then it happened again?

**A.** That is not possible to answer. That is not possible to answer based on morphology.

**Q.** I thought what you said earlier was – spell it out for me where I get it wrong – that if it had gone on for any length of time then that would have shown other changes elsewhere in the lungs, you would have picked up.

**A.** Yes.

**Q.** Therefore you can say no, it did not happen.

**A.** I thought this latest question was worded slightly differently, questioning whether for Hayley there could have been previous single events when there was a sudden increase in the blood pressure within the lungs and short episodes of right ventricular

failure which cured themselves or which was resolved without any intervention or ----

**Q.** Which had not left any sign or caused any damage.

**A.** Exactly. This is the answer. My answer for that is that you cannot tell that based on morphology.

**Q.** What you are saying is that the event that caused the death was acute.

**A.** Yes.

**Q.** That event occurred over the last two days of her life.

**A.** Yes.

**Q.** Not over a longer period.

**A.** Yes.

**Q.** If there were earlier events, they are not significant to the death.

**A.** Yes. And using the couple of days, not so strict, saying that it was 48 hours, but in a few days prior to her death.

**Q.** I think we are all understanding that "a couple of days" does not necessarily mean 48 hours and not 49 hours.

**MS LUCAS:** I have no further questions, sir.

**THE CORONER:** Do you want to come back?

**MR WEITZMAN:** Just one question arising from what you asked, sir.

**THE CORONER:** Yes.

Further Questioned by Mr WEITZMAN

**Q.** You have described how you saw the right ventricle and that is obviously how it was at the point of death.

**A.** Yes.

**Q.** So we know that it failed in the sense that it was dilated to that point at death. Once dilated to that point, Hayley could not have survived any longer, could she?

**A.** I'm not sure how many cases with an acute failure of the right side of the heart are reversible. That is a question that possibly those that are trained in intensive therapy might be able to answer.

**Q.** I put the question badly; can I try and rephrase it. What you saw was how the heart was at the moment of death.

**A.** Yes.

**Q.** So if you had the acute failure which led to that dilation, that must have happened at

death rather than earlier.

**A.** Yes, my answer is Yes.

**Q.** So that was the last part of the acute failure and the question we are debating is whether it all happened then or gradually over the couple of days. Is that fair?

**A.** Yes, I think so, yes.

**MR WEITZMAN:** I have understood; I am grateful.

**THE CORONER:** Thank you very much. I would like you to stay at least for a while.

(The witness withdrew)

**THE CORONER:** My normal practice is to take the pathologist through the statements that I was going to read under Rule 37, but I propose to do that through Dr Stumper because I think he will be able to explain it better than the pathologist. I am going to ask the pathologist to stay just in case something comes up we need to go back to him on. Dr Stumper, please.

Dr OLIVER STÖMPER, Sworn

Questioned by THE CORONER

**Q.** Tell me, please, your full name and your medical qualifications.

**A.** I'm Dr Oliver Stumper. My qualifications are German doctor in medicine. I further trained in Holland, in France, in Edinburgh. I'm a medical doctor and PhD.

**Q.** Tell me when you first qualified as a doctor.

**A.** 1989.

**Q.** Tell me how long you have been at the Birmingham Children's Hospital.

**A.** Since 1993.

**Q.** Confirm you are duly registered with the General Medical Council of this country.

**A.** Yes.

**Q.** What I am going to do is to go through the reports which I deal with under Rule 43. It is merely a matter of you explaining them to us if it is not obvious. Do you have the statement of Dr Frank Casey?

**A.** I have not seen this before.

**Q.** Do not worry. I will start reading it but if you could get a copy ready for the doctor it will make it easier for him. I will read it. All I need you to do is when we get to something that I either cannot pronounce or needs explaining, you do it for us. You now have one, have you?

**A.** Yes.

**Q.** This is the statement of Frank Casey, registered medical practitioner. He says:

“I, Dr Frank Casey, am a consultant paediatric cardiologist working at the Belfast Health and Social Care Trust. I qualified as a medical practitioner from the National University of Ireland in 1985. My qualifications are MD, FRCP, MRCPCH, BSC.

I first met Paula Stevenson and her partner Bobby on 24th June 2008.

She had been referred to me as a private patient for foetal echocardiography.”

Tell us in English what that means.

**A.** Foetal echo cardiography is the examination of the unborn child typically at about 20 weeks gestation with ultrasound and specifically to look at the heart, whether the heart has four chambers, whether the arteries are round the right way.

**Q.** Right.

“At that time Mrs Stevenson was home from Australia on holiday. A routine anomaly scan performed in Australia prior to coming back to Northern Ireland had indicated increased nuchal translucency.”

**A.** Thickening of the skin fold in the back of the baby.

**Q.** Then:

“She subsequently had an amniocentesis...”

**A.** Sampling of foetal blood sample to look for chromosomes.

**Q.** Reading on:

“...performed in Australia which was reported to be normal. I saw her on 24th June 2008. She was at approximately 22 weeks gestation in the pregnancy. I performed a foetal echocardiogram which indicated there was a major congenital cardiac abnormality.”

Tell us what “congenital” means.

**A.** Congenital is to be born with, so existing from birth.

**Q.** But does it also say that it is not a genetic failure?

**A.** The two can go separate. Most of the time they are separate.

**Q.**

“At that time I made a diagnosis of pulmonary atresia with ventricular

septal defect. I counselled Paula and her partner Bobby about the nature of this heart problem and the treatments that were likely to be necessary. I met with the couple again on 27th June and had further discussions about the diagnosis and plan of treatment. At that time the couple indicated to me that their very strong desire was to stay in Northern Ireland to have their baby and have subsequent treatment here at the Belfast Trust.

Hayley was born at the Royal Jubilee Maternity Hospital on 6th October 2008 at 36+5 weeks gestation. She was delivered at this gestation because of maternal pre-eclampsia and the delivery was by vacuum extraction.”

Just tell us what maternal pre-eclampsia means?

**A.** High blood pressure in the mum making it basically essential to get the baby born.

**Q.**

“She was small at birth with a birth weight of 2.11 kilograms. Apgar scores were nine at one and nine at five minutes. No resuscitation was necessary at delivery. As had been planned prior to birth the baby was admitted to the neonatal unit in the Royal Jubilee Maternity Hospital. An echo-cardiogram was performed soon after delivery. This echocardiogram confirmed that there were four well developed chambers in the heart. There was a moderate sized ventricular septal defect in the perimembranous area of the ventricular septum.”

Do not get technical. Just tell us in simple terms what that means.

**A.** It's a hole in the partition wall between the two pumping chambers of the heart.

**Q.** And where is the hole that all babies are born with?

**A.** That's between the two filling chambers.

**Q.**

“The aorta was overriding the ventricular septal defect and was a large calibre vessel. The pulmonary artery arose from the right ventricle of the heart and was a very hypoplastic vessel.”

Hypoplastic?

**A.** Small in size.

**Q.**

“The pulmonary valve was not completely atretic but there was only minimal forward flow through it. The branch pulmonary arteries were confluent and measured approximately 3 mm in diameter. There was a large tortuous patent ductus arteriosus with left to right flow. There was a patent foramen ovale in the atrial septum. There was mild regurgitation tricuspid valve. The overall position of the heart was more to the midline than usual, in keeping with mesocardia. Following this echocardiogram the baby was commenced on a Prostaglandin infusion to stabilise pulmonary blood flow.”

I do not want you to translate each and every bit of that. What I want you to do is just to tell us basically what was different about Hayley’s heart than normal and how serious was it?

**A.** In essence, Hayley was born with a very complex heart disease which meant that there was not enough blood flow going to the lungs, (a) because the communication between the right side of the pumping chamber and the lung arteries was small and the lung arteries themselves were very small, measuring only 3 mm at 2.1 kilo. Normal would be about 4.5, 5 mm. All babies when they are in the womb don’t breathe and basically the blood is being shifted around the body by having two communications. One is the so-called patent Foreman ovale – that is the hole between the two filling chambers of the heart – and the other communication is what we call the ductus arteriosus, communication between the lung artery and the aorta. In the foetal circulation this ductus arteriosus stays open. Having said that, immediately after birth it tends to close, and in Hayley’s complex heart abnormality the only way for enough blood to go to the lungs and pick up the oxygen was by keeping the ductus open with a special drug called prostaglandin.

**Q.** There was a time when a baby born with that heart condition would inevitably have died. Is that right?

**A.** That’s correct.

**Q.** Just tell us roughly how long this surgery has been in place that enables some babies to be saved.

**A.** This special drug, prostaglandin, is available in clinical practice from round about

1976, 78. Before that time, Hayley would have been almost certainly too small to offer any operation. The first operation Hayley has was a Blalock-Taussig shunt which was invented first in 1956 but even in the year 2012 creation of a Blalock-Taussig shunt, the plastic tube between the aorta and the lung artery carries a mortality of about five to ten per cent. Even higher in somebody weighing only 2.1 kilograms.

**Q.**

“She was managed in the neonatal intensive care unit in the Royal Jubilee Maternity Hospital before being transferred to the paediatric cardiology ward at the Royal Belfast Hospital for Sick Children the following day. The agreed plan of treatment was to continue with the Prostaglandin infusion and maximise her nutrition so that she could reach a weight which would make the surgical treatment more feasible. The planned initial step in surgical management was to insert a Blalock Taussig shunt, which is a gore-tex graft, between the left subclavian artery and the left pulmonary artery.”

Just show us again roughly where that is.

**A.** From the blood vessel to the arm(?) going down to the lung artery in the chest in the left (inaudible).

**Q.** That procedure of having a shunt as a first step: is that pretty standard with this type of condition or was it specially needed in Hayley’s condition?

**A.** No, that is pretty standard in this type of condition.

**Q.** So you have that initial stage, with the major surgery then to follow about a year later.

**A.** That’s correct.

**Q.** When I say “about a year later”, what does it depend on? A year going by or the baby reaching a certain level, or what?

**A.** It depends on clinical progress, so if a child pumps enough blood and oxygen round the body and the saturations are well maintained, normally above 85 per cent, 80, 85 per cent, then we would ideally wait a bit longer. To attempt complete repair at 5.5, 6 kilograms is more difficult because the vessels, the lung arteries are smaller but also to achieve repair quite often we have to use a tube connecting the right sided pumping chamber or right ventricle to the lung artery and the bigger the child, the bigger the tube

we can get.

**Q.** So what would be the ideal?

**A.** Ideally we wait until about a year or when the child is becoming more active, trying to start to walk or so, then we have to do something more, but ideally we aim for eight to ten kilograms if at all possible.

**Q.**

“On 15th October 2008 [Hayley] had insertion of a central line performed under general anaesthesia. A central venous line was inserted through the right internal jugular vein. At the end of this procedure [Hayley] was noted to have a metabolic acidosis. She was therefore admitted to the paediatric intensive care unit for a period of stabilisation and ventilatory support.”

Dr Stumper, can I ask you to read?

**A.**

“On 15th October 2008 she had insertion of the septal line performed under general anaesthesia. The central venous line was inserted through the right internal jugular vein. At the end of this procedure [Hayley] was noted to have a metabolic acidosis.”

So her body was basically not receiving enough energy and oxygen.

“She was therefore admitted to the paediatric intensive care unit for a period of stabilisation and ventilatory support. She was extubated [taken off the breathing machine] on 18th October 2008 and transferred back to the paediatric cardiology ward on the same day. She was formally discussed at our cardiac surgery conference on 24th October 2008 and the immediate plan was that we should try to achieve a weight of close to 2.8 kilograms before considering surgery to insert the Blalock Taussig shunt.”

That would be in order to decrease the risk of not surviving this operation.

“On October 31st 2008 she had a Broviac line inserted to achieve stable venous access for the delivery of the ongoing Prostaglandin infusion.”

A Broviac line is a long line which enters into the systemic vein ----

**THE CORONER:** I am going to stop you there. I am sorry. It is 25 to four and I am

going to break for coffee at this stage. While I am coughing I cannot hear what is being said and I cannot concentrate. It is now 3.35; we will start again at 3.50. I am sorry about that.

**MS LUCAS:** Sir, are you content for me to speak to Dr Stumper? He has not started giving his evidence yet.

**THE CORONER:** Yes. Let me just make it clear, as I have said I think eight times already, this is an inquiry, not a trial. As far as I am concerned, we are here to try and find the truth. Anybody can talk to anybody at any stage, except while they are actually on their feet giving evidence.

(Adjourned for a short time)

**THE CORONER:** I am sorry to interrupt you. You were on the fourth paragraph beginning: "On 1st December 2008" on page 2.

**A.**

"On October 31st 2008 she had a Broviac line inserted to achieve stable venous access for the delivery of the ongoing prostaglandin infusion. On the evening of surgery she developed pyrexia [high temperature] and blood cultures were positive for staph aureus [which is a common bug]. She was subsequently treated for two weeks with Flucloxacillin and Gentamicin [which are common antibiotics to treat staphylococcus aureus].

On 1st December 2008 [at what would have been six weeks] she had insertion of a 4 mm modified Blalock Taussig shunt between the left subclavian artery [that is the artery to the left arm] and the left pulmonary artery [lung artery]."

4 mm modified Blalock-Taussig shunt means there's a gore-tex tube been put in.

"And that procedure the patent ductus arteriosus was ligated in order to protect her lungs from over-circulating. She tolerated the procedure well and was transferred back to the paediatric cardiology ward on 2nd December 2008. She made a good post-operative recovery and established bottle feeding. Post-operative echocardiograms indicated good flow through the left Blalock Taussig shunt and oxygen saturations remained in the mid 80s. She was well enough to be discharged home on

10th December 2008. Following discharge from hospital, she was reviewed as an out-patient. She also attended as a ward attender for Palivizumab prophylaxis against RSV infection.”

RSV bronchiolitis is a very common viral infection in children under one year and this is a routine vaccination programme, or prophylaxis programme.

“Her parents requested that I see her in my private out-patient clinic and I saw her at regular intervals there. She remained generally well at home. Her parents worked hard to maximise her calorie intake but her growth remained slow. Oxygen saturations however remained generally stable in the high 70s, low 80s. Hayley was also monitored by our home audio-visual monitoring programme. Her parents had a home saturation monitor for their use.

She was admitted electively for diagnostic high catheterisation on 20th May 2009 to evaluate her cardiac anatomy and haemodynamics [to look at the lung arteries and measure the pressures and so on] prior to considering further surgical intervention. The cardiac catheterisation largely confirmed the echocardiographic findings. Angiography indicated that there was a moderate sized perimembranous ventricular septal defect [communication between the two pumping chambers] with aortic override, a very small main pulmonary artery but not complete valvar atresia.”

So Frank Casey actually described that there was a little trickle of blood being pumped from the pumping chamber into the lung arteries and this is where also in Hayley's notes and throughout the documents the terms “tetralogy of Fallot and pulmonary atresia VSD” are sometimes used interchangeably.

“The Blalock Taussig shunt was confirmed to be patent but there was severe proximal stenosis of the left pulmonary artery.”

That means where the shunt inserted into the left lung artery, there was narrowing at that stage, so there would have been difficulty for the blood flowing towards the right lung.

“Distally [further out in the periphery] the left pulmonary artery was of good calibre. The left pulmonary artery was seen to have very reduced pulmonary blood supply but there was some filling of this vessel across

the midline through the area of stenosis...”

This must actually read:

“The right pulmonary artery was seen to have very reduced pulmonary blood supply but there was some filling of this vessel [the right pulmonary artery] across the midline through the area of stenosis in the left pulmonary artery. There was also a very small amount of flow through hypoplastic main pulmonary artery [so the communication to the pumping chamber]. She was also documented to have a left-sided superior vena cava [this is the great vein coming back to the heart from the left upper quadrant bringing the blue blood back to the heart] draining to the coronary sinus [which then goes over to the right side filling chamber which is a variation of normal. That happens in about five per cent of all cases, also in people who have normal hearts.] There were no obvious aorta-pulmonary collaterals.”

Aortapulmonary collaterals are normal vessels through the lung arteries which we see quite often in patients with pulmonary atresia.

“Following the cardiac catheterisation I discussed the findings at our cardiac surgery conference. The possible surgical options were discussed and it was agreed with our consultant cardiac surgeon Sir Dennis Gladstone that any surgical repair was likely to be complex and we would seek the opinion of the cardiac surgical team at Birmingham Children’s Hospital. I wrote to Mr Bill Brawn, consultant cardiac surgeon at Birmingham Children’s Hospital on 15th July 2009 and Hayley was in turn discussed with the team at their cardiac surgical conference in Birmingham... I have attached a copy of the letter received from Dr Paul Miller, consultant paediatric cardiologist at Birmingham Children’s Hospital, outlining the results of this discussion. This summarises the surgical options and indicates that their team would be happy to accept Hayley for further evaluation and surgery. I telephoned Dr Miller to indicate to him that I was happy for Hayley’s surgical procedure to take place in Birmingham and confirmed this with a letter sent to him on 2nd September 2009.

I continued to follow Hayley as an outpatient and her cardiac status remained stable. She had a moderate degree of cyanosis and continued to be generally active and feeding satisfactorily.”

**Q.** Cyanosis?

**A.** Cyanosis means blueness. So when the oxygen saturations drop below 90, 92 per cent, we can see there’s a blue tinge in the lips, and so on.

“Hayley was admitted to Birmingham Children’s Hospital on 12th October 2009 and I did not have any clinical involvement in her care beyond that point.”

**Q.** Just stay with that for the moment. Go back to the previous page and the penultimate paragraph, the last four lines, where Dr Casey says:

“Her parents worked hard to maximise her calorie intake but her growth remained slow. Oxygen saturations however remained generally stable in the high 70s, low 80s.”

Is that good or bad or usual or not?

**A.** That is, if anything, a bit low in a child who at the time, it would have been December 2008 into spring 2009, so probably considering that she was born at 2.1 kilograms she would not have weighed much more than three and a half, four kilograms at that stage, and to go down below 80 per cent is pretty blue, cyanose. So it’s a reflection of very limited blood supply to the lungs.

**Q.** Then on the next page:

“The possible surgical options were discussed and it was agreed with our consultant cardiac surgeon Sir Dennis Gladstone that any surgical repair was likely to be complex and we would seek the opinion of the cardiac surgical team at Birmingham Children’s Hospital.”

The impression I got from the family’s statements was it was because Mr Gladstone was retiring and they had not replaced him that Hayley was brought over here. This makes it sounds as though it was more the extent of the surgery. Can you comment on that? Do you know one way or the other what it was?

**A.** I know that Dennis Gladstone basically retired probably late 2009 early 2010.

Having said that, at Birmingham Children’s Hospital we have the greatest or the biggest programme and the biggest experience with the treatment of children with pulmonary

atresia VSD. We are getting referrals throughout the UK, Ireland, and also certainly in the past received many referrals from mainland Europe. That would have been probably one of the reasons why the Belfast team decided that surgery at Birmingham Children's Hospital would be a good option.

**Q.** So now read for us the letter that he refers to. It is the letter from Dr Paul Miller at the Children's Hospital to Dr Casey.

**A.** Dr Paul Miller is one of my colleagues at Birmingham Children's Hospital. With all referrals we receive from overseas patients we basically discuss the information in our multidisciplinary meeting and this meeting or the letter by Dr Miller is a summary of that meeting with our discussions. I want to point out at this stage that I was not present at that meeting. So Dr Miller's letter dated 12th August 2009 to Dr Frank Casey:

"Dear Frank,

Hayley Fullerton, cardiac diagnosis: pulmonary atresia VSD, intrauterine growth retardation [so being born at 2.1 kilograms at 37 weeks or 36+1].

Dextro-position of the heart [so the heart was over in the right chest] but balanced ventricles [means the ventricles were of good equal size]

moderate size perimembranous VSD with aortic override, small main pulmonary artery but not complete valvar atresia [again, some flow from the right side pumping chamber the lung artery]. 4 mm modified left

Blalock Taussig shunt with ligation of ductus arteriosus undertaken 1st December 2008, Dennis Gladstone. Cardiac catheterisation May 2009.

Thank you for asking us to review the data on this child who from your letter is now ten months old and weighs five kilograms. She was born at 37 weeks gestation weighing 2.1 kilograms with a cardiac diagnosis of functional pulmonary atresia with VSD although there was some antigrade flow into a small main pulmonary artery. She has previously undergone a left modified Blalock Taussig shunt. Her cardiac catheter data demonstrates dextro-position of the heart with a rather superior inferior relationship of the ventricles. [It describes only the position of the pumping chambers to one another] There appears to be early filling of the aorta from a right ventricular angiogram and more selective aortic angiography [angiography is injection of dye into the heart chambers

under X-ray vision so you can see all the blood vessels showing up in black and white and the chambers themselves.] demonstrates a patent left BT shunt [good flow through the left Blalock Taussig shunt] which inserts close to the origin of the left upper lobe pulmonary artery. [So the left lung artery divides into two main lobes and the shunt was fairly close to the upper lobe]. The distal [more peripheral] left pulmonary artery appears to be of good calibre, although there is reduced flow to the left upper zone where the shunt was placed. There is some filling of the right pulmonary artery across the midline with a tight left pulmonary artery stenosis, presumably at the point of previous ductal insertion.”

The ductus arteriosus is the communication between the lung artery and the aorta which closes normally after birth and there's this tendency to close also sometimes involves the surrounding tissue so it can form some scar tissue and this would have caused the narrowing of the right lung artery.

“Left pulmonary veins drain normally but right pulmonary veins are not demonstrated.”

That refers again to there being fairly little flow to the right lung artery because if there is not enough flow or contrast going through the right lung you also have difficulty seeing whether blood is coming back from the right side.

“There do not appear to be any collaterals from the descending aorta. A left sided superior vena cava draining to the coronary sinus and right atrium is noted.

We have discussed this data in some detail in our cardiac surgical conference. (Present: Paul Miller, David Baron, Bill Brawn, George Giovanni, Tarak Desai, Chet Mater(?) [they are all consultants with two cardiac surgeons involved] and are in agreement that further intervention is indicated, particularly given the degree of left pulmonary artery obstruction and rather small calibre of the right pulmonary artery. Our collective view is that we would prefer to proceed along the lines of a complete repair with patching of the central pulmonary arteries [so to enlarge the central pulmonary arteries] and VSD closure, [close the hole in the heart] although if that proves to be difficult our fallback position

would be central pulmonary artery reconstruction with a limiting right ventricular to pulmonary artery conduit.”

In children where the lung arteries are very small and one cannot establish enough vessels.... So combined cross-section area of the vessels and at her age sometimes it is safer not to push the boat out too far or to achieve perfection so we leave the hole between the two pumping chambers or ventricles open and just put a tube from the right side of the heart, the right side of pumping chamber, into the lung artery, so to get blue blood into the lungs. Also if there is more blood going through the lungs then they normally grow.

“We would be happy to admit Hayley for further evaluation, which may include a CT angiogram to further delineate the distal right pulmonary artery/pulmonary veins with a view to surgical intervention on the same admission.”

Even though I haven't been at this meeting, this reflects to me that we were concerned, or the team at Birmingham Children's Hospital was concerned about the size of the right lung arteries. We said we would admit her for further evaluation which may include a CT angiogram which is another X-ray test to look at lung arteries.

“The only other thing of note, is that we felt her kidneys looked rather unusual on the angiogram...”

At the end of the cardiac catheter you quite often look at the kidneys on X-ray because the contrast agent they inject during the catheter is being excreted by the kidneys so we see enough structure or shape of the kidneys on X-ray and with that Paul Miller suggests she may benefit from a renal ultrasound, so kidney ultrasound, if this has not already been performed.

“Thank you for asking us to review Hayley's data. I have provisionally arranged to admit her in September for further management as your letter indicates that Denise(sic) Gladstone would be happy for her surgical care to occur here. I hope that this meets with your approval and look forward to hearing from you.

Kind regards,

Yours sincerely,

Dr Paul Miller.”

**Q.** If you cannot answer this question then say so, but are you able to give the court an indication of just how difficult Hayley's case was? I do not suggest for one moment any of them are easy but you must have varying degrees depending on the extent of the initial damage and the baby's condition. Is this fairly straightforward or particularly difficult?

**A.** It's certainly not straightforward and yes, I would suggest that Hayley's case was difficult. Hayley's case was difficult (A) because she was small; (B) her lung arteries were not fully developed and in particular we had concerns about her right lung artery. It was suggested she should have further CT angio, which is an X-ray test to evaluate these vessels further. Going through the notes, that was planned the day before the surgery under sedation but she woke during the sedation and with that the CT angiogram could not be performed so Mr Brawn did the surgery the following day without having that further information. She was difficult also because her heart was over in the right chest rather than in the left chest, like in you and me, and she also had two veins going back to her heart.

**Q.** Why does it matter which side her heart is on?

**A.** It matters because of all this cardiac surgery has to be done on the heart lung machine. The heart lung machine takes over the function of the heart and the lungs, bypass, and in order to establish bypass one has to insert cannula both in the aorta but also in the veins, so to collect the blue blood from the filling chambers, put it through the pump and inject it back through the aorta, and cannulation is very difficult in somebody whose heart has rotated over to the other side, and also the fact that she has had two veins on either side, would have meant to use three cannula for the lower half and the two top quarters to establish bypass.

**Q.** These are difficulties for surgery. Once surgery is over, after the surgery has been finished, does it make any difference which side her heart is on?

**A.** No, not really.

**Q.** So it just makes surgery more difficult.

**A.** Yes. But it's a significant difficulty.

**Q.** Yes, I am not minimising it. I am just trying to ----

**A.** Also, I would suggest that this difficulty in cannulation for bypass may have swayed Mr Brawn to take the decision to go for complete repair rather than to go through all the

difficulty of bypass and then having to come back within a relatively short time and do it all over again. I think because of that difficulty he was probably swayed to go for complete repair.

**Q.** Now I want to ask you to read through the letter from the GP. This is going to be fairly straightforward. This is from Dr Jadczyk, of Greencastle Street, Kilkeel, County Down.

“Hayley was born on 6th October 2008. There was an antenatal diagnosis of pulmonary atresia and ventricular septal defect and she was admitted to the neonatal unit shortly after birth for further management.

Hayley was discharged home after a prolonged admission on 10th December 2008 and was subsequently attended at a review appointment at the Royal Victoria Hospital in Belfast paediatric cardiology.

On 12th August 2009 she had a consultation in Birmingham Children’s Hospital with Dr Paul Miller, consultant paediatric cardiologist. She was admitted then to Birmingham Children’s Hospital for operation after which Hayley unfortunately died.

There is no record in our notes of any consultation that Hayley would have received directly from ourselves. She had been prescribed medications which were requested in numerous correspondence that we were receiving from hospitals. Please find enclosed all correspondence we hold on our records concerning Hayley and a list of all medications that were issued for her by ourselves.”

That is signed by Dr Jadczyk. I do not propose to read through all the copy letters that he sent; they are all replicated in other correspondence from the hospitals.

Now just for completeness I want you to read, if you would, the report from Mr Brawn. We are going to hear from Mr Brawn on Thursday but just to keep things in chronological context if you would just take us through.

**A.** This is a letter from Mr W J Brawn, consultant paediatric cardiac surgeon at Birmingham Children’s Hospital, addressed to yourself, Mr Cotter.

“Dear Mr Cotter,

Re Hayley Elizabeth Fullerton...

Thank you for your letter that I have received via the legal services

department at Birmingham Children's Hospital. I enclose a copy of the operation note which I think summarises the procedure that we did on this patient. Essentially there was a shunt into the left lung with a stenosed narrow right pulmonary artery. The heart was unusually placed with dextro-cardia, that is the heart was in the right chest. Initially we thought we might be able to repair the heart with closure of the VSD which is what we did but we also had a back up option of repairing the vessel to the lung, the pulmonary arteries and then placing the shunt. Again, I enclose a copy of my operation note and as you see from the report Hayley was in the intensive care unit for a few days after the operation with a degree of collapsed consolidation of half of the right lung and some low blood pressures but gradually improved and was able to return to the ward. I was not directly involved with her care on the ward and I will ask one of my cardiological colleagues for furnish you with details about that aspect of her management.

I hope this is satisfactory.

Kindest regards,

Yours sincerely,

Mr William J Brawn."

**Q.** We will leave the rest and move on to your own report.

**A.** Sorry. I would like also to read part of the op note.

**Q.** Yes.

**A.** Especially the introduction and findings. This is the op note written by Mr William Brawn regarding Hayley's operation on 14th October 2009, at which stage she weighed 5.8 kilograms.

"INTRODUCTION:

This child who was born small for dates, and found to have complex Fallots with a very small right ventricular outflow and severe dextrocardia. Bilateral superior vena cava [veins on both sides of the chest] and she was maintained on Prostaglandins for a few weeks and then shunted. Now comes forward for consideration of surgery with a stenosed left lung artery, the shunt entering probably the left upper lobe

vessel but good size left pulmonary artery although we were not sure about the left upper lobe and a rather small right pulmonary artery. There is severe dextro rotation with bilateral superior vena cava and severe stenosis of the vessels makes this a bit difficult.

#### INCISION:

Midline sternotomy.

#### FINDINGS:

As soon as we opened the sternum we had severe bleeding from many venous collaterals particularly in the superior media stinum [so the upper part of the chest]. We assume this was from the previous long line placed to give Prostaglandin. However, there was no major hypotension [low blood pressure] and the bleeding was first controlled with ligacrips and then with diathermy [so cauterisation of the bleeding vessels]. It may be a problem for future re-intervention.

The heart was severely dextro-rotated with a ventricular mass over to the right side and the aorta was short. The right atrial appendage [which is part of the right side of filling chamber] was only just seen posteriorly [and this is where they would normally place the cannula for bypass surgery]. The left atrial appendage was anterior. There was about a three to four millimetre pathway from the right ventricular outflow tract to the main pulmonary artery where a ductus ligament entered a narrowed portion of the left pulmonary artery which was quite long. Then distally we managed to dissect out the gore-tex shunt. On opening back through the main pulmonary artery into the right ventricle, there was a malalignment VSD beneath the dextro posed aorta [so the aorta was over to the right aorta which the malalignment VSD was masking]. We could not see any PFO [patent foramen ovale] through tricuspid valve."

Then he goes to the procedure.

"Midline sternotomy, staying back pericardium [that is the sac around the heart] and controlling heavy bleeding from the veins in the superior media stinum and in the thymus tissue [that's the small gland on top of the heart]. Having done this we opened the pericardium, stayed it back

and with care we dissected out the vessels although doing this because of the disposition of the heart, periods of hypotension occurred [so just by preparing the heart for bypass cannulation he had problems with low blood pressure]. We managed to visualise part of the gore-tex tube [that's the shunt on the left side] and then we placed an ascending aortic right atrial appendage and then later left atrial appendage purse string [so they're basically putting stitches around the sides where they put the cannula in for bypass] heparinised the patient [to prevent blood clots from forming] cannulating first right atrial appendage and then left atrial appendage because of volume loading, clearing and cooling to below 18 degrees C nasopharyngeal. While cooling we further dissected the shunt and managed to clip it with a large ligaclip. Aorta was taped and we could visualise the origin of the right pulmonary artery which didn't seem too bad a size, [unfortunately he didn't measure it] the required size being 6 mm. Having clipped the shunt and cooled to below 18 degrees C the aorta was cross clamped and the heart cardiopleged and because of the disposition [so the heart was arrested with potassium solution] of the heart, the accessory veins and difficulty in cannulating the IVC [the vein from the lower body] which I could not see, we elected to perform the procedure mostly under circulatory arrest."

Which is very unusual in children her age but this was because of the difficulty cannulating and putting on bypass. Again, you will have to ask Mr Brawn himself, but this may have swayed him to perform complete repair. Probably I will leave it at this.

**Q.** Now we are on to your report, and this is dated 19th January. What I am going to suggest is you read through it and then we can go back and ask you questions, but if you want to add to it as you go through it, that is fine.

**A.** Thank you.

"Dear Mr Cotter,

Re Hayley Fullerton

Diagnosis: Pulmonary atresia and VSD (extreme form of Fallot)

IUGR [intrauterine growth retardation] – birth weight 2.1 kilograms at 37 weeks

Dextroposition of the heart and bilateral SVC

Post 4 mm left Blalock Taussig shunt – December 2008.

Operation: Complete repair of pulmonary atresia and VSD – 14th October 2009.

Date of admission: 12th October 2009

Date of death: 11th November 2009.

You requested that I provide a report on Hayley Fullerton, who was operated on at Birmingham Children's Hospital on 14th October 2009 and who sadly died on 11th November 2009. I was the consultant paediatric cardiologist in charge from 9th November 2009. I did not meet Hayley or the family before this date nor was I involved in any of the preceding clinical discussions or management.

Hayley was born with complex pulmonary atresia and VSD. She was referred for treatment via Belfast. The operation was performed by Mr Brawn on 14th October 2009, and was complicated by the fact that her branch pulmonary arteries were small, that she had a dominant left superior vena cava and her heart was on the right side of the chest. Nonetheless, a good haemodynamic result could be achieved as evidenced by intra-operative and early post-operative cardiac ultrasound examinations."

I went through the notes again and also have reviewed since this statement some of the ultrasound studies performed in particular on the intensive care unit and these ultrasound studies documented however that the right ventricle, the pumping chamber underneath the lung arteries, was struggling.

She had something which we call restrictive right ventricular physiology. This is something we see in children in particular after repair of tetralogy of Fallot pulmonary atresia in whom also the surgeon, in order to achieve the repair, has to close the hole between the two pumping chambers but also make a cut through the muscle of the pumping chamber in order to put the tube on or a communication through the lung artery. So these right ventriculates(?) which, due to the underlying condition, always have worked at the same pressure as the left ventricle because the two ventricles are connected by the big hole between the two pumping chambers so they are the same

pressure, and the right ventricle also normally is very thick in this condition, the myocardia, in contrast to a normal heart where the pressure in the lungs is low and the free wall or the external aspect of the right side of pumping chamber is actually a relatively thin wall. She had restrictive physiology and was struggling and this is also what in part explains why her liver was enlarged because of the back pressure, but this was throughout the course of the period.

“She required relatively little early post-operative inotropic support and her chest could be closed on day two, 16th October 2009 with stable haemodynamic parameters and decrease in inotropic requirement.”

Inotropes are drugs we give to support the heart. Having said that, she continued on Milrinon(?) which is a drug we give certainly to patients suffering from right heart failure, until transfer back to Ward 12 on 31st October.

“Her early post-operative period, however, was complicated by extensive areas of collapse and consolidation throughout both lung fields. She failed two attempts at extubation, however, was finally extubated on 23rd October 2009 which is seven days post-op and then she was maintained on pressure support via a short tube in her nostril. She was transferred back to the infant ward on 31st October 2009.”

In retrospect, that should have probably read “back initially to Ward 12 and then within a day or two to Ward 11.”

“The problems on the ward were a persistent low oxygen requirement and a superficial wound infection which was treated with Flucloxacillin.

Her inotropic support could be weaned on 2nd November 2009.

I first met Hayley during the ward round on 9th November 2009. Her breathing was a bit fast with a respiratory rate of 40 breaths per minute.

She was receiving 0.75 litres of oxygen via a nasocannula and was maintaining saturations of 97 to 98 per cent. On examination she was comfortable but mildly tachypnoeic [breathing was slightly fast]. She had good peripheral pulses and perfusion. Her tummy was soft and her liver was palpable to one centimetre [so there was very slight enlargement of the liver]. On auscultation, her chest was clear and there was overall good bilateral air entry. Her blood results at the time did not

show any evidence for an infection with a CRP [that's an infection marker we're using] of 21 and white cell count of 14.3. [Both of these are acceptable] We repeated her bloods and a chest X-ray later that day, which documented significant consolidation of the left chest and volume loss on the right side [because of the dextro-position of her heart]. With that, I requested for the physios to review her and provide physiotherapy in order to re-open these collapsed areas of lung."

I have reviewed the X-ray on the evening handover at five o'clock on 9th November 2009 together with the SHO, pointed out the significant changes to the SHO and said: "Let's get physio." In my language, that would have meant: "Let's get physio tonight." I have to apologise that this was transcribed on the notes "Defer physio until Tuesday morning 10th November."

"She was seen and treated by the physios the following morning. The night-time SHO reviewed Hayley at 2 a.m. on the morning of 10th November 2009. [This would have been before the physio] She had sternal recessions and was grunting intermittently [so she had more respiratory or breathing difficulties]. She was pale and a bit clammy with a capillary refill time of some two seconds. Her gas at the time was acceptable PCO<sub>2</sub> [so that is the amount of carbon dioxide in the blood] of 5.9 kPa [which is slightly elevated but nothing really too worrying. Her ventilation at that stage certainly still (inaudible due to coughing)]. Her feeding was stopped and she was commenced on intravenous fluids. [We do that in children who struggle to breathe because they can't breathe fast enough and then at the same time feed] A chest X-ray was repeated comparable to the one taken on 9 November 2009. She was again reviewed at 3 a.m. by the medical team and she appeared somewhat more settled. She was reviewed by the physio team on 10th November 2009 at 9.40 shortly afterwards by my registrar, Dr Reinhardt. At that stage, she was in 40 per cent head box oxygen with saturations of 93 per cent."

In children with respiratory distress or breathing difficulty and also collapse consolidation we quite like giving them head box oxygen because we can humidify the

air better than giving them nasal prongs. Nasal prongs quite often dry the airway out and the children have more difficulties coughing the stuff out.

“She had a low grade pyrexia of 37.5 [so temperature was mildly elevated to 37.5]. She was tachypnoeic and the decision was taken to repeat the blood tests to rule out infection and also to undertake viral tests to rule out Swine Flu.”

Swine flu – that was the first winter or epidemic of swine flu in the UK, H1N1, and we were or basically the Trust, as all other NHS hospitals, I believe, had put together guidelines in which the diagnosis has to be entertained and what other proceedings if such a diagnosis is suspected.

“In the context of suspecting a possible viral illness she had to be isolated. She had a repeat gas on 1300 on 10th November 2009, which again showed a PCO<sub>2</sub> of 5.9 and a pH of 7.47 [pH is the acid base balance which again is acceptable]. She was further reviewed by a cardiac surgical registrar at 15.30 the same day [and I also briefly saw her but I couldn't really assess her breathing because she was very upset during changing of her dressing]. The blood results came back that same afternoon showing a rise in her CRP from 29 to 69 and with that, we added iv Augmentin [which is another antibiotic] and continued her Flucloxacillin. I saw Hayley late afternoon on 10th November 2009 and despite her being in a degree of respiratory distress, I felt that we had taken all the right steps to make her better. Her blood gas and further blood results did not suggest an acute deterioration, which would have required ICU admission at that stage. I was confident at the time that with the antibiotics and physio treatment, she would improve.”

In actual fact, she did improve on the evening of 10th November 2009, which is also evidenced by the fact that we have recommenced her feeds, so she was allowed to feed again. We had taken her off the intravenous fluid because her breathing was more comfortable, she was happier, and that decision was made also on request by her mother. So we did not feel that PICU required, ICU admission was required in the evening of 10th November 2009. I was the consultant on call but I did not hear any more messages or comments about Hayley that night.

“At around 0700 on 11th November 2009, she was again reviewed by the SHO, who noted her to have increased work of breathing, and subcostal and intercostal recessions.”

Having spoken to the SHO, Pam Dawson, I now understand that initially she saw her briefly at six o'clock and no concerns were raised, and that also looking at Hayley at the time Pam felt she was better than what she was the preceding night. Then whilst writing in some notes Pam was alerted to review her again by mum because Hayley had an acute sudden deterioration. At that stage Pam, the SHO, noted her to have increased work of breathing and subcostal and intercostal recessions.

“She had nasal flaring and her respiratory rate was 50. At the time, she was warm and well perfused, and her capillary refill time was less than two seconds. Her situation worsened quite quickly after this and a repeat gas documented significant acidosis [so a reflection that the body isn't provided with enough oxygen and energy] with a pH of 7.12 and PCO<sub>2</sub> of 11.4 [i.e. she can't breathe off the carbon dioxide effectively enough].

The PICU team were alerted of this gas result immediately and returned together with the SHO to the ward. Hayley required intubation, shortly after which she lost cardiac output and required full resuscitation.

Despite the maximum effort by the PICU team and the attending members of the paediatric cardiology team, spontaneous cardiac output could not be achieved and resuscitation measures had to be withdrawn on 11 November 2009 at 8.15. The cause of death was 1(a)

cardiorespiratory failure; 1(b) complex pulmonary atresia; 1(c) acute collapse of the lungs. Rest in peace.

I hope that my report helps you in the investigation leading to her tragic death. I have to apologise for the delay in preparing this report, as the notes were not available to me for a long time.

Yours sincerely.”

**THE CORONER:** It is 25 to five. I anticipate that my questions are going to be at least 15 minutes. I can see no possibility that we are going to finish with this witness tonight. Do both advocates agree with that?

**MS LUCAS:** Yes, sir.

**THE CORONER:** I think it is better to stop and do it all in one go. (To the witness):

Can I just check, Dr Stumper, that you are going to be available tomorrow.

**A.** Yes, I will.

**THE CORONER:** So we will start with Dr Stumper tomorrow. We will have to see how we do with the other witnesses, but for the moment leave everybody called as they are. We will just have to work round it.

(To the witness): Dr Stumper, thank you very much; would you just like to take a seat.

I want to check with the advocates that you are content that Dr Marton should leave. I have only kept him just in case something came up in the Rule 37 that caused him any problem. Dr Marton, there is nothing there you need to comment on.

**Dr MARTON:** No.

**THE CORONER:** You are both content he is released.

**MR WEITZMAN:** Yes, sir.

**MS LUCAS:** Yes, sir.

**THE CORONER:** Thank you. So you are released on the normal terms. If I need you back then I have to get you. I appreciate you are not available tomorrow, but some time. Thank you very much.

So, it is now 20 to five. We will start again at ten o'clock tomorrow. Do the advocates want to talk more or not?

**MR WEITZMAN:** I do not want to talk more. Would it be helpful if we started any earlier?

**THE CORONER:** The difficulty is – well, I will just check.

**MS LUCAS:** Sir, in the morning after Dr Stumper would it be possible to call Dr Plunkett so that he can get back to the Trust? He is a little bit more difficult to cover at the Trust than some other witnesses.

**THE CORONER:** We can, but I would have thought Jacqueline Clinton's evidence was pretty brief. I would have thought you were talking about half an hour or so for Jacqui Clinton.

**MR WEITZMAN:** I am not sure that she will be particularly brief. She was the sister in charge of the ward. I would certainly think it would be easier to deal with Dr Plunkett first.

**THE CORONER:** Okay.

**MR WEITZMAN:** It may provide a useful background to her evidence as well.

**THE CORONER:** Very well. We already have listed for tomorrow hearings at 8.30, nine, 9.30. I have another meeting at eight o'clock. I am not holding the 8.30, nine o'clock and 9.30 but I am afraid we are going to have to start at ten.

**MR WEITZMAN:** Certainly, sir; it was only a suggestion.

**THE CORONER:** So we will start again tomorrow at ten o'clock. Thank you all very much.

(Adjourned until the following day)

## I N Q U E S T

TOUCHING THE DEATH OF HAYLEY ELIZABETH FULLERTON

Held at :

HM CORONER'S COURT, BIRMINGHAM

on :

1st May, 2012

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B e f o r e :

MR AIDEN COTTON

(THE CORONER)

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MR ADAM WEITZMAN appeared as counsel on behalf of HAYLEY  
FULLERTON.MS TRACEY LUCAS appeared as solicitor on behalf of  
BIRMINGHAM CHILDREN'S HOSPITAL NHS TRUST.-----  
Transcribed by :

JOHN LARKING VERBATIM REPORTERS

Suite 91 Temple Chambers

3 - 7 Temple Avenue

London EC4Y OHP

Telephone : 020 7404 7464

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F U L L P R O C E E D I N G S  
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1st May, 2012

**THE CORONER:** Good morning to you all. It is now 10 o'clock. This is the second day of the hearing of the inquest touching the death of Hayley Elizabeth Fullerton. I propose to continue with Dr Stumper's evidence and then I propose at the moment to call the witnesses in the following order - I warn you it may change: Dr Plunkett, Jacqueline Clinton, Dr Gupta, Dr Reinhardt, Sanjet Bardel, Sheila Bennett, Jane Titley

and Dr Dawson. So, Dr Stumper, would you like to come back to the witness stand, please.

DR O. STUMPER, recalled

Further questioned by THE CORONER

**Q.** You are still on oath from before. You remember all the rules from yesterday. Yes? Now, when I ask you questions, I would be very grateful if you would try and answer the actual question I am asking and not the question you think I should have asked or I am about to ask. Okay? You will have an opportunity to come back and add further explanation. The other thing is, remember that I have no medical expertise, no medical training, so you cannot put things too simply for me. Do not tell me, "Well, there was this ..." and assume I understand what that means. Put it simply for me. Now, yesterday you very kindly took us through the letters that I was reading under Rule 37 and then you read your own statement and then I stopped for the day. So, I am going to ask you some questions first and then the two advocates will ask questions. First, just so that I have got the background clear in my own mind, I think that you saw Hayley on two principal occasions - you may have seen her more often, but the two main occasions were on the grand ward round on the 9th of November ...

**A.** Yes, correct.

**Q.** ... and then late afternoon on the following day, the 10th of November.

**A.** Yes, that is correct, and I also saw her briefly in between.

**Q.** Sorry?

**A.** I saw her also briefly in between and I discussed her case with the medical team and the nursing team as well.

**Q.** You refer to those as we go through, but those were the two principal times.

**A.** Yes.

**Q.** Now, my understanding of the grand ward round is that the consultant in charge at that time goes round and sees all the patients, he is accompanied by junior doctors and nurses, and the idea is that each patient has a review every single day.

**A.** Yes, and Monday is the grand round, where the teams changed over from the previous week. So, one of my colleagues would have covered Hayley the preceding weekend, certainly possibly the preceding week and then the case is briefly presented and then examined and then management plans are formulated for the day, or for the

week for that matter.

**Q.** Now, you heard the evidence, did you, of the family yesterday?

**A.** I did not hear the evidence, but I read the statements.

**Q.** You have read their statements?

**A.** Yes.

**Q.** I am going to ask you whether you want to comment on any of the matters that were raised and I am going to put some specific things to you. If they are outside your expertise, just tell me. Okay?

**A.** Okay.

**Q.** The family were, I think, if not concerned, they would have been better pleased if Hayley had remained on the paediatric intensive care unit for longer. Do you think that she was kept on long enough or do you think she was moved off prematurely?

**A.** Well, Hayley underwent surgery on the 14th of October and had a fairly complicated postoperative course, requiring taking her back on the breathing apparatus on at least one or two occasions. She was also supported with having a short tube in her nostril and giving her positive pressure. In total, she stayed 17 days on the intensive care unit and then she fulfilled the criteria to be transferred back to the ward, because the breathing tube was, the support breathing tube was removed and she was relatively stable when she came to the ward.

**Q.** Obviously, it varies from baby to baby, but can you give me an approximate time or an average time that a baby would remain in the intensive care unit following this type of surgery, or is there actually no standard time, it just depends on what is necessary?

**A.** It largely depends on what is necessary, but patients with tetralogy, and yesterday we had a discussion whether she was tetralogy, or pulmonary atresia VSD, patients with tetralogy would normally stay in intensive care for two, possibly three days. Patients with pulmonary atresia VSD, the simpler ones, would be in intensive care probably for five days. 17 days is a very long stay in intensive care for somebody having undergone surgery for pulmonary atresia VSD. And part of the problem why these patients stay in intensive care relatively long time is that their bloods, their lungs have been starved of adequate blood flow. They have cyanosed before the operation because there is just not enough blood going through the lungs, and then suddenly after surgery, the lungs are flooded, and the lungs are flooded in varying degrees. The right lung normally has three

lobes and the left lung has two lobes, and it depends really on these individual vessels, blood vessels to these segments of the lungs, so how big they are, how long they are and so on, how much blood goes where. So, you end up classically with areas which are basically drowned in blood and wet, and other areas which do not get relatively little blood and where possibly secretions can stick and basically the lung can collapse. And Hayley expressed exactly that course on the intensive care. And when we look at all patients with tetralogy or pulmonary atresia VSD, there is about 50% of patients who will have some lung problems afterwards because suddenly after the operation certain lung segments are flooded.

**Q.** So, you say about 50% of babies will have collapse of lungs, or will have lung problems?

**A.** Will have lung problems which, it is either flooding, so wet lung fields, and some other areas maybe collapse. And this phenomenon is quite often described as reprofusion injury.

**Q.** We have heard that Hayley was put into isolation. My understanding is that that was on the 10th of November?

**A.** That is correct.

**Q.** Not the 9th, the 10th?

**A.** As far as I recall, it was the 10th. I'm certain about it, yes.

**Q.** Again, correct me if I have misunderstood, but in practical terms, it sounds from the family's evidence that it means that the door to her room was shut instead of it being left open?

**A.** That is correct. That is in accordance with the Trust policy; you have to basically limit the air circulation because most viral infections are airborne.

**Q.** It was not that she was moved to a different place. The door was shut instead of being left open?

**A.** Yes.

**Q.** And, in addition, the family are asked not to go into communal areas and staff are supposed to take proper precautions before going in and out?

**A.** Yes, and proper precautions at the time would have been wearing aprons.

**Q.** Just that?

**A.** At the time, in November 2009, it was, I think, just aprons, and then when a

diagnosis, or a viral diagnosis of H1N1 or swine flu came back, then obviously there is more protective clothing, including face masks, would have been required. But this was, obviously, the first year of swine flu in the UK and everybody was still fairly unclear about the spectrum of presentation, transmission and so forth. There was great concern about H1N1.

**Q.** And, again, correct me if I have got it wrong, but my understanding is that these steps were taken because they thought that Hayley might have swine flu - no-one ever actually said she had got swine flu?

**A.** Or a viral infection was one of the possibilities why her breathing was fast and why we saw recurrent x-ray changes, and with that, yes, we investigated her for swine flu.

**Q.** But no-one ever made a diagnosis of swine flu?

**A.** No.

**Q.** And so far as you are aware, were there any actual symptoms that made people think this could be swine flu, or was it merely that someone thought she might have a viral infection and therefore that could be swine flu?

**A.** The feeling was she might have a viral infection which was also partly supported by the rise in her CRP, that is C reactive protein, it's one of the blood tests we do routinely to rule out infections, and there was a modest rise, if I remember correctly, from 23 to something like 69, and 69 is just a moderate rise, and that would go along with viral infection rather than bacterial infection or even sepsis.

**Q.** Sorry, tell me again what that rise was.

**A.** From 23, as far as I remember, to 69.

**Q.** I may not phrase this correctly, but that is saying that there may be a viral infection, but there is nothing which actually said, "And this may be swine flu"?

**A.** No.

**Q.** Is there anything that could point to it being swine flu, or did you in those days just say, "It could be a viral infection, therefore we will be careful of swine flu"?

**A.** It could have indicated a viral infection, and one of the more feared viruses at the time was H1N1.

**Q.** In your view, is there any evidence that placing her in isolation contributed to her death and, if so, in what way?

**A.** I do not believe that putting her in isolation would have contributed to her death.

Yes, it meant that, because of the, let's say the architecture of the ward and the physics of isolation, it was more difficult to place the monitors, and it would have been our usual policy to place the monitoring equipment outside on the corridor, which means it is more easily audible and visible to the staff, but I understand that after discussion with the family, it was elected to leave the monitoring inside the room.

**Q.** Now, when you saw her on the grand ward round on the 9th, that was when you said that she needed physio?

**A.** Not at that stage. On the grand ward round on Monday the 9th, and that would have been at about 11 or 11.30, I met Hayley and her family the first time. As I pointed out yesterday, I was not involved in discussions when we accepted her for surgery. I was given her history and was basically told that, after a complicated time in the intensive care unit, and requiring ... she is finally getting better. However, I noted at the time that she was breathing faster than what I would have expected her to breathe, and also her saturations were slightly lower than what I would expect after the care, and with that I requested a chest x-ray. The chest x-ray was probably done at around lunchtime, and I, in the evening hand-over, at about 4.30/5 o'clock, asked, "Has anybody seen the chest xray?" At that stage no-one had actually as yet seen the x-ray, so I looked at the x-ray together with the SHO and we saw basically that there was massive consolidation of the chest, and I said, "This patient needs physiotherapy."

**Q.** So, that was on the evening of the 9th.

**A.** Yes, 9th of November - Monday, 9th of November, at about 1700/1730. And I presumed that we would make efforts to get the physio that same evening, and looking at the severity of the x-ray, I would have expected that to happen. But I did not check on that and I certainly also failed to ring the physios myself.

**Q.** So, you would have expected - I am going to put immediate physio, yes?

**A.** I would have hoped, yes, that she would have had immediate physio, or that evening.

**Q.** But you did not make that clear and you did not organise it yourself?

**A.** Yes.

**Q.** We are going to hear evidence later on, I am sure you have seen the papers, that she did in fact have two physio courses and you heard or you have read that in the family's statement. So, do you think it actually made any significant difference that it took place at 8.30 the following morning instead of, say, 8.30 the previous night or not?

**A.** Hayley had a fairly difficult night, on Monday night, from Monday the 9th to the 10th. She was reviewed by the physios at 9.30 on the 10th and following the physio she certainly improved. She had further physio late on that day, and again that dramatically improved her, to the effect that she was initially kept on intravenous fluids and in the evening of the 10th, she looked certainly much more comfortable, her breathing was more comfortable and so forth, and again upon the request and in discussion with the medical team it was agreed to reinstate feeds. I think, if we would have provided physio on Monday the 9th, it would have given her a better night from the 9th to the 10th, but I do not feel that this has directly caused or contributed to her death.

**Q.** You will also remember the matters raised by the family about the wound; that there was a wound where the surgery had been carried out, where the chest had been closed, that that had become infected, that it had a dressing on it and that her grandfather had specifically asked on many occasions that it be dressed at least twice a day. Do you think that it needed dressing at least twice a day and, if so, why did you not organise it?

**A.** No, I did not think that it needed dressing twice a day. When I trained in medicine, and certainly also in the early days of my career in cardiology, in the early '90s, we changed dressings very frequently, but this practice has changed now and there are special dressings which actually encourage wound healing and basically they are meant to be left in place for 48 hours. And I personally sometimes also don't like that practice, but this is the recommendation at present.

**Q.** It certainly sounds as though that view was got across to the family. You heard that the grandmother believed that they were deliberately not doing anything with the wound because she was putting cream on the bottom. So, how come a clear statement like that, that a dressing is supposed to be there for two days, is not got across to the family?

**A.** Well, it is the cardiac surgical team and the tissue viability team, as we call them, at the Children's Hospital who had taken over the wound care management, and I would have assumed, and possibly incorrectly, that the cardiac surgeons would have explained the details of wound care to the family, because also on the Tuesday the 10th, the wound again was inspected and cleaned by the cardiac surgical team, and as they were the major care providers in that respect, I would have expected them to detail to the family what are the current practices and protocols. I cannot see any let's say relation between putting Sudocream on Hayley's bum and any impact on the management of her wound.

**Q.** The next question is going to be a fairly lengthy one, so let me finish and then answer it. It is clear from what the family were saying, from the three statements we read out, that their belief is that from the 6th of November, at the latest, and possibly a bit earlier, but certainly from the 6th, Hayley was getting worse and worse and worse. She was deteriorating. That they could see the deterioration, that at least one other visitor said she could see a deterioration. That they kept on telling the doctors and you and the nurses, "Hayley is deteriorating." And they say there was a steady decline, and you will remember the grandmother said, when she found out about the chest x-ray at the end, "I'm not surprised - it's what I've been saying for days and days and days." Okay? The internal report gives the following as the overall impression: "Hayley began to objectively clinically deteriorate on the 9th of November 2009. Treatment to address this deterioration was started by the clinical team based on their assessment of Hayley. This treatment was in line with standard practice. The cardiology medical team failed to put the clinical deterioration into context of the prior respiratory complications experienced by Hayley on the paediatric intensive care unit. Hayley should have been referred to the paediatric intensive care for review on the 10th of November 2009. Early commencement of pressure support ventilation of Hayley could have prevented the patient's death." Now, against that background, specifically, the family are saying Hayley was deteriorating obviously and continuously from the 6th of November to her death on the 11th, the report is saying that Hayley began to deteriorate on the 9th of November. You saw her on the 9th and on the 10th. The family say that Hayley should have been referred to the intensive care unit days earlier, the report says she should have been referred on the 10th of November. So, tell me your views on those matters.

**A.** Right, I had not seen Hayley before the 9th of November, but with hindsight or retrospect, certainly, judging from her prolonged period in the intensive care and so on, if her work of breathing objectively went up preceding to the 9th of November, I would have had a very low threshold to ask for an x-ray, because the x-ray, after all, remains the most reliable test to assess whether there is fluid collection or consolidation. Now, refer to PICU on the 10th of November - certainly, the chart document and also some of the statements by the nursing staff looking after Hayley document that Hayley was much improved after her first and second physio therapy sessions on Tuesday the 10th of November, and in the night of Tuesday, 10th of November, actually the family asked

also to restart her feeds. Her breathing rate had come down, she was more comfortable and the medical team agreed to that, by the family, to restart the feeds. So, Hayley certainly was improved on the 10th of November. When Hayley sadly died at Birmingham Children's Hospital, it became, or we agreed to hold a serious investigation into her death. I made it very clear that I wanted to be involved in that review. I notified the Trust very early on about my periods of leave, annual leave and so forth, and unfortunately the Trust was unable to arrange the investigation at the time when I was available, despite me giving early notice. I would have felt it would have been essential for the cardiologists involved in her care at the time of her death to be present, given that investigation.

**Q.** So, do you think that you should have referred Hayley to paediatric intensive care on the 10th of November?

**A.** No. She would not have fulfilled our - let's say our agreed standards of referring somebody, especially with the outstanding question: may she have H1N1 infection? Almost certainly, we would have had to isolate her on ICU. We provided at the time of 10th November all the care Hayley needed, i.e. we gave her physio, we gave her double antibiotics, we added Augmentin to her when we got concerned about her chest. We gave her headbox oxygen. Now, headbox, or oxygen is a powerful drug also. It opens up the lung vessels and it reduces the pressure on the lungs, and one cannot deduct that somebody is going from 1 litre into 40% headbox oxygen - oxygen is a drug and we can deliver it more consistently with headbox, and also the headbox gives the big advantage of humidifying the air better, and thus children normally respond to that, being able to clear their secretions much more effectively.

**Q.** So, you do not think that you should have referred Hayley at that time. You note what the report says, but you do not agree?

**A.** I work at Children's Hospital in paediatric cardiology since 1993. I was appointed consultant in 1996. Hayley at the time of 10th November 2009 did not fulfil the criteria for ICU admission.

**Q.** So, with people forming a professional opinion - we lawyers do it as well as you doctors do, in addition to you doctors - it is not unusual to have two lawyers having diametrically opposed views on the same piece of law. Sometimes the law is just one sentence but they still disagree as to what it means. In your world, you are saying that,

as a paediatric consultant of several years experience, your judgment was that Hayley did not meet the requirements for ICU at that time, that you were giving her all that she needed, all that she could have got in ICU. Do you think that another cardiologist as qualified as you, as experienced as you, could legitimately come to the opposite conclusion faced with exactly the same facts?

**A.** Any cardiologist of my experience working at Birmingham Children's Hospital would almost certainly have supported my judgment at the time. At Birmingham Children's Hospital, we operate on some of the most complex cases in the country and we are the unit which does most of the work in the field of pulmonary atresia VSD that we have, and with that, there are certainly a number of other children at any one time on ward 11 who are as sick as Hayley was on the night of Tuesday, 10th of November, up to about 5 or 6 o'clock, certainly before her arrest. I think, in my professional opinion, and even going through the notes in detail with some of my colleagues, we have not identified any space on the chart where we would have said, "Come on, we should have referred her here." The collapse was the only early warning that there was. They managed it very effectively and expediently, despite the very tragic outcome.

**Q.** So, explain to us as non-medical people: how can it be that you have a child of 13 months, who is seen by a doctor and assessed to be okay - ill but okay - and then just half an hour later she is dying? How can a child suddenly collapse like that?

**A.** Well, at the time of Hayley's sudden deterioration, we certainly were worried that some of the milk feed in her stomach could have been regurgitated and she could have aspirated that to the lungs. That would have been - that happens. And that also leads to a very acute deterioration and to a collapse, which in a child who recently underwent complex surgery and where the right heart is struggling, can lead to rapid demise and death. Now, I have to say that it came somewhat as a surprise to me that the pathology report did not confirm that at all, but that certainly was our first impression. Now, we heard that Hayley had a degree of right heart failure and, as I said yesterday, I have reviewed some of the ultrasound studies and so forth. She was suffering from something called restrictive physiology. This is a condition where basically the right heart is struggling after the surgery having taken place, and also let's remember that Hayley had, because of the complexity of her heart condition, Mr Brawn effected her repair on what we call a circulatory arrest. So, where there is no protection to the heart

itself other than low temperature. So, the heart muscle just hibernates, more or less. And that certainly would have caused more damage to the right ventricle. Also, to achieve the repair, Mr Brawn had to cut into the right ventricle, and he actually had to inspect through the right side ventricle, so there was a lot of manipulation going on during the surgery.

**Q.** Sorry, a lot of what?

**A.** Manipulation going on during the surgery. And then, and I think again because of the position of her heart, he elected to achieve the repair with patch rather than what we would normally use, a valve or a conduit. So, normally we would put in a tube with a valve, and the valve basically protects the right heart because the blood which is pumped to the lung arteries can't suddenly fall back. But in her case, he put a patch there, and I would suggest, and I have not discussed this with him, but I would suggest he probably did that because he did not want to re-operate on her once Hayley grows and the conduit gets too small. And with that, Hayley was left in a situation where she had very complex surgery, where her lung arteries were patched out quite extensively and there was a patch, not a functioning valve, underneath the lung artery. So, during the contraction of the heart, the blood would be pushed to the lungs but then fall back, and this also explains why the pathologist described this dilatation of the heart. But because of her underlying condition, the heart was not only dilated, it was also very, very thick, and yesterday we heard that the heart weight on autopsy was something like 93 grams. Now, for a 6 kilogram child, normal value is about 30 to 35 grams, and then we look at normal value as in distribution. The upper limit of normal at 6 kilogram is about 55 gram. Hayley's weighed 93. So, she had a very thick, stiff right heart, which needed filling. So, she had to increase the pressure in the right side, and then she had these abnormal pulmonary arteries, which meant that some segments were flooded and others didn't get enough.

**Q.** Sometimes when people go through surgery, say a 20 year old having a broken leg reset or something, once you are through the surgery it is really just a matter of time before you recover. Is it a similar situation for a baby going through this heart surgery or is that just one step along the way, and do we lose many children after surgery?

**A.** Luckily, in this day and age, we do not lose many children after heart surgery.

**Q.** Sorry?

**A.** In this day and age we do not lose many children after heart surgery, but the mortality after surgery is not happening in the first eight hours or just the time in theatre; mortality in cardiac and heart surgery is defined as 30 days. So, it's the whole period, including intensive care, and in Hayley's case that was 17 days, and then the period on the ward. 30 day mortality in patients with tetralogy is about 2 to 3%. In patients with pulmonary atresia VSD, which is more the spectrum of Hayley's, it's about 8 to 10%. Because all cases are different, we can only estimate the individual risk of a patient to undergo surgical treatment, or complete repair, as in Hayley's case. And I personally, from my experience at Birmingham Children's Hospital, would probably put a figure of 5 to 8, possibly 10% mortality within 30 days after surgery on somebody like Hayley, with her size, her age and her overall problems. And, in retrospect, it is my feeling that trying to achieve complete repair in Hayley may have been the wrong decision, and we certainly in retrospect should have repeated the imaging information of her lung arteries as we initially had planned.

**Q.** You are going to be asked questions by the advocates. Please remember to talk to me and make sure that I am getting it down. Yes, Mr Weitzman.

Questioned by MR WEITZMAN

**Q.** Thank you, sir. Good morning, Dr Stumper.

**A.** Good morning.

**Q.** Can I start by asking you about the grand ward round on the morning of the 9th.

This was the first time you had seen Hayley, but you were aware of her medical history and you had had a chance to review the notes, is that correct?

**A.** On the ward round of the 9th of November, I would have been given her history as summarised by the registrar, and basically, yes, I was given the history of having a child, a one year old child, small for her age, having undergone complete repair of pulmonary atresia VSD, very difficult postoperative course with ventilation and slowly recovering, slowly getting better.

**Q.** And it was clear to you that her respiratory condition - and I use that in the widest sense - had been deteriorating over the previous weekend, is that fair?

**A.** Well, I was told she was getting better, but on inspection or examination myself, I felt she was actually breathing faster than what I would like her to breathe at the time, and I also documented that she had mild recession. Listening to her lungs, the lungs

actually sounded quite clear. Nonetheless, also, after hearing the previous history, I asked for an x-ray.

**Q.** Would you have looked at the PEWS scores which, as I understand it, are kept by the nurses?

**A.** I normally do not scrutinise all the charts for PEWS scores. There are limitations to PEWS scoring, and I think the child was probably, let's say, suffering from different PEWS scores, meaning different things in different children. In particular, in Hayley's case, also, she was just over one year of age. Normally, children at one year of age weigh about 9 to 10 kilogram. However, Hayley only weighed about 6 kilogram. So, we plotted, or she was plotted, all her observations were plotted on a PEWS chart for the age group 1 to 5. One could argue she should have been plotted on a weight chart or a growth chart, or a PEWS chart, of zero to 1 because she was effectively only about 7/8 months of biological or physical age. If she would have been plotted on a PEWS chart of zero to 1 year, her scores would have been significantly lower than what they were being plotted on a 1 to 5 year old chart, and that is because in older children the heart rate is normally lower and the blood pressure is normally higher, but also the breathing rate in older children above 1 year of age is significantly slower than in children below 1 year of age. So, the PEWS score system, even though it is a good measure, I think one has to rather look at the trend, or look at rapid changes.

**Q.** PEWS stands for paediatric early warning system.

**A.** That is correct.

**Q.** And the idea is that you have observations so that you can identify whether there is a deterioration in a child's respiratory condition, general condition, is that right?

**A.** It is correct that the PEWS scoring system alerts to changes in overall condition. It's an accumulated factor, with lots of components going into it, and sometimes just physical examination is more valuable or what we called in the old days the end of the bed test is more valuable than PEWS scoring.

**Q.** But if you had been alerted that her condition had been deteriorating over the weekend, by looking at the PEWS scores, that would have fed into your end of the bed examination, is that fair? It would not have been the only criteria, but it was something that you would have taken account of?

**A.** Yes.

**Q.** And we can look at the PEWS scores, but it is clear that the amount of oxygen she required over the weekend increased - would you agree?

**A.** It increased from .5 litre to .75, and I think then 1 litre.

**Q.** I think it increased from .3 to .5 to .75 and then 1 litre. Is that fair? Would you like to see the scores?

**A.** No, I do not want to really go through all the scores. Looking through the notes, yes, it had increased from probably the 5th or 6th of November to the 9th of November, from .3, and again this is where I think that earlier instruction of taking an x-ray may have been beneficial.

**Q.** Not only did it show increased oxygen uptake but it showed that she had developed respiratory distress, albeit mild?

**A.** Well, it basically showed that she had increased oxygen requirement, or that her breathing rate also increased.

**Q.** And intercostal recession?

**A.** And mild recession.

**Q.** And that is where she is having to suck in the muscles between the ribs to breathe?

**A.** Well, she has to work harder to shift the air around, yes.

**Q.** And it was these changes that the family were concerned about and trying to raise with the medical staff, is that fair?

**A.** From reading through the statements, yes, that is a correct summary.

**Q.** And they alerted - this was the grandfather and grandmother, because the mother was not there during the grand ward round on the 9th - they raised these concerns with you on the 9th, did they not?

**A.** Yes, and I also examined Hayley at the 9th and I felt her work of breathing is more than what I would expect, I noted that her saturations were below 95% and that she also needed, I think, 1 litre of oxygen at the time. I was not informed that she was in .3 litre some 96 hours previously.

**Q.** So, what you are seeing is a decline over the weekend prior to the grand ward round, is it not?

**A.** During a grand ward round, I normally have to see 30 patients.

**Q.** No, I am sorry, that was not the question I asked you, Dr Stumper. What you are seeing is a decline prior to the grand ward round. Is that correct?

**A.** What I was presented on the 9th of November was a story about her previous cause and that she was getting slowly better. I have not examined the child prior to the 9th of November in detail, at the time of the ward round.

**Q.** If she was declining prior to your grand ward round, but you did not know that, is that important information which it would have been useful for you to have known?

**A.** When I saw Hayley on 9th of November at 11 o'clock, I asked for an x-ray, which I think was the first diagnostic test to instigate further treatment.

**Q.** Again, could you answer the question? Would that have been important information for you to have known?

**A.** I would have made the same decision in the sense that I would have requested a chest x-ray, first of all. I probably would have asked the physios at the time rather than waiting for the outcome of the chest x-ray, and I possibly also may have put her into headbox oxygen at an earlier stage.

**Q.** Thank you very much. And this was precisely the concern that the family were trying to raise, was it not?

**A.** From reading the statements, yes, that was the concern.

**Q.** Now, you asked for the chest x-ray. Did the family also ask for that and was it in any way their prompting that caused you to ask for one?

**A.** Well, looking at Hayley and seeing her breathing and also hearing her story, and I do not remember whether I asked when did she have the last x-ray, but I felt an x-ray was indicated at the time. But it is true that I remember that the family were very upset and let's say pushing towards it, but my clinical opinion and judgment certainly did not let's say contradict this, and I certainly would have asked for an x-ray at the time, irrespective of what the family said to me at the time.

**Q.** The x-ray gets reported at 1600 hours, sorry, 1800, at 6 p.m. on the 10th, is that right?

**A.** Well, I do not know when the x-ray was taken but the x-ray is basically available shortly after it's been taken.

**Q.** You had to chase it, as I understood your evidence earlier. You said, "Has the x-ray arrived? Has anyone looked at it?" And then you looked at it at 6 p.m.

**A.** About that time. Possibly 5.30.

**Q.** And the notes are filled out by your - is it the junior SHO, Miss Gupta?

**A.** It is the SHO, yes.

**Q.** And what I have got is, "X-ray reviewed with Dr Stumper. Massive consolidation left lung; volume loss right side 066." So, was it massive consolidation on both sides?

**A.** Well, the left chest, which was her good lung, because the heart was on the right, was let's say loaded with secretions and fluid, and the right lung certainly was partially compressed by the large heart.

**Q.** So, was the volume loss on the right side - 066 suggests to me two thirds of volume loss. Is that what it is trying to express?

**A.** No, 066 would normally mean cardiothoracic ratio, which is basically a measurement of heart size versus complete chest size.

**Q.** So, you have not specified the extent of the volume loss on the right side?

**A.** No.

**Q.** Those problems in the lung, would they have been there for at least a period of 24/48 hours? They would not have occurred suddenly, would they?

**A.** They were almost certainly accrued on chronic changes; chronic in the sense of her previous history and her previous problems in ICU. So, there would have been a chronic element, but probably also an acute element to it.

**Q.** I think the last x-ray - I am sorry, sir. I think the last x-ray had been taken on the 28th of October. Is that right?

**A.** I do not have that information available.

**Q.** I know it was in October. It may have been slightly later. Were you surprised that there had been no x-ray taken in the intervening period?

**A.** Considering Hayley's difficult postoperative period, yes, I would be somewhat surprised.

**Q.** And if you had ongoing changes, deterioration in the lungs, shown by the x-rays, that would be a cause of concern, is that fair?

**A.** Yes, it would be of concern.

**Q.** And the more the deterioration, the more the concern and possibly a referral to PICU - again, is that fair?

**A.** I don't think that Hayley triggered any of the parameters of PICU referral before the 9th of November. Hayley was transferred back from ICU, I think on the 31st of October, and if you say that her last x-ray was taken on the 28th of October - yes, she

probably should have had, warranted an x-ray after that, sometime on the ward. Hayley certainly had extensive physio on PICU. I do not know when Hayley was discharged from physio follow up or input after her stay in ICU or during her stay in PICU.

**Q.** But if you have a ----

**THE CORONER:** I am sorry, I need to know whether you are saying that the last xray was ...

**MR WEITZMAN:** Let me just check that. It was certainly within October. The 26th. I have one here dated the 26th, and we have not got any later ones in the notes that we have. I am sure that my learned friend can check and tell me if I have got that wrong.

**THE CORONER:** The 26th?

**MR WEITZMAN:** Yes.

**THE CORONER:** It may be changed later on, but at the moment you are being told that the last one was the 26th.

**MR WEITZMAN:** I do not want to put a false point, and I am sorry if there is a later one.

**MS LUCAS:** Sir, I understand that it was the 29th.

**THE CORONER:** Let's just stop while the two advocates sort out what it is that we are putting to this witness, so that we all know. (Pause)

**MR WEITZMAN:** Sir, the answer appears to be that the last radiographic report we have is the 26th but the electronic system shows something may have happened on the 29th.

**MS LUCAS:** Sir, Dr Plunkett said that when he looked at PACS, which is the electronic system, he noted there was an x-ray on the 29th.

**A.** What I am saying is, it is probably immaterial because she was felt to be well enough, and physio was quite happy with her, she was in oxygen when she was transferred back to the ward. At the time she was still on "Milinol", a drug to support her right heart, to make it stronger and to cope with the stress of these abnormal lungs and lung vessels, but that was weaned very quickly, which I believe is probably related to the fact that Hayley was changed over to ward 11. Initially, it was envisaged for her to go into a high dependency unit where we would have continued with the Milinol, but because, I believe on parental wishes, mum wanted to sleep next to Hayley in the same bed, we could not look after Hayley being on Milinol in the cubicle. So, it was weaned

down quite quickly and she was felt to be well enough, but certainly in children with her condition, if there is any concern about let's say breathing pattern, I think there has to be a very low threshold to do a chest x-ray. Now, quite often in this day and age people let's say shy away from doing x-rays because of the radiation risk.

**MR WEITZMAN:** If there are problems with breathing, low threshold for chest x-ray, and if you do a series of x-rays and they deteriorate, that is of concern - is that fair?

**A.** Yes, and certainly the chest x-ray taken on the 9th of November was significantly worse than the one before.

**Q.** And a deteriorating chest x-ray is one of the - I think you have described them as parameters - one of the criteria for referral to PICU. Is that right?

**A.** It can be. It can be one of the criteria to refer to PICU. The chest x-ray in Hayley certainly was something which I felt could be addressed effectively with physiotherapy.

**Q.** Well, let's come on to that. You say it could be addressed with physiotherapy, but you did not specify when the physiotherapy should take place. Is that right?

**A.** No, I failed to specify, "Get physio now" but my words were such, and I pointed out the dramatic changes on the x-ray, that I felt it was implicit to get physio at the earliest point in time.

**Q.** Because in fact the notes recorded at 6 p.m. on the 9th say that physio should be carried out on the 10th of November.

**A.** These were not my instructions.

**Q.** So, what has happened, just so that we are clear, is that you are with your SHO and she is making the note of what you are saying needs to be done and because of a failure of communication, she has asked for physio the following day, when you wanted it done that evening?

**A.** Yes, I certainly would have liked it to be undertaken that evening, looking at the chest x-ray, but it is true that I failed to say, "Get physio tonight."

**Q.** And you wanted it done that evening because the chest x-ray was serious and there was a pressing need for it?

**A.** Well, the chest x-ray certainly showed significant changes which I felt were perfectly amenable to physiotherapy.

**Q.** And there is no doubt that, if the mis-communication had not occurred, it would have been done that night?

**A.** Yes.

**Q.** And I think you told the Coroner that, had it been done that night, Hayley might have been spared the subsequent problems that she developed on the night of the 9th/10th, when she was attended by SHO Dawson - is that right?

**MS LUCAS:** I am sorry, I do not remember that being said. I remember Dr Stumper saying it would have made her night easier, but he did not say it would stop the problems.

**MR WEITZMAN:** My apologies. I will clarify it. Thank you very much. We know that on the night of the 9th/10th, Hayley suffered a period of serious respiratory distress at 2 o'clock in the morning or thereabouts. Would you agree?

**A.** I did not see Hayley at that time, but Hayley certainly was, looking at the chart, was working hard throughout that evening and, yes, she was working that hard that a further x-ray was taken that night.

**Q.** Can I read to you the notes that the house officer made at 2.10: "Asked to see patient re respiratory distress. On examination, sternal recession. Grunting intermittently. Pale, clammy, CRT 25, respiratory rate 55, sats ..." - it may be 91, it is a bit unclear, "1 litre. Nose plugs. Sats 98. 1 litre. Nose plugs. Plus 5 litres facial. Heart rate 150." And the SHO was so concerned that she required the x-ray department to come up to the ward to x-ray Hayley. You are aware of those notes, are you not?

**A.** Yes, I am.

**MS LUCAS:** Sir, CRT is 2 seconds, not 25.

**A.** Yes.

**MR WEITZMAN:** My apologies.

**A.** CRT is capillary refill time. It basically describes how well the child is perfused. If you compress the finger, you see how quickly it lights up again. And 2 seconds is acceptable. Anything much longer than 3 seconds is worrying. Her breathing was up, her respiratory rate of 50 is certainly faster and the SHO on call that night did the right thing, i.e. get a further x-ray and also demand that the x-ray has been taken at the bedside.

**Q.** And that x-ray showed a further decline from the one taken at your request on the 9th, is that right?

**A.** That is correct, and these two x-rays were probably 16 hours apart.

**Q.** For a child with the kind of complications that Hayley had which you have described, going through this event will have weakened her - is that fair?

**A.** Hayley recovered from what was very complex heart surgery, she was in intensive care for 17 days and, yes, she would have still recovered, or in recovery phase; she was not fit and well.

**Q.** So, to have this event on the night of the 9th/10th at 2 in the morning, as described by the SHO, will have been bad for her and will have weakened her abilities to cope?

**A.** It would have challenged her body and her breathing, and I think she coped with it, she coped with it reasonably well, which is reflected by the fact that her capillary refill time at the time was 2 seconds and also that the blood gas, which basically reflects the overall ability of the body to change gases but also to provide the body, the muscles, the tissues with enough oxygen and energy, they were within acceptable limits.

**Q.** The SHO at that point wanted to admit Hayley to PICU. Would that have been appropriate at that time?

**A.** Well, the SHO quite correctly thought: would she benefit from being in the intensive care unit? At least that discussion - that discussion had to be had or that thought had to be entertained at the time, yes.

**Q.** But she did not go because the registrar was relying on your consideration in the morning - again, is that fair?

**A.** That is incorrect. She discussed Hayley's case with the registrar. The registrar on that night was actually a registrar who previously had worked in PICU for a year, and basically his assessment was that at the time she would not fulfil the criteria of PICU admission. I did not see Hayley during the night of the 9th to the 10th of November, and equally I was not contacted at 2 o'clock or at the time of clinical deterioration. The SHO had done all the right things at the time; she entertained the thought, "Shall I refer her to ICU?" She has spoken to the appropriate senior member of the team at the time, who used to be a PICU registrar himself, only about three months before his commencement with us.

**Q.** So, you could have been called but you were not? You were on call?

**A.** I was on call and I could have been called.

**Q.** You did see the ----

**THE CORONER:** Just slow down and let me make sure that I have got that. We have

the SHO considering intensive care, referring to registrar, registrar considering, deciding not. Nobody consulting this witness, but obviously they would have been aware of what was in the notes. Is that a fair summary of where we have got to?

**MR WEITZMAN:** I think it is, yes, sir.

**A.** Who would have been aware of what's in the notes?

**THE CORONER:** Presumably, the senior house officer and the registrar would have been aware from the hospital notes of the decision that you had made earlier that day? I know that they did not refer to you, but they would have been aware of what was in the notes?

**A.** Well, they would have looked at the notes and they would have seen the x-rays and almost certainly would have agreed with the concept or with the need for Hayley needing physio, but at 2 o'clock in the morning, physio is not available, and Hayley was reviewed on Tuesday the 10th of November, very early in the morning, by the physiotherapy team, two senior members of staff, who have again reviewed all the xrays and decided they can improve and clear the secretions with providing her with physio. The physiotherapy team and also reviewing the x-ray from 10th of November, at 2 o'clock in the morning, decided she was not a case for CPAP. CPAP is continuous pressure support for the airways, i.e. we try and keep the lungs open. And that would have been the treatment which would have been probably instigated would we have referred Hayley to PICU at the time. I do not know as to whether the consideration of Hayley possibly having H1N1 was also a factor contributing to the decision not to transfer her to PICU. Her gas at the time certainly was suggesting that she was coping with the situation, and I am also not aware what the bed status was in PICU that evening.

**MR WEITZMAN:** You saw the x-ray taken during the night, the following day on the 10th.

**A.** That is correct.

**Q.** Can you remember what time you saw it?

**A.** No.

**Q.** And you noted the deterioration on that second x-ray.

**A.** Yes, there was worsening compared to the one before, and I admit that I got a bit frustrated that physio was not provided on Monday evening, but by that time I saw the

x-ray, she was receiving physio. The physios discussed whether to put her on pressure support and decided against it. The physios basically decided that these are secretions and we can improve her by providing her with physio. We provided her with higher dose oxygen and later on during that day also we gave her headbox oxygen.

**Q.** Certainly, during that day, the 10th, the family remained concerned and I think the grandmother expressed very serious concerns to you about the state of Hayley's lungs. Is that right?

**A.** I saw Hayley on the 10th of November whilst the surgeon was addressing, cleaning the wound. Hayley was very upset at the time and Hayley's grandmother approached me and fairly emotionally expressed her concern about her lungs, and the family were very, very worried, and I appreciate that. With the surgeon redressing the wound and Hayley also becoming fairly distressed at the time, I basically tried to convey to the family that we are providing her with physio and we have to wait a bit longer or be a bit more patient for things to get better. I deeply apologised to the family that this has come over fairly harsh, because I at the time of the 10th of November was also fairly busy in the cardiac lab; I was not available all of the time on the ward.

**Q.** You have told us about criteria for a referral to PICU and the Coroner has identified in the report that they say that on the 10th of November, Hayley should have been referred to PICU, and in response to that assertion, you say she did not meet the criteria. What do you say the criteria were for a referral to PICU?

**A.** Well, a child who is struggling and who is expressing signs of not coping with the support, the level of support we can provide on the ward, and acute sudden deterioration triggering let's say very rapid response.

**Q.** I mean, earlier on in response to my questions you indicated that, because her blood gas levels were normal, a referral was not necessary.

**A.** No, I pointed out that even though she was working hard, she was suffering from, certainly on the 10th of November, we suspected she may have a viral infection. We had to entertain the concept or the idea of, could she have H1N1? This is why she was kept in isolation. She was coping with the situation. We provided her with physiotherapy, we provided her with let's say headbox oxygen, at a higher rate because oxygen is a very powerful drug, we added further antibiotics and Hayley improved during the course of the 10th of November 2009. At no stage would she have triggered

in the afternoon of 10th of November, would she have triggered PICU admission. I discussed her case independently with some of the ICU people outside and they agreed to me with, when they looked at the chart, that there wasn't any let's say strict trigger to refer to ICU after midday on the 10th of November 2009.

**THE CORONER:** When was this discussion? At the time or after the death?

**A.** No, after.

**Q.** After her death?

**A.** Yes, and after where I have previously mentioned or stated my unhappiness that I was not involved in it.

**MR WEITZMAN:** You have just made reference to the charts. Could I ask you to look at page 649, which I think is our exhibit C2. One for the Coroner, please. Can I check - sir, do you have that, please?

**THE CORONER:** Just tell me the reference number.

**A.** 651 or 649?

**MR WEITZMAN:** I am afraid there appears to be a double print at the bottom of the page, sir. But if you look at the top, is it the one for the - it starts, "8th", top left hand corner and then it is the 10th?

**A.** Yes.

**Q.** Do you have that?

**A.** Yes.

**Q.** And certainly you are familiar with the calculation of these, are you not?

**A.** I do not calculate PEWS scores in my regular clinical practice.

**Q.** If we look at 10 o'clock on the 10th - do you have that please, Dr Stumper?

**A.** On the 10th?

**Q.** Yes, please.

**A.** 10 o'clock, yes?

**Q.** Yes. We see that, in the bottom, Hayley was crying - do you have that? Where it says "temperature", there are some notes written. It is rather faint.

**A.** Yes.

**Q.** And then if we run up from there, we see the PEWS score is 6, do we not? Keep going up. She is noted to have mild respiratory distress. She is in a headbox with 38% oxygen and then do you see the next entry, it says, "86% oxygen saturations"?

**A.** Yes.

**Q.** That is wrongly entered, is it not?

**A.** Sorry?

**Q.** That is wrongly entered. If you look across, where it says, "SPA2", that is in the line for greater than 95%. If it is in fact 86%, it should be at the top of those rows, less than 91%?

**A.** Yes, if the reading or, sorry, the number 86% is correct at the time, it should have been plotted further up. Having said that, the preceding readings or the adjacent readings are 98, 97, then one or two afterwards, 95, 97. The 86 is a reading which is completely out of these batch of figures, in particular considering that the oxygen in the headbox was down from 48 to 38.

**Q.** Dr Stumper, it does say 86%, does it not?

**A.** I read it as 86. That is correct.

**Q.** And I did not make this chart. I am just going to ask you about the numbers that are there entered, rather than speculating. And if it is 86, it should be in the top, which would score 4 rather than 1. You are basically adding another 3 or 4 to the PEWS score, are you not?

**A.** Yes, and if we would have plotted Hayley on a PEWS score of 021, she would have scored 2 points less than previously.

**Q.** That is not what I am asking you. Please, as the Coroner asked you, would you answer the question, Dr Stumper? She would have been scored at 9, would she not?

**A.** Probably. If the reading of 86 is correct, and if it is correctly recorded.

**Q.** And if she had been scored at 9, the PEWS response guide says, "Scores at 9 or greater, very concerned. Call patient's own team or hospital at night if no response or unable to attend immediately. Call PICU." Yes?

**A.** That is correct. Having said that, at 10 o'clock, Hayley received, I believe, her first physiotherapy session, so if the drop in saturation to 86 would have caused, would have been caused by the physio actually mobilising lots of secretions, that could have led to a transient reduction in her saturations.

**Q.** If she had respiratory distress at 10, as identified by the PEWS scores entered, that was something that the cardiology team would need to know about in determining whether or not she needed to go to PICU, is it not?

**A.** Yes, but we would have made a clinical judgment and repeated the gas, rather than act solely on the PEWS scores.

**Q.** I accept that, but unless you have all the information, you are handicapped in making the full decision - is that fair?

**A.** Yes.

**Q.** If we look at the full report that the hospital compiled, at page 560, I have it - it is paragraph 4.1.4. I am going to read it to you. Do you want me to make sure that you have a copy, sir?

**THE CORONER:** Yes, I need the witness to have a copy so that he can see what you are reading.

**MR WEITZMAN:** Certainly.

**THE CORONER:** Tell me again the reference while your solicitor is looking it up for me.

**MR WEITZMAN:** I am so sorry, sir, I did not hear you.

**THE CORONER:** Sorry?

**MR WEITZMAN:** What did you say? I did not hear you.

**THE CORONER:** Tell me the reference while your solicitor is looking it up.

**MR WEITZMAN:** I have got it at page 560 in the bundle that we provided, and paragraph 5.1.4, and that paragraph covers a number of pages and it is immediately before section 6, it is the page before section 6, sir. Dr Stumper, I am reading from the top of the page, please. "The review ----

**A.** Can I confirm then that it is page 560, starting with, "The review team"?

**Q.** You can. Thank you very much, Dr Stumper.

**A.** Thank you.

**Q.** "The review team noted that by the morning of the 10th of November 2009 the patient was clinically in distress. There was a perception amongst the cardiology doctors that there were five criteria for admission to PICU, of which one is a poor blood gas count. The others were reported to include the patient looking unwell, increased oxygen requirements, increased work of breathing, worsening x-rays. This is not the case. Patients are admitted within a range of other critical conditions based on the overall clinical context. The cardiology registrar discounted admission to PICU because the patient did not meet all of the five perceived criteria, even though they met the other

four. It was also noted that the patient's chest x-ray showed worsening bilateral changes which would in itself be concerning." Now, both in the early morning and throughout that day all four criteria were met, i.e. Hayley was looking unwell, she had increased oxygen requirements, increased work at breathing and a worsening x-ray - the only one that was not met was that the capillary blood gas count was normal. And applying those criteria, both in the morning and later on the 10th, Hayley should have been admitted to PICU. Would you agree?

**A.** I do not agree.

**Q.** In your statement to the Coroner, the second page, halfway down the substantive paragraph, you say, "I saw Hayley late afternoon on the 10th of November 2009"?

**A.** Yes.

**Q.** "And despite her being in a degree of respiratory distress, I felt that we had taken all the right steps to make her better. Her blood gas and further blood results did not suggest an acute deterioration which would have required ICU admission at that stage." Dr Stumper, in your statement you make it plain that the criteria you considered as relevant for admission to ICU was the blood gas, and that is precisely the mistake that has been picked up by the Trust's own report.

**A.** This is not correct. I have written this report on the 19th of January 2010. That was in response to me being informed that Mr Cotton wanted to hold an inquest into the tragic death of Hayley. I have written this report before the examination and also before restudying all of the relevant notes. This, as you point out, is a very extensive paragraph, and I have compressed a lot of the information which went into that one long paragraph. At no stage is the blood gas the only criterion for ICU admission.

**Q.** Well, you say specifically there, "The blood gas did not warrant a referral to ICU", do you not?

**A.** This is what is written in that letter.

**Q.** Well, it is your letter.

**A.** Yes, dated 19th of November, 19th of January 2010. Now, can I draw your attention please to the fact that the preceding and following observations, the saturations, were all above 95%? And also her respiratory distress was plotted as "mild" up to 4 o'clock on the 11th of November. Her capillary refill time was 2 to 3 seconds throughout, and some of the PEWS scores certainly after your cited 10 o'clock reading certainly are in

the sixes, as has been said before. Her blood pressure remained stable, her heart rate is fairly steady, below 130/140, up to 6 o'clock on 11th of November, and then there is acute, sudden deterioration, which was reacted promptly upon.

**THE CORONER:** Mr Weitzman, I am going stop it there and we will take a break at this stage.

**MR WEITZMAN:** Thank you.

**THE CORONER:** So, it is now 11.26, which brings us back at 11.41. Thank you.

(Short break)

**THE CORONER:** It is now 11.41, so the case is in session again.

**MR WEITZMAN:** Dr Stumper, you told the Coroner today, and I confess that I had not fully understood it, but you think that the problems were due to difficulties in Hayley's heart which resulted, which could not be properly cured by the surgeon. That is a very layman's paraphrase. Have I failed to do what you said justice?

**A.** Certainly, looking at her postoperative course and also reading through the statement - how she was born, when she had the shunt and so forth, and also considering her weight at 5.8 kilograms on admission - to undertake complete surgical repair in the context of the heart being over there, the veins, having to do the surgery under what we call circulatory arrest rather than bypass conditions, was a very, very major undertaking, and even though it was intended to be the cure to her heart condition, it came at a greater risk; a greater risk for postoperative complications, but also greater risk as possibly not surviving the surgery or the let's say time in hospital.

**Q.** When I was cross-examining the pathologist yesterday, I asked him, and he seemed to accept, that it was a problem in the lungs which caused the dilation of the right ventricle. Do you disagree with that?

**A.** Yes, I disagree with that.

**Q.** Can I ask you to look at a letter dated 1st of February 2010. This is your letter, Dr Stumper, of the 1st of February, sent to Miss Barbosa, who is risk manager at the Trust, yes?

**A.** Yes.

**Q.** So, it is written very shortly after the statement that you provided to the Coroner on the 19th of January. Yes?

**A.** Yes.

**Q.** And I am going to read from the paragraph at the bottom of the page, over the page, which I hope gives a complete picture.

**THE CORONER:** Before you do it, I want the doctor to have a chance to read the whole thing himself.

**MR WEITZMAN:** Sir, I will stop - that was my point. I will wait for that to be done.

(Pause) We can now turn over the page to 541, the second part, and pick it up from the first full sentence. Sorry, let's go back: "Repeat chest x-ray on the 10th of November 2009 showed further worsening of the left lower lobe consolidation. Lung collapse or consolidation increased the workload on the right ventricle. However, as Hayley's right ventricle was used to work as systemic pressure levels (having had repair of pulmonary atresia VSD only some three weeks ago) I felt that her right ventricle, despite the recent ventric colotomy, should have been able to cope with this increased workload. Thus, the management approach of improving her chest and ruling out infection, including the commencement of antibiotics, was correct. At a preliminary respiratory decomposition, I would not have commenced her on inotropes on the 10th of November 2009." Now, as I understand it, Dr Stumper, you there are saying that the problems with the right ventricle were caused by the lungs, and you felt that the right ventricle, because of the history, was not at risk - is that fair?

**A.** I think that's confusing the issue and let's say muddling things up. The heart and the lungs work together and it is correct that if the lungs are consolidated/congested they put extra pressure on the right ventricle to pump the blood through the lungs. Having said that, the lung arteries in Hayley were small. The pathologist yesterday described them as being dilated, but that is the situation after surgery, when Mr Brawn enlarged the whole area with the patch. Also, and I referred to that earlier, the right ventricular - normally, we would put a valve into it, as a connection between the right ventricle and the lung arteries. In Hayley, there was only something called a monocost patch, which is a patch which only has one lever, but this does not prevent the blood going back to the right ventricle and doesn't prevent the need for higher filling pressures - the fact that her liver is enlarged. Certainly, the first couple of scans or ultrasound studies on the intensive care, she has what we call restrictive physiology. So, where the right ventricle is, because of the thickness and the markedly increased weight of her heart, the thickness of the ventricle, it needs higher filling pressure. But these are common things

after repair of pulmonary atresia VSD and also re-perfusion injury of the lungs happens in about 50% of these cases. We know this. But depending on how the child reacts to it, and let's say how we deal with it, what happens with it. But also, in this whole context of it, this is where my suggestion came: was it the right thing to go for corrective surgery at the time, even though the stitching or the plumbing had been very good?

**Q.** Dr Stumper, firstly, in that letter, in the second paragraph, you say, "There were good sized branched pulmonary arteries without any distal conduit obstruction."

**A.** These branched pulmonary arteries, they were of good size after the patch enlargement of the central pulmonary artery. It is incorrect to use the word "conduit" because Hayley has had what we call a monocost patch rather than a conduit. I have to apologise for that.

**Q.** And then at page 541, the second part of the letter, you go on to say, "Lung collapse or consolidation increased the workload on the right ventricle." So, you were clearly there saying problems in the lung increased the workload on the right ventricle, were you not?

**A.** Yes, further increased because the lungs and the heart work together.

**Q.** And you were treating the lungs, were you not?

**A.** Yes.

**Q.** You were not treating the heart at this point. You did not prescribe any medicine for the heart, did you?

**A.** Well, Hayley at the time was on three times daily diuretics, which get rid of fluid in the body, and also reduce the, let's say the amount of fluid in the blood vessels, reduce the pressure in the heart, reduce the back pressure on the liver. Hayley was also on a drug called "Amilorite" ...

**Q.** She was not on Amilorite at the 9th and 10th of November, was she? That had been stopped when she moved to ward 11, from ward 12?

**A.** No, this is Amilorite, this is not "Milrinone", which is a drug which we would probably have liked to give. Having said that, after two or three weeks giving Milrinone, the body more or less gets used to it and you should not indefinitely give it, but Milrinone is a drug you can only give intravenously, so this is not ideal in a child in postoperative recovery. There are, unfortunately, not many drugs in our cupboards

which we can give orally or by mouth to specifically support the right ventricle. As stated in this letter, her right ventricle was thick walled because it worked at systemic pressures all of her life, and after the surgery, the pressure in the right ventricle has reduced and basically there was enough muscle mass to pump the blood around. What has changed after the surgery was that the right ventricle which used to pump blood mostly to the heart, suddenly was filled back, with every beat, or every time it relaxed, was filled by the incompetent pulmonary heart.

**Q.** That does not appear in this letter, does it?

**A.** No.

**Q.** And what you say in the last sentence of the letter is - and I think you have slightly mangled your language, but, as I understand it, "At a primarily respiratory decomposition and with that I would not have commenced her on inotropes on the 10th of November." As I understand it, what you are saying is that, "The problem is in the lungs, so I'm not going to give her inotropes for the heart" - is what what you are saying there?

**A.** Yes, I did not feel that she required commencement of inotropes because we, I felt we could improve her situation dramatically while providing her physio, as has turned out and as has been clearly documented in the notes later that evening on the 10th of November.

**Q.** So, in effect, you are treating her lungs, because you prescribe Augmentin and physiotherapy, Augmentin for the infection in the lungs, and we have a history of respiratory distress, which is going up or down. If you have problems in the lungs that are reoccurring, is it not better to refer Hayley to intensive care so that, if there is a sudden deterioration, the right people are immediately there to deal with her?

**A.** I, as I said before, I felt - and this is based on near enough 20 years experience in paediatric cardiology and looking after patients with pulmonary atresia - Hayley at the time, I felt we could improve her dramatically with providing the routine treatment we would give children with her problems on the ward.

**Q.** Hayley's situation was unstable at best, was it not?

**A.** Hayley's situation, certainly in the night from the 9th, Monday the 9th to the early morning 10th, was let's say difficult. She coped with it and she improved dramatically on Tuesday the 10th after her first and, in particular, her second physiotherapy session.

Her clinical status was much improved towards midnight on the 10th of November, to the effect that, upon the request to restart the milk feeds again, the medical team consented to that and her continuous intravenous fluids were weaned down and she was restarted on the feed, in agreement with the family and the medical team. Now, the request to restart her feed, I believe, even though I was not present at the time, was raised by the family. And we only would have consented to that if her clinical status would have improved by then.

**Q.** You were not there at the time, so you are simply reporting what other people may have told you?

**A.** Well, if you are a consultant cardiologist and you are on call for a week, you work in the team and you have to take the information and the assessment and the information you are being given by various members of the team at various times.

**Q.** Dr Stumper, I am not being critical. I am just saying that is the basis of your knowledge, yes?

**A.** Yes, and reviewing the charts.

**Q.** Now, what we see on the morning of the 11th is that Hayley has sudden and severe respiratory problems, yes?

**A.** Yes.

**Q.** The SHO takes blood gas, goes to PICU and then the PICU comes to the ward, yes?

**A.** Yes.

**Q.** And so, the kind of deterioration which was foreshadowed by the difficulties you have identified occurred, and had she been on PICU, the monitoring would have been greater and the support greater and that deterioration could have been avoided. Would you agree?

**A.** Hayley improved very significantly on the afternoon and in the early evening on the 10th of November. She was not on ICU at the time and we would not have been able to accommodate her on ICU with the clinical status she was in on the 10th of November, in the evening. Otherwise, we would have to admit half of the patients who are on ward 11 at Birmingham Children's Hospital after complex heart surgery to ICU.

**Q.** And that is precisely why the Trust's own report recommended that she be sent to ICU on the 10th, is it not?

**A.** No, the Trust report suggested that she should have been reviewed by ICU at the

time. The PICU team probably at the time, when they would have seen her on the 10th, would have agreed the continuation of headbox oxygen and intensified physio, would have had a good likelihood or chance to improve her clinical condition, as in actual fact it did.

**Q.** Thank you very much, Dr Stumper.

**A.** Thank you.

**THE CORONER:** Ms Lucas.

Questioned by MS LUCAS

**Q.** Thank you, sir. Dr Stumper, just on that last point, there seems to be a little bit of confusion. Is referring to ICU the same as admitting to ICU?

**A.** No, these are two separate things. Referring to ICU is discussing a child's clinical condition, PEWS scores, x-rays with the PICU team, including the gases, and that can then trigger, and it not necessarily has to, and certainly in 2009 it wouldn't have necessarily triggered, a review in person by the PICU team, and it certainly would not be the same - the PICU review does not equate to PICU admission.

**Q.** And is it correct to say that there are, as in all children's hospitals and other hospitals in the country, limited beds in ICU?

**A.** Yes, there is always finite space in PICU.

**Q.** Is that why children are not routinely just admitted to ICU but are actually referred and considered?

**A.** No, ICU is a place of high therapy and support, but it's not let's say very close to the normal life of a normal child of one year. There's always lights on, there's lots of intervention, noise and so on in ICU - unless we need it, it's not a nice place to be, and certainly you have to get a child back to the normal ward with lower dependency or a lower level of support before being even able to consider discharge. You can't discharge normally from PICU.

**Q.** You mentioned that PICU is not a nice place for a child to be. Are there contraindications or complications that can occur for children going into PICU when actually it is probably not the most appropriate place for them?

**A.** ICU is a location, but ICU is also the management we do with these children, and normally children on an intensive care unit are, first of all, ventilated on the breather, they have a central line, they normally are on anaerobes and so on. It's a spectrum of

clinical conditions and the severe, the extreme need for invasive support that qualifies somebody to go to ICU.

**Q.** So, am I right in thinking that you do not just send children to ICU, to put them on ICU in case somebody needs to be around if they deteriorate, but you send them to ICU because they need a particular intervention or a set of interventions?

**A.** Yes, it's more the intervention and, as I said, in Birmingham we have the biggest experience with pulmonary atresia and so on, and we look after a lot of children who are as sick as Hayley on ward 11, on a regular basis - as sick as Hayley certainly was on the 10th of November 2009.

**Q.** Thank you. Can we have a look at physiotherapy. My learned friend has referred to physiotherapy involvement. Physiotherapy last saw Hayley on the 4th of November and at that point they discharged Hayley from their care. If physiotherapy staff have concern that a patient needs their assistance when they review them, do they regularly come to you and ask for a chest x-ray or for further review if they are concerned?

**A.** Yes, once we involve the physiotherapy department - they are a group of highly skilled people and practitioners and they work relatively independently. So, it would be rare that I personally as a consultant would speak to them, but there is certainly good communication between the physio and the more junior doctors in the team. And, yes, they are the ones who provide the input, physio input, to mobilise secretions, improve chests and so on and, yes, if they would ask or think that things got worse and then an xray may be helpful in the planning of therapy, then they would do so, and they would have to, because x-ray, because of radiation, this is a medical procedure and it has to be requested from a medic, so they would contact one member of our team, the SHO or the registrar, to write the form, and I am not aware that a request for a chest x-ray by a physiotherapist would be declined by anyone in the team.

**Q.** So, if a physiotherapist, as you said, is an independent practitioner, comes to you or to any of your colleagues and says, "I'm concerned here that we may need another chest x-ray because of the way this child's condition is going", then your colleagues would take that very seriously?

**A.** Yes, and we would certainly support the physiotherapist to obtain the x-ray.

**Q.** If we look at the times that you went to see Hayley, on the 9th and the 10th of November, is it fair to say that you knew Hayley was not very well and you were

concerned about her?

**A.** Yes, that is correct.

**Q.** As were your colleagues. So, we are not in a position here where you are expecting Hayley to, after the surgery she had, to have an easy ride after that surgery?

**A.** Well, the problem for me in looking after Hayley between the 9th and the 11th of November was really the fact that I was not involved in review of her preoperative angiogram, and in the immediate postop period. To the best of my knowledge, I first saw Hayley on the 9th of November and let's say the more I look at these notes, and certainly I have looked at these notes after, also in writing my letter to you, Mr Cotton, and to Nina Barbosa in February 2010, it was, the more I looked through the notes, the more let's say I learn also about the complexity of her heart, which in part here I think has predicted some of the problems she experienced in the postoperative period.

**Q.** Is it fair to say, however, that now, looking back, you have seen her condition, is it fair to say that if you had had that knowledge when you saw Hayley, that it would have made any difference to the treatment you were providing to her on the 9th and 10th of November?

**A.** If I would have been involved in the initial discussion when she was accepted for surgery, where it is stated quite clearly that we have concerns about the state of her right lung arteries, her size and also noted that she had them on both sides, the heart was on the right chest and so on, and we at the time agreed that she should have further imaging of her lung arteries before attempting surgery, and surgery at that stage was clearly defined as possibly complete repair, but it may be safer, the alternative would be just to enlarge the lung arteries and put a shunt in here - if I would have been involved in that discussion and with my experience in looking after these children, I probably would have insisted on getting the information before making that decision. I may have, in hindsight, taken her to the cardio catheterisation lab and repeat the angio which Dr Casey did six months ago, almost six months ago. And six months in the life of Hayley was half her life. So, the lung arteries could have even looked worse at the time Mr Brawn performed the surgery. I would have liked to have seen the lung arteries before making that decision, and from my perspective, I probably would have thought that attempting complete repair in the overall context of her condition and so on would be a high risk procedure, and I would have considered alternatives to it, in retrospect, I have

to say.

**Q.** I know that you are not a cardiac surgeon, but from your experience of cardiology, if Hayley had not have been able to have that procedure because cardiac catheterisation had shown the poor size of her pulmonary vessels, what would have been the options for Hayley, who clearly needed to have something done to her heart?

**A.** Since 2005 we have treated a number of these children with catheter techniques rather than bypass surgery, and in particular we would have been able to enlarge the shunt which was on the left, or overcome the narrowing from the shunt towards the right lung artery. Equally, as Hayley had a tiny trickle of blood going from the right side pumping chamber to the lung artery in 2011 and 12, our treatment of choice would have been to enlarge that passage from the right ventricle to the lung artery, with a catheter technique, thereby providing more blood flow to the lungs, addressing the blueness here, and also gradually introducing again more blood into the lungs rather than taking the risk of what we call re-perfusion injury after complete repair.

**Q.** You mentioned there in 2011 and 2012. Would that have been an option in 2009?

**A.** It could have been, yes. We started doing these procedures in about 2005.

**Q.** So, is it correct for me to say that when you saw Hayley, and by this time the surgery had been undertaken and Mr Brawn is going to attend the inquest to give evidence on that, by the time you saw Hayley, she had had the surgery and when you saw her, if you had known the possible, or the issues with her blood supply to her lungs, would it have effected the treatment that you provided for what you saw with Hayley on the 9th or the 10th? Could you have done anything differently that was available to you then, looking at the symptoms Hayley had on the 9th and 10th?

**A.** No, these are thoughts and let's say considerations I can have now after studying the notes in great detail. On the 9th of November, I was given the story, complex pulmonary difficulties, they had difficulty in ICU, smaller child, slowly recovering, and I see a child who is clearly working harder than what I would like her to breathe after that repair, and basically we asked for the right examination at the right time. I think we provided therapy by and large at the right time. I expressed my frustration and apology that we failed, or that I failed to request physio the evening of the 9th of November. Having said that, she improved after receiving physio on the 10th of November and in the evening of the 10th, towards the 11th of November, she actually, from what I gather

from the notes, even though I have not reviewed her myself, she actually was doing pretty fine until about 6/6.30 in the morning, when she had an acute, sudden collapse.

**Q.** So, is it your view, Dr Stumper, overall, that the care that was provided on the 9th and the 10th, the plan that you put in place for physiotherapy and to augment the antibiotics with some different antibiotics, is it your view that that was the right plan for Hayley at that time and that the results later on the 10th, until midnight on the 10th, actually confirmed that that plan was the right one?

**A.** Yes, and also I think, again, it's very important to point out that, yes, we had concern that she may have a viral infection, we were at the height of the H1N1 epidemic, and she had to be isolated and she had to be investigated as well, if she had the H1N1. That was one of the possibilities. It was the right thing at the time.

**Q.** Can I ask you a little more about that. In 2009, I remember, there was a lot of fuss about swine flu and we were all seeing it in the news every day. I know now we look back and think it probably did not become as bad as everyone was suggesting it was going to be, but in 2009, swine flu was a big issue for the NHS - is that correct?

**A.** That is correct.

**Q.** And am I correct also in saying, from memory of that time, that Trusts, and particularly Trusts such as the Children's Hospital, who had an ICU, and so a lot of children who developed swine flu had to go to intensive care for ventilation, is it correct to say that it was proving to be quite a burden in managing these patients on the NHS at the time?

**A.** It was a huge burden. It was a huge burden with regards to finding enough PICU beds. I think at the time we struggled largely to operate on other children with heart disease because there were just no ICU beds. I remember that some children with very severe chest infections and suffering from H1N1, whose lungs had to be supported on a special pump called "EKMO". There were no single EKMO beds for children in the UK. Some children had to be flown out to Sweden. It was a huge, a huge disaster, and a very difficult time. Over the night of 9th and 10th of November 2009, we had on average 19.5 on the 9th and 20 patients on ICU on the 10th. That, again, is the maximum physical capacity of 21 at the time.

**THE CORONER:** Just say that one again.

**A.** We had on intensive care, during the night of the 9th to the 10th, there were 18.3, on

average during the day, 18.3 patients and on the 10th it was 19.6 patients, with a total open beds of 20, physical, staffed beds of 20, I think.

**MS LUCAS:** Can I go back to what you said about Hayley's size and particularly how that relates to the PEWS charts. My learned friend has referred to the PEWS charts quite often today and the scoring as a result of the PEWS charts. Listening to what you said, which you did not go into in any more detail, is it the case that if a child is aged 1, that they would normally be in the PEWS chart that is aged 1 to 5?

**A.** That is correct.

**Q.** Was it, from what you said, the case that, even though a child could on a chronological age be 1 to 5, that actually the PEWS charts are more accurate when they relate to their age, taking account of their size and other things as well?

**A.** I don't ... I'm not the best person to ask about PEWS charts, but all I'm saying is that you have to make a cut-off somewhere, and the cut-off is at 1 year. Now, somebody - Hayley was plotted on a chart for 1 to 5 years of age. So, she would have been plotted along the same borders or parameters as a 3 year old. So, that means the respiratory rates, the rate of breathing you have in a 3 year old is significantly lower than in a below 1 year old. Yes? The heart rate in a 1 year old or six month old child is higher than in a 3 year old. You have to make a cut-off point somewhere. Now, in retrospect, we probably should have said, "Despite her birthday having been early October and she now technically being 1 year of age, let's plot her on a below 1 year of age because she only weighs 5.8 kilogram at admission." A normal 1 year old child weighs about 9 to 10 kilograms. She did not. And had we plotted her on a below 1 year chart, the parameters for heart rate and respiratory rate actually would have been less, and some of the scores would have basically suggested she did not have any respiratory distress, but because we plotted her on the above 1 year old child, yes, she always checked as mild respiratory distress.

**Q.** And is it correct to say that, with - I know at the time the PEWS scores were quite new and they were seen as a brilliant new invention to try and have some - as much as possible, objective way of looking at whether children were deteriorating or not. But is it fair to say that a child on ward 11, so a child who had had cardiac surgery and a rocky post-surgery time on ICU and then gone to the ward, is likely to have triggered the PEWS score quite regularly, even though they were actually relatively stable?

**A.** Yes, there are a fair number of patients with cardiac disease who can have moderately elevated PEWS scores, and to some extent running at levels which are stable. If the child is well, it is not what triggers anything. What should trigger review or further discussion, or further management, and management which can be provided I think in near enough any clinical stage - that is equipment and experience of it - what should trigger management review is basically acute, sudden change in the PEWS score. It's not the overall value. And, again, it is important not to get too hooked up upon a single measurement which is out and which does not fit in. We are all human. It depends whether a child is crying, coughing or anything like that. We are trying to - in the observation charts, and especially if observations are only taken every 2 or 4 hours ... 120 or 240 minutes of observation are being compressed into one single figure, which is then even prone to potentially human error when transcribing it or in which box to put it. We can't dissect out the clinical practice to that extent.

**Q.** So, is it correct - sorry?

**A.** No, and, equally, going through the notes, again, I have to say that the only thing that's available in this court is whatever is written in the notes or filed in the notes. Hayley was seen by a huge number of people throughout the day, who may not have written in the notes, who may not have documented it. Some of my conversations with the registrar aren't documented in the notes. Some of the registrar's discussion with the physiotherapy department isn't recorded, because if we were to record every single thing, we would not see any patients.

**Q.** So, is it correct to say that PEWS scores, observation charts, they are seen as part of the whole evaluation of a child, all the information that you have is taken into account, along with speaking to the parents, seeing the child themselves, speaking to other members of staff who may have had some involvement - that is all taken together, and if you try to dissect all of that, it can often give an incorrect view of the care that is being provided?

**A.** Yes, and it's the whole machinery that works together, and if Mr Brawn is renowned to have excellent results in the treatment of pulmonary atresia VSD, then that is correct, but it is the entire team, including all the people in theatre, the ICU, it's also myself as a cardiologist, for that matter, who are contributing to it and, most importantly also, the nursing staff on the ward. We as a team know what we are doing and, unfortunately,

despite our best efforts Hayley passed away.

**Q.** Thank you. I have no further questions, sir.

**THE CORONER:** Thank you very much, Dr Stumper. Take a seat, if you would.

(The witness withdrew)

**THE CORONER:** Dr Plunkett, please.

DR A. PLUNKETT, sworn

Questioned by THE CORONER

**Q.** Tell me please your full name and your full medical qualifications.

**A.** My name is Dr Adrian Christopher Plunkett. My qualifications are Master of Arts, MBBS, which is a medical degree, and I'm a Member of the Royal College of Paediatrics and Child Health.

**Q.** When did you first qualify as a doctor?

**A.** I qualified in August 1999.

**Q.** And tell me how long you have specialised in paediatrics.

**A.** I specialised in paediatrics from 2000.

**Q.** Tell me how long you have been at the Birmingham Children's Hospital.

**A.** Since October 2009.

**Q.** And you are registered with the General Medical Council.

**A.** Yes, I am.

**Q.** Now, what I am going to suggest is that you take us through your report, but when you are going through it, if there are things that you think you can usefully add, then feel free to do so. Okay?

**A.** Yes, sir. I, Dr Adrian Christopher Plunkett, of Birmingham Children's Hospital - this is my first statement relating to the care and treatment given to Hayley Fullerton during her admission to Birmingham Children's Hospital on the 12th of October 2009 to the 11th of November 2009. My qualifications are MA, MBBS, MRCCPH. I obtained full registration with the GMC in August 2000 and I have been a consultant in paediatric intensive care since July 2009. I have been employed by Birmingham Children's Hospital since October 2009. I am currently employed as a consultant paediatric interventionist. I have held this position since October 2009. My duties involve clinical management of patients in paediatric intensive care.

I remember the care I provided to Hayley Fullerton and, therefore, my

statement is based on both recollection and medical notes.

**Q.** Can I just check - can everyone in court hear? Yes.

**A.** During Hayley's admission to the Birmingham Children's Hospital my involvement was as the consultant for the paediatric intensive care unit on the following dates: 19th to the 23rd of October and 25th of October - they were dayshifts, so office hours. The nights of the 27th to the 29th of October, which was nightshift, so around 4 p.m. and finishing the following morning. And the 24 hour period on the 31st of October, which was a weekend. I also attended the emergency call at the time of Hayley's cardiac arrest on the 11th of November 2009. I have included information about Hayley's medical condition and detailed information about her admission to the paediatric intensive care to give a detailed background to Hayley's case. A significant proportion of this information comprises information gathered from the medical notes.

The background of Hayley's history prior to PICU admission is as follows.

Hayley Fullerton was 1 year old at the time of her admission to paediatric intensive care. She had been referred to Birmingham Children's Hospital from Northern Ireland by Dr Frank Casey, a paediatric cardiologist, for management of her cardiac condition; pulmonary atresia with ventricular septa defect. She had previously undergone cardiac surgery in Ireland - a modified shunt and closure of ... in December 2008. The purpose of this operation is to increase blood flow to the lungs. Subsequent to this surgery, a cardiac catheterisation study was undertaken to plan the next stage of surgery. So, this is the study that was done in Northern Ireland. Following this, she was referred to the cardiac team at Birmingham Children's Hospital and surgery was planned. The cardiac investigations showed - and this is a summary - dextro position of the heart - that means, as Dr Stumper was explaining, the heart was on the right side of the chest, pulmonary atresia with ventricular septa defect, with confluent branched pulmonary arteries and left pulmonary artery stenosis. The shunt. A left superior vena cava connected to the coronary sinus to the right atrium. This anatomy has been covered by Dr Stumper. The left superior vena cava is one of the draining veins, it's normally on the right but she actually had two, but one on the left which was dominant. No significant multiple aorta pulmonary collateral arteries - we usually refer to them by the acronym of MAPCAS. They are fairly common in patients with pulmonary atresia VSD, but there were none in Hayley's case that we could identify.

She was admitted electively to the cardiac ward in Birmingham Children's Hospital on the 12th of October 2009 for preparation for surgery. Echocardiography was undertaken and surgery was planned for the 14th of that month. The following cardiac surgery was undertaken - again, this is an abbreviated summary. RVDPA conduit with monocost valve - which Dr Stumper has explained is a connection between the right ventricle and the pulmonary artery in order to allow blood flow into the lungs from the right ventricle. VSD closure to the ventricular septa defect, it was closed. The modified BT shunt was clipped, so that the previous shunt that had been placed was therefore not required any more and it was clipped. Bilateral VSC. So, the left and the right superior vena cava was confirmed. The sternum was left open postoperatively - so, now, this is back in intensive care after the operation - for delayed sternum closure. That is standard practice after a big cardiac operation like this, to leave the sternum open and close it within 24/48 hours, or sometimes later. It allows time for the heart swelling to subside. The theatre team noticed that the CBP cannulation - that means putting a canula or a line in the central veins (we call it CBP because it is pressure monitoring) - was very difficult in the neck. The right internal jugular vein could not be seen on ultrasound, and that is the usual method of identifying a vein. We know that's because that side was smaller, and it's conventional to place the catheter on that side. There was evidence of superior vena cava obstruction, which was evidenced as dilated superficial veins in the chest wall. So, the veins in the chest wall were larger than normal, and that would suggest that there was some obstruction somewhere in the vena pathways. A central vena line, a catheter for infusing drugs and measuring vena pressure, was placed in the femoral vein. So, that's one of the veins in the groin. Normally, we would place it in the right internal jugular vein, and the anaesthetist placed it in the groin as an alternative. That is typical in cases where we can't access the leg. There was some oozing (bleeding) in theatre immediately postoperatively but this improved with blood platelets and cryoprecipitate. So, they are standard blood products that are given for postoperative bleeding. A thrombelastogram - that is abbreviated as TEG - in theatre was reported to be normal. This is a test of the blood's ability to clot. So, we can assume after the treatment that her blood clotting was normal. Hayley required adrenalin infusion at .15 micrograms per kilo per minute initially after the operation. This was reduced to 0.08 micrograms per kilo per minute by the time of admission to

paediatric intensive care. A Milanone infusion was also running. Adrenalin and Milanone are inotropic drugs. The purpose is to assist the function of the heart. They are used in this situation as standard practice.

The postoperative management in PICU, in the intensive care unit, was as follows. The initial postoperative course, day 1 postop, was stable and the medication to support her heart function (that is, again, adrenalin and Milanone) was weaned to a level of support that is typical for a patient with this condition on the first postoperative day. The postoperative echocardiogram showed good heart function. That is a summary really, but it showed overall global contractility, or that the function of the heart was good, and satisfactory surgical repair. On day 2 postoperatively, so we are now at the 15th of October, the amount of support required for the heart had increased slightly; the adrenalin requirement had increased. This would have suggested that more time was required for the recovery of the heart. Therefore, closure of the sternum was postponed by 24 hours. Hayley's condition improved and the sternum was closed on day 3, that is the 16th of October. The procedure was well tolerated, i.e. the circulatory system tolerated the closure of the chest wall. Sometimes, when we close the sternum, we discover the circulation isn't adequate at that point, and then reopen the sternum. So, in Hayley's case, the sternum was successfully closed. Support was further weaned following the procedure and feeds were restarted. So, it suggests that at this point Hayley was moving in the right track and progressing. Thick secretions were noted from the tracheal tube on the 16th of October, but no increased ventilation requirement at this stage. The presence of thick secretions is suggestive of respiratory infection, but it is not a sensitive marker of infection on its own. Infection would be supported by other changes such as blood test markers and fever. Since these changes were not present, Hayley was not considered to have an infection at this stage. On day 4 postoperatively, the 17th of October, Dr Martin, one of my colleagues, a consultant, was asked to resite an arterial line. Arterial lines are very important for monitoring blood pressure and providing a site for sampling blood in an intensive care patient. The previous arterial line had been recently removed from the right brachial artery - that is the artery in the arm. Because of signs of poor perfusion and decreased pulses in the distal limbs. So, this is suggestive of a clot in the artery at the site of the arterial line, and removal of a line in this situation is standard practice. This is a well described

complication of arterial lines and it is not related to the condition of the circulation as a whole; i.e. this poor perfusion of pulses in the limb are not indicative of poor cardiac function. The arterial line was removed and perfusion to the arm was monitored clinically and by Doppler ultrasound. That's just a method of monitoring blood flows using ultrasound. Doppler ultrasound detected brachial and ulna pulse. So, there was flow in the artery that the line was removed from and in one of the two arteries supplying the hand. It's usually adequate to have one of those arteries open, without compromising the hand. But no radial pulse was detected - so, that is the other artery to the hand. Heparin infusion was started. This is standard practice for the management of this complication, and the perfusion and the pulses had improved by the 19th of October 2009. I have not said this in my report, but that would suggest that this wasn't a clot, because if there was a clot in the artery, that would take, usually, weeks to resolve. So, this was probably a spasm of the artery, which is more of a temporary complication.

Her ventilation was weaned throughout the day on the 17th of October. So, this is day 4 postop. With a plan to remove the ventilator. We sometimes call that extubating, where we take the tube out of the patient's trachea. However, Hayley deteriorated with signs of infection of the respiratory tract, i.e. pneumonia. This is sometimes referred to as lower respiratory tract infection or chest infection. These terms are used interchangeably in clinical practice. In view of possible infection, samples were taken for culture to identify the cause of infection. Blood, urine and secretions from the breathing tube were cultured. The liver function tests - I will refer to them as LFTs - were also noted to be abnormal at this time. The liver was also enlarged on clinical examination, and echocardiography showed evidence of high right atrial pressure. High pressures on the right side of the heart are common in pulmonary atresia and could explain the enlargement of the liver and abnormalities on the liver function tests. The abdomen was also noted to be distended, but abdominal x-ray did not reveal any pathology. The abdominal x-ray findings excluded an abnormality with the bowel which might require surgery - that was the reason for doing the abdominal x-ray. So, therefore, we needed another cause for the abdominal distension. The abdominal distension was attributed to, (a) liver enlargement, as mentioned earlier, and, (b) slow bowel activity associated with systemic illness - not an uncommon finding in intensive care patients.

Despite the apparent deterioration on the 17th of October, Hayley rapidly

improved on day 5 postop - that is the 18th of October - and the adrenalin infusion was discontinued. The ventilation was weaned and then ventilation was removed at midnight. So, she came off invasive ventilation at midnight. The decision was taken on the grounds of minimal requirement for ventilation support. After removing the ventilator, Hayley's breathing was supported by non-invasive ventilation, which comprises pressure air and oxygen delivered to the mouth and nose via a face-mask. So, technically, that is still a form of ventilation, but it's not invasive, in the sense that there is not a breathing tube inserted into the trachea. So, we consider that a step down in the support. The type of non-invasive ventilation employed was CPAP - that stands for continuous positive airway pressure. Hayley deteriorated at 3 o'clock in the morning on day 6 postop, i.e. only three hours later, with breathing difficulty and increased oxygen requirements. She was therefore put back on the ventilator; she was re-intubated. This was the day I came on duty, so that morning was my first encounter with Hayley. The chest x-ray following re-intubation revealed bilateral collapse and consolidation. So, areas of both lungs showed some collapse. That doesn't mean the lungs were entirely collapsed, but it does mean there were areas of collapse and consolidation. The difference between collapse and consolidation is that, in collapse, the air is absent from the breathing tube and the breathing sacks, and in consolidation, the breathing sacks are actually full of fluid or mucus or pus. Signifying a possible infection. A second x-ray taken approximately 8 hours after the re-intubation showed that the breathing tube had been placed a little too deep - approximately 1 centimetre. A possible consequence of a tube being placed too deep in this situation is to cause further collapse of the right lung. Actually, it could cause collapse - most typically, it causes collapse of the right lung, that is why I have indicated that, and Hayley did have a collapse of the right upper lobe, which is classical of having a tube slightly too far. This complication was noted on the second x-ray and the tube was appropriately adjusted. This is a commonly seen complication of intubation, and it is one of the reasons that we take frequent chest x-rays of ventilated patients. The tube repositioning was managed in an appropriate way.

**THE CORONER:** Let me just stop you there for the moment. You say at the beginning of that page, "The chest x-ray following re-intubation revealed bilateral collapse/consolidation." Can bilateral collapse or consolidation result from a tube being put in too deep?

**A.** Technically, that's possible, but we very rarely see that. The usual complication of a tube being placed too deep is - the classical complication; either collapse of the right upper lobe or a complete collapse of the left lung. The latter of those two is when the tube is very far too deep and actually placed in the right main bronchus. So, the trachea comes down, separates into a right and left bronchus. If the tube is placed considerably too far in, it goes down, typically the right main bronchus, and the left lung therefore doesn't get any air and will completely collapse. It is pretty unusual to see that, but that is a described complication. In small babies, the distances which the tube can be placed too far in can be a matter of 1 centimetre - which was the case here. I should also say ---  
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**Q.** Hold on. Just give me an indication of what 1 centimetre looks like.

**A.** Do you mean show you?

**Q.** Yes, show me.

**A.** It's like that. And 10 millimetres.

**Q.** Yes.

**A.** In Hayley's case, on this particular occasion, we adjusted the tube by 5 millimetres, so half a centimetre, and subsequent x-rays showed it was in an appropriate position. It also wasn't in the right main bronchus, it was at a position in the lung called the carina. The carina is just where the two bronchi divide. The ideal position for an endotracheal tube is about 1 centimetre above the carina, and her's was at the carina on the x-ray. So, I think it's likely that some of the lung collapse resulted from the tube being a bit long. I certainly don't think that it would explain bilateral collapse and it certainly has no, there is no connection between the tube being too long and consolidation. It doesn't explain the lungs filling up with mucus and pus.

**Q.** Were you here yesterday when Paula's statement was read?

**A.** No, I've read the statement but I wasn't here in the morning.

**Q.** If you have read her statement, you will know that she felt that that was a very significant thing that had happened and she wished she had brought it to the attention of Mr Brawn and other people and regretted that she did not. How significant do you think it is?

**A.** I don't think it's significant. I think it's significant in the sense that she had to have the tube readjusted, which would have potentially set back her course on a ventilator by

somewhere between 30 minutes and a few hours. The reason it takes a bit of time to recover from having a tube readjusted is because we usually have to give some heavy sedation, a short acting anaesthetic. I have recently looked at how many times we adjust tubes in intensive care, and it's between 10 and 15% of patients that are tube adjusted. It's very common. And what we don't see is permanent consequences of that. The consequence of a tube being too long causing collapse is always transient.

**Q.** I am just putting down what I think is a fair summary of what you have said, so if it is not, tell me. The tube being placed too deep played no part in Hayley's death but it would have caused her some problems, which she recovered from.

**A.** I agree.

**Q.** Is that a fair summary?

**A.** Yes.

**Q.** And it goes without saying, it would have been better if it had not happened, but how does it happen? How does someone get a tube a centimetre too deep?

**A.** Well, when we intubate a patient in intensive care, the majority of times it's done as an emergency. Compare that with intubations that are done in operating theatres, where the majority of cases are electively intubated. So, that adds a bit of stress to the operator, the person who is putting the tube in, and then we normally - there's two ways of assessing how far in the tube should go. One is to directly visualise, or directly see it go between the vocal chords as you place the tube into the trachea. So, you literally look at that with your eyes and see it, and there's a mark on the tube and we standardly put that below the vocal chords and no further. So, that's one way of doing it. The other way of doing it is to use formulas or to see where the tube was previously in the same patient. Formulas are based on age. My personal preference is not to use a formula but to do it under direct vision, but it's standard practice to use formulas by other people. That may have been what happened in this case because Hayley was small for her age; it's plausible that the distance that the tube was required to be placed was overestimated because she was 1 year old but weighed significantly less than an average 1 year old.

**Q.** So, I think you have answered the next question I was going to ask, which is: how do you know how far to put it down?

**A.** Sorry, I thought I'd answered that. So, it's really those two methods and that's all. There is actually a third method, which is that, after the tube has been placed, you

examine the chest while the lungs are receiving ventilation through that tube, and if both chest sides are moving equally, then that's a good clinical sign that the tube is in the right place. Now, I don't know, I wasn't there at the time, it's possible that the tube was moving - sorry, it's possible that the chest was moving appropriately at that point because, as I have said, the tube was at the carina, it wasn't in either of the main bronchi. There is another - may I go on?

**Q.** Yes.

**A.** There is another point, that tubes also move over time because the method by which we fix the tubes, we use tape that's elastic. The reason we use elastic tape is so that, as it's bound to the tube, it holds it with some force, but over time that elasticity is lost and it's quite - we quite frequently find that a tube has migrated, even within a space of a few hours and we have to re-tape the tube. Some patients have multiple tapes in the space of just a few days.

**Q.** And you say in here that this is one of the reasons that you take frequent chest xrays.

**A.** Yes. So, after placing one of these breathing tubes, we will always take a chest xray for the very reason of checking where the tip of the tube is, because we know that our methods are not precise.

**Q.** So, go back to where we were. This is something that caused the family great concern. It should not have happened, but it did. But you are saying that, in your professional opinion, it played no part at all in Hayley's death and, although it would have caused her some problems, they were problems that she would have recovered from?

**A.** That's what I'm saying, yes.

**Q.** I know it is what you said. I just need to make sure I have got it right for later on. I stopped you at point 10.

**A.** A broncho alveolar lavage, BAL, was undertaken to look for respiratory infections, and broad spectrum antibiotics were started. So, these are antibiotics that we use for the vast majority of infections that are required in intensive care. Cultures from the specimen revealed no growth, i.e. no sign of infection. BAL is a standard method of examining the lung for infection in our PICU. However, the sensitivity of the test is not 100%, so, although it revealed no growth, it does not exclude infection. Since the index of suspicion was fairly high for infection at this stage, a full course of antibiotics was

given. Other measures to deal with the collapse and consolidation of the lungs were undertaken on the PICU. These included mechanical ventilation and regular physiotherapy.

On day 7 postop, the 20th of October, Hayley had improved again, only requiring minimal support, signifying the lungs had rapidly recovered. The liver function, sorry, the liver blood tests, LFTs, remained abnormal, however, and the abdomen remained distended. Although the LFTs were abnormal, they were starting to normalise and continued to improve throughout the admission. In view of the overall improvement, the ventilator was removed again and CPAP was restarted at 1513 on the 20th of October.

**Q.** Let me just stop you again. Why do you keep - sorry - why do you try to get babies off ventilation? Why do you not just leave them on for a week or a fortnight or however long?

**A.** The main reason is that it's not the physiological way of breathing. Probably the main risk of being on a ventilator is that the breathing tube goes through the vocal chords, and the vocal chords form a natural barrier to infection and they also allow you to generate enough force in your lungs to cough. Both of those things prevent infection. And we know and it's well documented in children and adults that the longer one is on the ventilator with the tube through the vocal chords the higher the chance of infection, and that continues to increase exponentially. So, the longer period of time you are on the ventilator, the risk of infection significantly increases. So, as soon as the patient is on what we call minimal ventilation, and we have fairly standard definitions of that, and if they are comfortable with their breathing, then that's the trigger point that we will try them off the ventilator.

**Q.** So, within reason, the sooner the better?

**A.** Yes. So, point 12. Hayley was not able to breathe adequately on CPAP and required ventilation again on day 8 postop, 21st of October, at 3.40 a.m. So, that's 12 hours after being extubated. Again, chest x-ray and clinical findings were consistent with bilateral collapse and consolidation. The right lung more so compared with the left lung. Thus, she had failed to wean successfully from the ventilator on two occasions, and on both occasions there was evidence of lung collapse and consolidation. Infection is one possible cause, but another possible cause is paralysis of the diaphragm - a

recognised complication following some cardiac surgery. An ultrasound scan of the diaphragm was therefore undertaken on the 21st of October. This was normal, excluding paralysis of the diaphragm. We didn't have a high clinical suspicion of that, but we were doing that for completeness. The respiratory status rapidly improved again following re-ventilation. In view of the fact that Hayley had demonstrated a tendency to recurrent lung collapse and consolidation, we made a plan to try to avoid this following the next extubation by using BiPAP, a form of non-invasive ventilation which provides more pressure than CPAP. The ventilator was removed again at 8 a.m. on the 23rd of October - that is day 10 postop - and BiPAP was commenced. Initial assessment after removing the ventilator revealed evidence of a recurrence of the right upper lobe collapse and consolidation. So, the problem had come back again after coming off the ventilator for the third time. However, on this occasion Hayley did not require reintubation and the non-invasive ventilation was continued and slowly weaned over the next week. The right lung improved over time. During this weaning phase, the liver function test normalised - a sign of liver recovery. Hayley showed some signs of withdrawal symptoms from weaning morphine - this is often observed in children who have required sedation for extended periods, i.e. more than one week. "Clonidine" was added to the medication. That is another drug that we often use when we suspect there are withdrawal symptoms from morphine - to facilitate weaning from morphine, and sedation was adjusted to aim for a return of the normal sleep/wake cycle. Antibiotics were changed on the 27th of October to Floxicilyn as the placing wires - the placing wires are left in situ after the operation, and they are a potential risk for infection. They appeared infected and staphylococcus aureus - that is a common bacterium - was isolated from swab from this area. This was a localised infection and not related to the recurrent lung collapse. Hayley was discharged from intensive care on the 31st of October 2009, on day 18 postop. At the time of discharge, she had not required noninvasive ventilation for over 24 hours - it was approximately 36 hours, I think. The chest x-ray appearances had improved. This is referring to the chest x-ray on the 29th of October. She continued to receive Milrinone at .5 micrograms per kilo per minute. She was tolerating enteral feed but had some diarrhoea and nappy rash. The sternal wound was requiring regular dressings and she remained on Floxicilyn. Hayley remained on the cardiac ward for the rest of her admission.

**Q.** I think what I am going to do is to stop it there and then we will start again after lunch. It is now five to 1 and we will start again at 2 o'clock.

(The short adjournment)

**THE CORONER:** The court is now in session.

DR A. PLUNKETT, recalled

Questioning by THE CORONER (continued)

**Q.** Dr Plunkett, we will continue with your evidence. We had reached page 9 and you had just read out paragraph H, so we are on to paragraph I.

**A.** I was not involved in her care on the cardiac ward until the cardiac arrest call on 11th of November 2009. I attended the arrest as the paediatric intensive care consultant. I had been on call the previous night and was handing over to the day team when the crash call was made. A crash call is a call to someone to help urgently for a patient who is extremely unwell. The crash team includes doctors and nurses from many specialities, including paediatric intensive care. I responded to the crash call immediately. I estimate my time of arrival was within two minutes of the crash alarm being sounded on our pager system. On my arrival, I found Hayley was in cardiac respiratory arrest; no signs of circulation or breathing. She was being managed by the resuscitation team led at this stage by Dr Richard Neil, one of the PICU registrars, who is now a PICU consultant at Birmingham Children's Hospital. Dr Neil had intubated Hayley (placed the breathing tube in the trachea) and was administering ventilation with an anaesthetic circuit with 100% oxygen. Just to clarify that, that doesn't mean he's giving anaesthetic; we use a circuit to administer oxygen. Cardiopulmonary resuscitation was underway; chest compressions and ventilation. As the most senior doctor present, I took over leading the cardiac arrest management. On arrival, I checked the breathing tube position by assessing the chest movement on ventilation. However, the chest was noted to be very poorly compliant, requiring a very high pressure by bagging circuit. This was suggestive of a severe occurrence of lung collapse. Hayley did not have adequate intravenous access in situ at this stage, so an interosseous line had been placed in the tibia - so, that's a needle in the bone in the leg. This provides rapid and effective access to the circulation for administration of drugs. Adrenalin was given for the cardiac arrest by this line.

During the resuscitation attempt lasting 20 minutes, Hayley remained on

hand ventilation throughout - so, that means ventilated by hand using the circuit. CPR (that is cardiopulmonary resuscitation) continued throughout this time, except for pulse checks and very brief echo-cardiogram to exclude pericardial effusion - an echocardiogram is an ultrasound of the heart. The management of the cardiac arrest followed the international standard guidelines recommended by Advanced Paediatrics. Intravenous access was limited, so I placed a 22 gauge canula in the right femoral vein. So, I mentioned earlier, there is a needle in the tibia - I think we actually had two in the end because they didn't last very long. So, this is a canula I put directly into one of the central veins in the groin. Through which resuscitation drugs (that is bicarbonate adrenalin and calcium) were given. Interosseous access was also obtained prior to this, as described earlier. Interosseous access was obtained in both tibia. The first needle only lasted a few minutes, hence the insertion of the second.

After 20 minutes, the cardiac rhythm had deteriorated from PEA (that is pulseless electrical activity) - that means that the electrical activity in the heart is detected but there is no pulse; it's a cardiac arrest - to asystole, and that means there's no electrical activity as well, so it's also a cardiac arrest but it's a deterioration. Echocardiograms showed cardiac standstill; there was no evidence of heart activity. Blood gas taken from the line I inserted revealed severely high acid levels in the blood. The chest compliance remained very poor. Therefore, there had been no response to resuscitation. In agreement with the rest of the team, I ended the attempt at resuscitation and Hayley was certified dead at 8.15 a.m.

I offer my most sincere condolences. Prior to the 19th of October, I had not been involved in the care of Hayley. My last involvement was on the 11th of November 2009. I also provided a witness statement and contributed to the internal root cause analysis investigating Hayley's death.

**Q.** Let me ask you some general questions, and when you answer remember that I have no medical training, so keep it simple for me. It is clear from Dr Stumper's evidence this morning that what he is saying is that, whilst very significant surgery had been carried out to Hayley's heart, it was not a perfect heart; it had got very significant defects to it still. Do you agree with that or disagree?

**A.** I agree.

**Q.** And one of the principal defects to Hayley's heart was that one of the ventricles was

much thicker than you would normally find it.

**A.** Yes, the right ventricle was thicker than normal and there was also evidence during the intensive care admission that the right side of the heart, so the right ventricle, had not been working adequately at one point. That was when there was the liver function test and the liver was enlarged. Also, what was unusual, even though Hayley had undergone cardiac arrest, it's unusual not to be able to - given that we were there very quickly and in fact Dr Neil was actually there as it happened - it was unusual not to get some response, even if it doesn't necessarily mean the patient would survive; it's unusual to get no response from the heart. Which to me - and this isn't an expert opinion - but to me that signifies the heart was sick.

**Q.** Signifies what?

**A.** That the heart was unwell, and I suspect, given her anatomy and her previous course, that it was the right side of the heart that was failing.

**Q.** Now, when you have a heart like Hayley's which has become too thick on one part, presumably that is for life, it is never ever going to get any different, unless you have a heart transplant?

**A.** Actually, the heart - I mean, I'm talking slightly outside my speciality here, because we don't follow patients up in outpatients; we give them intensive care, we treat them acutely, deal with any reversible issues and then discharge to a long-term care, in this case with cardiology. But my understanding is that the right ventricle in this instance over time would undergo some degree of what we call remodelling, and I don't know to what extent it would normalise, but one would expect it may in the future ...

**Q.** It would improve.

**A.** Have improved.

**Q.** Yes.

**A.** It's a bit more complicated than that because, also, we know that there was regurgitation, so that the new valve, or the monoocious valve that was placed between the right ventricle and the pulmonary arteries - there was blood coming back. As Dr Stumper explained, blood goes into the lung and some of it comes back into the ventricle. So, the ventricle would therefore be exposed to higher volume, which means that, although the ventricular wall may improve, the ventricle itself might actually enlarge over time, which means, commonly in this situation, another operation would be

required at a later stage. That may be weeks, months or even years later.

**Q.** Yes. And just tell me a bit more detail what you mean: you start giving resuscitation and normally if you start giving resuscitation to someone whose heart has only just stopped, you would normally expect to get some response, even if it was only a shortlived response - is that right?

**A.** From my experience and also talking around with my colleagues, we attend cardiac arrests fairly frequently, the majority of which are unexpected, and it's quite common for us to at least get some response in terms of the heart function. What was unusual in Hayley's case was that the heart didn't respond but also it was very difficult to ventilate her lungs.

**Q.** Yes. And am I right in thinking that not all the arteries were in as good a condition as they might be expected to be in a child who was born without this problem?

**A.** Do you mean the pulmonary arteries, the arteries going to the lungs?

**Q.** Yes.

**A.** That's my understanding, is that the pulmonary arteries would be to some degree under-developed in this condition, and there may be multiple areas of narrowing such that in foetal life these babies often develop other ways of getting blood into the lungs, and we know that during the operation Mr Brawn had to patch the arteries to make them bigger.

**Q.** Now, I want you to, if you could, put things in perspective for us, to see if you agree with what Dr Stumper said. We know that Hayley had gone through a lot. Of all the children on ward 11 and ward 12, they have all come out of, presumably, intensive care?

**A.** Yes, many of them have. Some of them have come into ward 11 or ward 12 and don't require intensive care and others will come in before intensive care. But, yes, most of the, the vast majority of cardiac patients, after discharge from intensive care, will go to one of those two wards.

**Q.** Yes, and when they leave you, when they come out of intensive care, is it generally felt by families that it is a big step down to ordinary wards, or is it a natural progression which everyone accepts?

**A.** It's very commonly reported that families feel uncomfortable with the step down in intensity of care, and that's usually - I mean, I don't know the specific answer to this, but I think what is perceived is a reduction in nursing care because the ratio of patients to

nurse increases significantly. So, in intensive care, the level of monitoring and observation is huge; there's a one to one nurse to patient ratio, and often there's more than one practitioner round the bed. And compare that with high dependency or a ward situation, where there's at least two patients for high dependency and possibly four or more on the ward. So, yes, it's understandable that it is perceived as a step down.

**Q.** And yet Paula was also saying that when Hayley was on ward 12, she really thrived; she was talking about Hayley even playing peek-a-boo with her bib and loving the other children there and no longer pulling her hair out. Is that - I know that you are not working on that ward - but, I mean, is that something that makes sense to you, that children do actually improve better on the other ward?

**A.** Yes, I mean, I think that's expected. There's always, I'm always amazed at how quickly children bounce back from severe illness, to the extent that even in the high dependency setting, after stepping down from intensive care, you often get smiles from the patients. So, it doesn't surprise me, and it didn't surprise me, when I read that, that she had undergone a period of significant improvement.

**Q.** And then you remember that I was putting to Dr Stumper the family felt that Hayley had been on a steady downward path - I am not saying always downward, but steadily downward from, at the latest, the 6th of November and possibly earlier. They were saying that Hayley was getting worse and worse and worse, and they would keep on telling people, "You're not doing the right things, you're not covering her properly." From your reading of the notes, is that valid or is what Dr Stumper says correct for the 9th and the 10th, that she was very bad, or bad on the night of the 9th, the physio perked her up, she went through an improved period and right up to about an hour before her collapse, she appeared to be on a level and then suddenly collapsed? Now, if you have not read the notes or you are not able to interpret them, say so, but is that correct or not?

**A.** Yes, I had read the notes and during the root cause analysis, I was one of the panel members and we looked at the timeline. Now, there's only so much information you can get from the notes but, broadly speaking, I agree with that, and I think there was a period, as I think Dr Stumper said, and from what you have just said, there was a period on the 9th, the 9th night going into the 10th morning, at which she appeared to be alert, and then there was some improvement after that point. With the caveat that that is reading observation charts that are made on the hourly observations, and reading entries

in the notes.

**Q.** Yes, and, obviously, notes are important, but is clinical judgment, assuming it is the correct clinical judgment, is that something which encompasses the notes but also what you are seeing before you?

**A.** Yes, that's fair, yes. It's a sort of nebulous concept; clinical judgment I think involves a lot of subconscious recognition of parameters, when it is hard to put your finger on what they actually are. So, notes, observations, scores, verbal communication, but also clinical examination, but there's other factors which I can't really quantify. You build up clinical acumen with experience.

**Q.** And you heard the other point I put to him. I asked him whether, just as with lawyers, they stand up and tell me completely contrary interpretations of a very simple, an apparently simple piece of law, and yet they are both experienced, they are both doing their best, they are both giving their honest opinion - do you get that with the medical profession?

**A.** Yes, on almost every decision. Particularly in areas like management of congenital heart disease, where the evidence base is still quite small because, for obvious reasons, there are not many patients who undergo these operations and management. So, that's why we have a big team and that's why decisions are often made in big teams. It's usually a consensus view in the end.

**Q.** Now, you were not there when Hayley collapsed. I know that you were there quite soon afterwards, but you were not there at the time of the collapse, but does it surprise you that you can have a situation where doctors are looking at her and checking her even an hour before the collapse and they are saying she appears to be okay, and then suddenly something happens and the baby dies?

**A.** Yes, it is surprising, to be honest and, as I say, it was unusual that there wasn't some response to resuscitation, which I think was also surprising, which to me signified that there was some underlying lack of reserve or lack of ability to respond, which - my personal opinion is that the right ventricle wasn't adequate, you know, it's function wasn't adequate to respond.

**Q.** We have already been through people having different opinions, but assume you are right, assume that Hayley's right ventricle was not adequate: what difference would there have been if this had happened in intensive care rather than in ward 11?

**A.** Okay, so assuming that I'm right and the right ventricle couldn't respond, I don't - it's hard to imagine a different outcome. Yes, I don't think it would have made any difference because the ... It's very difficult to be sure about that, but the crash team, which comprises intensive care individuals, were there very quickly. Whether a few minutes, which is what we are talking about, would have made any difference, I don't know.

**Q.** This will probably sound rude, and it is not meant to be rude, but you say one cannot be sure - I question whether a doctor can ever be sure: you cannot really know whether someone is going to live or die; you may have an opinion about it, but you cannot know, can you?

**A.** No, that's true. It's all probability. It's usually based on experience.

**Q.** And, presumably, in your career you have had babies who you have feared will die, who do not and who actually thrive, and you must have had babies who you thought were okay, who sadly died - is that right?

**A.** That's true, yes.

**Q.** And, presumably, that is a common experience amongst doctors?

**A.** Yes, I agree.

**Q.** You cannot just walk into a ward in the Children's Hospital and say, "Those three children will die and the rest of the ward, it's all going to be fine"?

**A.** That's correct, yes.

**Q.** I know it is obvious to you, but you just need spelling it out for us ...

**A.** Okay. I mean, there are attempts to make models to predict outcome, and we have never achieved that model for any illness that applies to any individual. We use it to apply to a population as a whole and models for predicting outcomes for populations as a whole are actually quite good, but for individual patients, it's impossible.

**Q.** And talk about reserves for the very young and the very elderly because it seems to me from inquests I hold that, when you reach your late nineties, you have a similar problem, that you do not have reserves. Just spell out for us what "reserves" are, what they actually mean.

**A.** I think the two extremes of age sort of manifest in the same way, in that it would appear that patients who have got a severe illness suddenly lose reserve and suddenly deteriorate out of the blue sometimes, but I think the reasons are slightly different. So,

in elderly patients, as one ages, cells die, so organs become more and more dysfunctional; liver, kidney, brain, heart, lungs. And so, the reasons for them not having much reserve are fairly obvious in that situation, because there just aren't adequate cells ultimately. With children, on the other hand, if they survive acute illness, they rapidly bounce back because they have got - they haven't undergone cell death to anywhere near the same extent that elderly people have. And so, why we say that with children is that they use up their energy stores, usually, very effectively until they suddenly run out because they can't store much in the way of energy; they don't have body fat or muscle in which to store it. And it's at that point, where suddenly the reserves run out, and by that I mean the energy that makes the cells work. So, it's a slightly different cause but the manifestations are quite similar.

**Q.** Yes, and does the fact that Hayley was, we were told yesterday, was on the third centile and that she was underweight, significantly underweight for her age, does all this have a bearing, or is that irrelevant?

**A.** No, that does have a bearing, for the reasons I explained about energy reserves, because patients who are underweight or malnourished will have decreased stored energy, so they can't access it at times of stress. So, that will manifest as a sudden running out of energy supply.

**Q.** And are you able to give me any figures, for instance how many children underwent this type of heart surgery, not necessarily precisely the same, but curing a significant defect like this, and how many lived and how many died?

**A.** In our institution?

**Q.** Yes.

**A.** I haven't - sorry, I don't have, I can't confidently tell you the exact numbers, but I'm sure Mr Brawn would have those figures.

**Q.** Who will?

**A.** Mr Brawn. I could access them but I don't carry them around in my memory.

**Q.** And can you give me an indication of how Birmingham Children's Hospital rates nationally? How many similar, how many hospitals carry out this type of surgery, how many centres are there and roughly how many operations each?

**A.** The exact number of centres - paediatric intensive care and, in particular, paediatric cardiac surgery, which has to have an intensive care attached to it, is centralised. So,

there are regions in - for each region there will be one or maybe two centres. So, for example, London has currently three, likely to be two centres in the future, Birmingham has one, there's one in Bristol, there's one in Southampton, there's one in Newcastle and Liverpool and Glasgow.

**Q.** About eight or nine?

**A.** Yes, there may be - I may have forgotten one or two there, but that's the order of magnitude, and numbers of cases range between 3 and 500 approximately per year per centre, of which pulmonary atresia VSD is a small representative of that sample. I don't know the exact numbers.

**Q.** That is fine. The last thing. Paula was referring to a "broviac" line?

**A.** Yes.

**Q.** Can you tell us - well, tell me first of all whether it has got any relevance and then tell me what it is.

**A.** I forget the, what was mentioned in the statement, other than: should we have considered a broviac line when she was in intensive care?

**Q.** Basically, she was saying that she kept telling everyone on ward 11 that they needed a broviac line.

**A.** Okay. So, a broviac line is a central line, so it's a line that, a catheter that goes into the right side of the heart, usually one of the large veins draining into the heart, and then it's placed surgically as opposed to ones that we do in intensive care, and it's usually tunnelled under the skin, which makes it more secure and less likely to become infected. The benefits of the line for - if a patient requires frequent intravenous drugs or frequent blood sampling, but there are risks associated with the line; it's a difficult procedure to place the line and there's risks of bleeding and the line becoming infected or clotted. Yes, I'd say it's debatable whether Hayley should have had one. It certainly could have been considered, but with her anatomy, with her veins, which we know the right side, the vein was very difficult and very small, her left side drained directly into the coronary sinus, which is unusual drainage, and the heart was on the opposite side of the chest - I would say that significantly increased the risks of siting one of those lines. So, I think on balance we wouldn't routinely put in a broviac line in this situation.

**Q.** Did you consider doing it?

**A.** No. Personally, no, it didn't cross my mind, from memory.

**Q.** And looking back, do you think it should have done?

**A.** No, because I think - I mean, it's possible that she underwent the occasional drip being placed, which was a painful experience, which is regrettable, but I wouldn't like to put her through a general anaesthetic and a difficult surgical procedure just to avoid that. When it came to the resuscitation, it would have been more convenient if she had had more intravenous access, so a broviac line would have taken care of that, but we were able to put in two interosseous lines and I personally put a line straight into the femoral vein fairly quickly, so I don't think that hindered our resuscitation.

**Q.** And you remember also she was saying in her statement that when adrenalin was being given, it kept spurting out into her face?

**A.** I do remember that happening on at least one occasion. It's quite common when an interosseous line goes in to underestimate the amount of pressure that is required to push through because the resistance at the end of the line is much higher than it is on a drip, and that's possibly what happened; as someone was administering the adrenalin with a syringe - I've seen this happen many times: because the pressure builds up, it becomes disconnected and sprays. In which case, we reapply the dose. So, I suspect that's what happened.

**Q.** That is fine. Mr Weitzman.

Questioned by MR WEITZMAN

**Q.** Dr Plunkett, you have told us about reserves and you said that in children the energy gets depleted, the reserves get depleted, so if a problem arises they are less able to cope with it.

**A.** Yes, I think that's what I said. Yes.

**Q.** So, you have a situation almost like falling off a cliff; that suddenly the child runs out and it becomes immediately quite desperate and quite serious. Is that fair?

**A.** That is classically how it is described. Obviously, not in every case does that happen, but, yes, that is a well described problem.

**Q.** And with Hayley, as the Coroner points out, she was on the third centile, which is the low/average, I suspect?

**A.** Yes.

**Q.** So, that problem would have been apparent, that she would have limited energy reserves?

**A.** She certainly would have had limited energy stores, yes.

**Q.** If you go through a series of periods of respiratory distress, I would presume, and you will correct me if I am wrong, that they would deplete your energy reserves?

**A.** Breathing fast in small babies, including babies of Hayley's size, requires a lot of energy, and if energy stores are limited significantly, that could deplete energy stores rather quickly, which is why it's important to give feed and nutrition.

**Q.** When a baby is struggling for air, you get, first, mild signs, such as intercostal recession, then you get subcostal recession and then sternal recession - is that right?

**A.** That's the described sequence of increased severity. Again, that doesn't apply to every case, but that's commonly recognised.

**Q.** And those kind of signs are an indication of respiratory distress, that the baby is having to work harder to get the air and so the energy sources are being depleted?

**A.** That type of breathing. So, the higher one goes up that breathing ladder, the more energy one would require.

**Q.** So, we know that on the night of the 9th and 10th, because it is recorded by the senior house officer, the paediatric cardiologist senior house officer, she has a serious event where she has got sternal recession, problems breathing, more oxygen is needed, and that is the kind of event that would deplete energy stores, is it not?

**A.** Yes.

**Q.** And if the parents are right - and you have seen the timelines because you were the interventionist on the root cause analysis report - from the 6th, there was a gradually escalating respiratory problem?

**A.** Yes, we noticed there was an increase in oxygen requirement from around the 6th, which became a bit more significant on the 9th.

**Q.** All of that is going to deplete the energy stores?

**A.** I just want to be careful in saying it will deplete the stores, because it will require more energy - provided there is adequate energy being given, then it wouldn't necessarily lead to depletion of the stores. The other thing to remember is that, in addition to energy in the form of calories (which is usually from glucose), one requires oxygen, which comes from a different route.

**Q.** Yes. Hayley is not a child at this point in the chronology who is getting a lot of feed, is she?

**A.** Correct. I think there were points where feeds were stopped intermittently. I can't remember exactly how much feed she was receiving at that point in the timeline.

**Q.** Now, Birmingham Children's Hospital has developed a paediatric early warning system, and I think it was developed by Heather Duncan at your hospital, yes?

**A.** Yes.

**Q.** And that is a process to monitor for precisely the deterioration that we are concerned with here, is that fair?

**A.** Yes, the system is used to generate an early warning of a child deteriorating. So, I think that meets the definition you have just given.

**Q.** When you came to assist Hayley on the morning of the 11th, when you got there she was manually intubated, they were using the bag and air, trying to get air into both of the lungs, with little response, which showed a severe problem in the lungs themselves. So, there was an attempt to get oxygen into the lungs and it was not getting there. Is that fair?

**A.** Yes, I think some must have been getting in because we did, in order to check the tube position, we saw some chest movement, but we noted that there was a very high pressure, but there was - I would say that is fair, that there probably wasn't enough getting in.

**Q.** So, at that point either the lungs are collapsed or significantly consolidated or a combination of the two?

**A.** Yes, I mean, there are a number of things that cross one's mind in that situation, but I think they all lead to one of those sort of final pathways, which is collapse, either from the lung just losing volume or from a big pneumothorax, which is air outside the lung, or effusion, and, as you say, consolidation is also a possibility.

**Q.** Because she is not getting oxygen into the lungs to transfer into the blood, Hayley is, as it were, having to burn energy ... Well, the pH in her blood is going up, and it went significantly up from when the capillary blood gases were taken from her to the end of the process - that is right, is it not?

**A.** Yes, what you're referring to, I think, is acid levels. So, the pH goes down, meaning the acid level is going up. Part of that was because we couldn't get oxygen in and part of it was because we couldn't get carbon dioxide out.

**Q.** So, she is - am I using the correct term - anaerobically trying to respire for a

period?

**A.** Yes, there would have been anaerobic respiration, which means burning energy in the absence of oxygen.

**Q.** And that is a big drain on her energy levels as well, is it not?

**A.** True.

**Q.** So, you have got a situation where, when you arrived, there are real problems with the lungs and the supply of oxygen and then, as I understand it, the heart fails?

**A.** Yes. I don't know if that had occurred all at the same time. It may have done.

**Q.** Well ...

**A.** Do you mean prior to my arrival?

**Q.** When you arrived, had there already been cardiac arrest?

**A.** Yes. So, when I arrived, Hayley was receiving cardiopulmonary resuscitation with Dr Neil and the rest of the team.

**Q.** So, the precise sequence of events of the cardiac arrest relative to the deterioration of the lungs, we need to ask Mr Neil about?

**A.** Yes, exactly. He was there at the moment when it happened.

**Q.** And so, when you say you were surprised that there was not a reaction to the cardiopulmonary resuscitation, that may be because there was a problem with the heart, and you have identified the problem with the right ventricle, or it may simply be that by this point Hayley was so exhausted that the heart could not function any longer?

**A.** I think that's true, but I think the Hayley being exhausted in that sense would mean Hayley's heart was exhausted. Is that the question you are asking?

**Q.** It is, yes. She had got to a point where there was no more energy, she had got no more supplies to get her heart working in response to the attempted resuscitation?

**A.** That's correct, and I'm sure part of that was because we couldn't get oxygen in.

**Q.** So, it would be fair to say that this problem appears to have been consolidation/collapse of the lungs, lack of oxygen - I should start again. Sorry. Child with depleted energy - one?

**A.** Child with low energy reserves.

**Q.** Low ...

**A.** Sorry, to be pedantic.

**Q.** No, I am very grateful. Thank you. Child with low energy reserves. Problem with

the lungs preventing oxygen getting into the blood stream. Further depletion of the energy reserves, collapse of the heart because of lack of energy to power it?

**A.** Yes, that is the sequence of cardiac arrest.

**Q.** And the fact that the heart did not then respond, you say that is unusual, but in a child who has such depleted energy, it is not inconsistent with the history, is it?

**A.** Let me take a moment to think about that. I'm just thinking through my own experience of resuscitating children in this situation, which does happen from time to time. It's just that in the majority of cases there is some response. So, I still say that it is unusual.

**Q.** If you have a child whose energy reserves - sorry, what was your phrase?

**A.** Are limited or ...

**Q.** Reducing.

**A.** You'd have to go on with your question - I'm not sure what you're asking.

**Q.** I said that her energy was depleted, and you corrected me and said I was using the wrong phrase.

**A.** Yes, so, I was saying she had low energy reserves.

**Q.** Right, if you have got a child who has low energy reserves and has respiratory distress, that is a child looking for trouble and that is what the warning system is there to flag up?

**A.** The warning system is not specifically designed to identify patients with low energy reserves. That really only focuses on cardiovascular and respiratory parameters.

**Q.** But if a child has those problems and is small, one knows that they are at risk?

**A.** Yes, I think that is part of the global assessment; one would certainly include that in one's assessment.

**Q.** And if they are receiving more intensive support, in particular monitoring and maybe pressurised air support to the lungs, that may provide some assistance, is that fair?

**A.** Sorry, say the question again.

**Q.** If they are receiving more support, intensive care support, there are a number of ways in which you can assist the child so that they do not rely solely on their own energy to carry out the basic bodily functions?

**A.** Yes, that's true. That's what we do in intensive care; we provide organ support while

the child gets better on their own. One of the issues I have with this is that, although ventilation of some description, like invasive ventilation, will open up, potentially open up collapsed lungs or treat consolidated lungs, positive pressure ventilation puts pressure on the heart and specifically on the right ventricle, and there's quite a strong interplay and a well recognised decline in right ventricular function in patients who are receiving ventilation. That's why, when you, sir, asked me earlier if it would have made any difference of this had happened in intensive care, that was one of my reasons for doubting it would have made any difference.

**THE CORONER:** It would not have made a difference?

**A.** That's right. Because I wonder, even if we had ventilated Hayley, and, remember, this is just based on my experience and estimation of probability, is that the right ventricle would have suffered with the positive pressure ventilation anyway. And there are good physiological principles to explain that.

**MR WEITZMAN:** But that is on the assumption that the problem here was the right ventricle rather than a problem with the lungs.

**A.** Yes.

**Q.** Originating in the lungs.

**A.** Yes, that's true.

**Q.** Now, when Hayley was on PICU prior to her move to ward 12, she had problems with her lungs.

**A.** Yes.

**Q.** And you have described how you tried to wean her and on two occasions you needed to put her back on ventilation with a tube, and then, first using "BiPAP" and then "CPAP" ...

**A.** The other way round. CPAP the first time and ...

**Q.** Sorry, on the occasion when you were successful in weaning her, you first used BiPAP and then CPAP.

**A.** Yes.

**Q.** And, in effect, what you are doing there is providing different levels of pressure to keep the lungs open.

**A.** Yes.

**Q.** As you said, you are providing the support so that the body can get better. Yes?

**A.** Yes.

**Q.** And in Hayley's case, you were keeping the lungs open so that her lungs could get stronger, so that they could cope without that support - is that fair?

**A.** Yes, I hesitate to say the lungs would get stronger, but that is the principle of it, is that we provide that level of BiPAP and that CPAP in order to keep the lungs open. The lungs themselves obviously don't get stronger but the patient gets stronger and the muscles required for breathing would get stronger, and the nutritional status would improve, and one - well, we monitored the fact that the liver function got better, and one would hope that the heart function would get better. So, yes.

**Q.** And what you have with the lungs is, you have muscles around them, both the diaphragm and the intercostal, etc. muscles, and they are the muscles that create the movement of breath, so, as the child gets stronger because you are supporting the lungs, those muscles get stronger, so they are better able to breathe?

**A.** Yes.

**Q.** And that allows them, presumably - tell me if this is wrong - to deal with problems caused by collapse or consolidation?

**A.** Yes, it would do. If the muscles got stronger, the patient would be able to deal with those problems better.

**Q.** And that is what happened to Hayley when she was on the PICU?

**A.** Yes, so, she did require ventilation support for longer than normal in this situation. Whether it was her muscles - we are hypothesising whether it was her breathing muscles actually getting stronger over that time or we were just opening up more and more of her lung. I can't be sure.

**Q.** Can you explain that to me - opening up more and more of her lung?

**A.** Yes, so, what we noticed, both times that Hayley failed to come off the ventilator - in other words, both times she had to go back on - and in fact even on the third time that she came off, there was what appeared on the x-ray at least to be collapse of segments of the lung. In order to treat that, one opens up the lung by physiotherapy, sometimes delivering ventilation - there are other methods as well, such as positioning the patient in different positions to allow the lung to open up.

**Q.** And if that had been provided to her prior to the arrest on the 11th, the problems with the lungs which caused the cardiac arrest might or could not have - it could have

saved her, could it not?

**A.** I think it may have saved her. At least acutely in the ...

**THE CORONER:** Sorry, say that again.

**A.** Sorry, sir. I think, if we had administered ventilation at some point before she died, it could have saved her life, or at least in the matter of hours or days - whether long-term the right ventricle would have coped, I don't know, and I have some doubts that it would.

**MR WEITZMAN:** But certainly - I am sorry, sir.

**THE CORONER:** So, to be clear, you are saying that if Hayley had been put into paediatric intensive care on the 9th or the 10th, it may have saved her life then but you do not know whether it would have made a difference long-term, but you think it would not - is that what you are saying?

**A.** I have doubts about the, if the right ventricle would have functioned long-term, and for that reason I would say I have doubts that she would have survived long-term in that situation.

**MR WEITZMAN:** That is not something that you have raised until now, Dr Plunkett.

**A.** No. I mean, what I envisage, if we go down that hypothetical path, what might have happened is that we may have done some more cardiac investigations.

**Q.** Back on PICU?

**A.** Yes. I mean, they wouldn't actually have been done in intensive care; they probably would have been done in the catheter lab or a CT scanner.

**Q.** So, whilst she was in PIC, she would have been taken elsewhere for more cardiac investigations?

**A.** That could have happened, yes, and we may have identified other operations or some other procedure that we may have been able to have done to improve the right ventricle.

**Q.** Again, assuming that the problem is the right ventricle?

**A.** Correct.

**Q.** Can you look please at the root cause analysis report, and I am looking at the copy in bundle B, at pages 547 to 577. We have "overall impressions" on the first page, do we not?

**THE CORONER:** Sorry, what page are we looking at?

**MR WEITZMAN:** 547. Do you have 547? Bottom right hand corner, pagination.

**A.** I've got pages 400 ...

**Q.** I am so sorry. Which pages do you have, sir?

**THE CORONER:** I have got a copy of the full report, which starts at page 396 and goes on to 429.

**MR WEITZMAN:** Would you bear with me a second, please. Is that what you have, Dr Plunkett?

**A.** Yes, I've got the same.

**Q.** I can catch up with you and, if we need to look at anything else, we will. Using the pagination in the right bottom corner, can we look at paragraph 1.2, at page 411 - 1 of 19. You were the consultant interventionist.

**A.** Yes.

**Q.** And so you took a part in the preparation and production of this report, is that right?

**A.** Correct, yes.

**Q.** I have a letter to Paula Stevenson dated the 28th of May, which appears at page 397.

Do you have that?

**A.** Yes.

**Q.** Reading from the bottom of the page: "Our investigations revealed several failings, summarised below. After being transferred to ward 11, Hayley's oxygen requirements gradually increased and, although they remained relatively low, the review team noted an increasing need for oxygen three weeks after her surgery, which should have raised clinical concern." And you would agree with that?

**A.** Yes, it's unusual.

**Q.** I am turning the page now: "After being referred to ward 11, Hayley's oxygen requirements gradually increased ..." - sorry, that is a repeat. "On the 9th of November the medical team were worried about Hayley's oxygen requirements and, after her chest x-ray showed significant changes, the medical staff became concerned she had a chest infection. As you know, Hayley's lung had collapsed and she was being treated with physiotherapy and antibiotics to address any possible infection that may have caused this. It was the opinion of the review team that Hayley's collapsed lung was the significant factor in her death." Again, that is what we have just been through and I have asked you about, and I think you have agreed with me?

**A.** Yes, I agree.

**Q.** "On the morning of the 10th of November, Hayley was clinically in distress" and that refers to respiratory distress, does it not?

**A.** Yes.

**Q.** "The investigations highlighted there was an incorrect perception among the cardiology doctors that a patient needed to demonstrate five criteria, detailed on page 11 of the report, in order to be considered for admission to PICU. This is not the case as patients are admitted for a range of critical conditions on their overall condition." And we will come to that, if we may. "5. Hayley began to clinically deteriorate on the 9th and, although standard treatment was started, the cardiology team had failed to consider respiratory problems while Hayley was on PICU and put these into context with her present problems." And that is the problems that you have described in some detail in your statement.

**A.** Sorry, say that last bit again.

**Q.** My apologies. Those are the problems on PICU that you have described in some detail to the Coroner from your statement?

**A.** Yes.

**Q.** So, i.e., she had had previous problems with her lungs and she needed, first of all, ventilated support via tube and then pressurised support, the BiPAP and CPAP we have been discussing, yes?

**A.** Yes.

**Q.** "There is no way to soften the conclusion of the investigation for you, but the review team concluded that Hayley should have been referred to PICU for a review on the 10th of November as there were sufficient grounds to request this. Had she received early ventilatory support, this may have prevented her death." Yes? So, one, the review for PICU. And I accept the point made by my learned friend to Dr Stumper that review does not necessarily mean a transfer, but if you had reviewed her, given the clinical history on PICU, given the deterioration and everything we have been discussing in front of the Coroner over the last half hour, then it is likely that there would have been some form of ventilatory support, is it not?

**A.** No, I don't think that's a given. It's possible, I agree, it's definitely a possibility. The problem is one can't say, without actually seeing the patient - we get called often to see patients on the medical wards or surgical wards who are undergoing difficulty and there

is concern from the referring team that the patient either needs advice from the paediatric intensive care or admission to paediatric intensive care, and the vast majority of those referrals to the ward, one of us will institute a therapy that can be done on the ward, with a plan to then review the patient if there is no improvement, and then to subsequently admit to intensive care. So, although from time to time we do admit patients straightaway into intensive care, we often institute some either escalation of therapy or a review of the current therapy, with a plan to then review later. So, it's possible she would have got into intensive care at some point, but I disagree with the fact that we definitely would have admitted her for ventilation at that point.

**Q.** Can you do ventilation on the ward?

**A.** No.

**Q.** Not even CPAP?

**A.** I mean, CPAP can be administered on the ward in certain circumstances. We wouldn't apply it to a patient who is not on CPAP already and leave them on the ward on CPAP. So, we occasionally have patients in intensive care who are on CPAP and stay on it when we discharge them to the ward, on CPAP, but we wouldn't start CPAP on the ward when a patient is not receiving it.

**Q.** If you look at the ----

**THE CORONER:** Sorry, just to interrupt. Tell me which page you started reading from and how far you got.

**MR WEITZMAN:** I started reading on page 399. I moved over to page ----

**THE CORONER:** Hold on. Started from 399?

**MR WEITZMAN:** Yes, and moved to 398. Is that what you have, doctor?

**A.** I've got 398 as what we've just been reading - the letter.

**THE CORONER:** So, you started reading from - where on 398?

**MR WEITZMAN:** We have got a letter dated the 28th of May, sir, and I began at the paragraph at the bottom of 397, which starts, "Our investigation" and that paragraph, sir, is repeated in part on the next page, so I skipped the repetition and I read the next four paragraphs, and I am now asking about the fourth of those paragraphs. Thank you, sir. What I do not understand, Dr Plunkett, is, you say you might not have provided ventilatory support on a PICU review, but the letter - and we will go through it in a second - which echoes the conclusions in the report which you were part of, goes on to

say, "Had she received early ventilatory support, this may have prevented her death", and I would understand that rather to indicate that that would have been an appropriate course had there been a review?

**A.** As I say, it's possible, and I think it's certainly possible that she, if she had been referred, she would have been reviewed by someone like myself from intensive care, made a plan that either involved admission to intensive care at that point for - we probably would have started something like CPAP - or a plan for increased physiotherapy/antibiotics, respiratory restriction - there's various other methods of treatment that one could institute for breathing problems - with then a plan to review later for potentially admitting or not admitting if things had improved. What we concluded at the panel on looking at this case was that, with the benefit of hindsight, it does appear that positive pressure ventilation may well have helped her and may well have prevented her death. But what you're asking me, I believe, is: would I, if I had seen the patient as a referral from the ward, have instituted ventilation at that point? And I'm just saying that that doesn't always happen.

**Q.** Well, it is not quite with hindsight, is it, because what you are saying in your report is, one, there was a deterioration; two, there was a failure to put the deterioration into the context of the history; three, there was a failure to understand the PICU criteria; four, but for those failings, PICU would have been contacted and then ventilatory support may - you used the word "would" rather than "may" - may have saved Hayley's life?

**A.** Yes, I agree with that. Yes.

**Q.** And for your reference, if we go to page 422, those conclusions are set out in the report itself rather than the letter.

**A.** Yes.

**Q.** In the letter you indicated that there was a concern about the criteria for admission to the PICU, yes?

**A.** Yes - do you mean the letter to the family?

**Q.** The one I have just taken you through.

**A.** Yes, we did have concern about that.

**Q.** And an over-focus on blood gas - is that right?

**A.** Yes, that did seem to come out in the investigation.

**Q.** Would you bear with me a second, please. Yes, it is at page 421, please. Do you have that, sir?

**THE CORONER:** Yes.

**MR WEITZMAN:** Thank you. I am going to start reading from the first full paragraph, Dr Plunkett: "The review team noted that by the morning of the 10th of November 2009 the patient was clinically in distress. There was a perception amongst the cardiology doctors that there were five criteria for admission to PICU, of which one is a poor blood gas count." I suppose, to be fair, we are not really talking about admission, we are talking about referral, are we not?

**A.** Yes, that's true.

**Q.** "The other were reported to include the patient looking unwell, increased oxygen requirement, increased work of breathing, worsening x-ray. This is not the case. Patients are admitted with a range of other critical conditions based on the overall clinical context." Certainly, as we go through the evidence, I believe it will become apparent that there was a fixation on blood gas counts as being the trigger for a referral to PICU, and that is when, as we have described, the pH drops, yes?

**A.** That is one of the abnormalities in the blood gas, that the pH changes, but there are many other abnormalities that could present themselves.

**Q.** I would suggest to you that that comes quite late in the process because by then the problems are pretty - by then you are not breathing, or you are not aerobically providing oxygen to the blood, and so by that point the distress in the child, whether it be Hayley or another child, is pretty advanced?

**A.** I think that's a fair statement, but I would say, just to put it in context if I may, that the vast majority of children we admit to intensive care, and I am not talking about the ones we review, the ones we admit will have an abnormal blood gas in the sense that they will have abnormal carbon dioxide level if we are admitting them for respiratory support. That's the context - that's the group that Hayley would have fitted into. So, the fact that she had a normal blood gas in terms of carbon dioxide and pH level does stand as an unusual finding given the way that she was looking clinically.

**Q.** But certainly, as you accept, things have got quite advanced, if you have those blood count levels, which is why, as you set out in the report of which you are the author, "One must not concentrate on just one test but look at the condition globally"?

**A.** Yes, it's the same for any assessment; we wouldn't look at just the blood gas, we wouldn't look at just the pH, we wouldn't look at just the respiratory rate. It forms part of the bigger picture.

**Q.** And I think you make it plain in the report - I do not think I need to take you to this part - that PICU are happy to accept a referral if the cardiology clinicians, or other clinicians, have a real concern based on the global overview of the child?

**A.** That's correct.

**Q.** You certainly would not dismiss a referral because the blood gas had not reached a certain level?

**A.** That's correct.

**Q.** But there was a perception that you would?

**A.** I think that is true. That is something we picked up in the investigation. There was a perception that an abnormal - from certain individuals - that an abnormal blood gas was a prerequisite for a referral for intensive care. Whether that was applying to this clinical context or in general, I don't know and we didn't investigate that further.

**Q.** We will deal with that in other evidence. But if that were the case, it may be that that was providing a block on a referral to PICU when one was needed because of other clinical signs?

**A.** That is possible.

**Q.** And that is certainly what this report found, is it not?

**A.** I think that was one of the factors that we identified.

**Q.** So, if I look at the next paragraph, for example: "The cardiology registrar discounted admission to PICU because the patient did not meet all of the five perceived criteria, even though they met the other four [and the fifth is the blood gas]. It was also noted that the patient's x-rays showed worsening bilateral changes, which would in itself be concerning." So, if there was a failure because there was a perception that you would not take people because their blood gases had not changed, that was a wrong perception?

**A.** That's a wrong perception, that we would not consider a patient with a normal blood gas.

**Q.** A dangerous perception?

**A.** Well, it has potential to be dangerous.

**Q.** It may have been dangerous in this case?

**A.** It may have been. Correct.

**Q.** And a systemic problem? Not down to any individual?

**A.** I believe that's true.

**Q.** Which is why you carried out the report, to try and meet precisely that kind of systemic problem?

**A.** That is true.

**THE CORONER:** Just tell me what you mean by a systemic problem.

**A.** Well, I think - I mean, my understanding of it is that it's a perception shared by more than one individual, as opposed to one single individual.

**MR WEITZMAN:** What you say ----

**THE CORONER:** So, perception shared by more than one individual - that is what you are calling systemic? It is not a test. I am just trying to find out what you mean by the word.

**A.** That's what I would mean by it.

**MR WEITZMAN:** In fact, what you say in the paragraph that I have read to you - not the last one but the one before: "It was a perception amongst the cardiology doctors", i.e. the cardiology team.

**A.** Yes, I mean, the cardiology ... This incident occurred within the cardiology department. Whether it applied to other departments within the hospital, we didn't specifically investigate, but part of the action plan was investigations into educating the hospital as a whole.

**THE CORONER:** So, did you talk to everybody in the cardiology department?

**A.** No. As a result of taking the, of doing the investigation, no, we didn't, but subsequently there has been an education programme that has been doing that.

**Q.** We are talking about how you reached this conclusion. What I am asking you is, if you say that you think it is a perception shared by more than one individual: did you talk to everybody, every individual and find out what their perception was and, if so, how many people did you talk to and how many people shared this perception?

**A.** No, we didn't talk to everybody. We just took statements from the people who were involved in the case, and from memory, about two or three of the individuals mentioned blood gas abnormalities being a prerequisite.

**MR WEITZMAN:** Dr Plunkett, can I deal with a completely different topic now, which is the length of the tube that was used to intubate Hayley, and I cannot, forgive me, remember the precise date. I am going to get the terminology wrong, but the tube was a millimetre, a centimetre above the carina ...

**A.** Yes, so we're referring to the first intubation.

**Q.** Back on PICU.

**A.** In intensive care. Which was on the morning of the 19th of October. The tube was judged to be 1 centimetre too far in because, as I have said, we normally aim to have the tube, the tip of the tube 1 centimetre above the carina. That's a rule of thumb.

**Q.** Does that cause - tell me if I have got this wrong - bronchial spasm?

**A.** Not typically, no. It may cause - if it's too far in, it may cause collapse, transient collapse of the lungs, as I explained earlier, but bronchial spasm is not a normal complication of that.

**Q.** You did not see it in the first x-ray, only in the second taken eight hours later.

**A.** Yes, that's the sequence of events.

**Q.** Why do you think that was the case?

**A.** Well, I've looked at both of the x-rays subsequently, and the tube was in the same position on both x-rays. Perhaps it's a millimetre or 2 deeper in the second one, and I think it becomes more obvious in the second one because the right upper lobe of the lung has collapsed and lost some volume, and in doing that it brings the carina up, so if that's the tip of the tube, the carina gets closer to it. So, I think that's probably why it was noted on the second x-ray.

**Q.** So, am I right in saying that the position of the tube in relation to the carina was obvious from both, was clear on both x-rays but it was noticed on the second?

**A.** Yes, that's what happened in real time. Can I also point out that the radiologist felt it was in a satisfactory position on both x-rays.

**Q.** The radiologist?

**A.** Reported it to be in a satisfactory position on both x-rays.

**Q.** So, it was the PICU who spotted it rather than the radiologist?

**A.** That's correct, which is - we see the x-rays very quickly and when a tube is too long, we invariably get a call from radiology a few hours later saying, "Your tube is too long." We didn't on this occasion because they felt the tube was in a good position.

**THE CORONER:** I am sorry, I am obviously slipping. The radiologist reported that the tip was in a satisfactory or unsatisfactory position?

**A.** Satisfactory. Sorry, I don't have the exact words, but they support lines, and that includes breathing tubes, and I can't speak for the radiologists, but I imagine they saw that it was above the carina, even though it wasn't a full centimetre above the carina; it was still above the carina. So, I imagine that's why they reported that it was okay. I think that - I'm saying that to illustrate that there is even some debate about the fact that it was ----

**MR WEITZMAN:** You are saying that it was only your team on PICU who spotted it, whereas the radiologist, whose job it is to look at the x-rays, did not spot it, and I suppose it was seen on PICU because you have so much experience of dealing with these issues?

**A.** Yes, that's fair.

**Q.** Sir, I have no further questions for this witness.

**THE CORONER:** Just before you start, Ms Lucas. The report that you were a party to ... I am just trying to find the page. It is page 411. This lists the investigation team. Is that right?

**A.** Yes.

**Q.** And are all of you present all the time doing this or do you subdivide the work up between you and then come together afterwards?

**A.** No, we were present, all of us were present during a single meeting for this report, but obviously we all had an opportunity to look through the notes and read the statements prior to that.

**Q.** And how long did that meeting last?

**A.** It was a matter of hours. I can't remember how many hours, but it was a single meeting.

**Q.** A whole day, a whole morning or afternoon?

**A.** I think it was half a day.

**Q.** Half a day.

**A.** From memory.

**Q.** And you heard Dr Plunkett say how disappointed he was that he was not able to be there for that.

**MS LUCAS:** Sir, I think you mean Dr Stumper.

**A.** Sorry, I'm Dr Plunkett.

**THE CORONER:** Sorry.

**A.** Dr Stumper, I heard Dr Stumper say that, yes.

**Q.** You heard Dr Stumper say that.

**A.** Yes.

**Q.** I think "disappointed" was the word he used - that he was not there because he disagrees with that conclusion that you have reached about referring, that Hayley should have been referred.

**A.** Yes.

**Q.** So, how did it happen that he was not involved? How did it happen that you can reach a decision like that, which obviously reflects on him, and he is not there to say, "Hey, hold on, let me have my say"?

**A.** I don't know how that happened. All I do know is that everybody who was involved - so, Dr Stumper and myself and everyone else who was involved in the incident - would have written a report, and then - and so that's an opportunity to provide any information and evidence at that stage. That's then reviewed as objectively as possible and then that is fed back to everybody who has supplied a report, before the final report is reached. I wasn't responsible for drawing up the members of the panel and I'm not sure by which criteria those panel members are drawn up. I was invited and, since I knew Hayley fairly well, I accepted the invitation. It could have been any other member of the paediatric intensive care.

**Q.** Yes, and obviously it is carried out quite soon after Hayley's death. Do you know when it was actually carried out? Do you know when the actual meeting was?

**A.** Sorry, I can't remember the date because this is going back a while. I don't know off the top of my head.

**Q.** And when you were answering questions from counsel for the family, you were both referring to page 421 and reading out that there was a perception amongst the cardiology doctors that there were five criteria for admission to PICU, of which one was a poor blood gas count. But what we are actually talking about is referral to ...

**A.** Yes, that's true. It's referral, not admission.

**Q.** Yes, and you both appeared to agree between yourselves that you were talking as

though that word was "referral" rather than "admission" - but, I mean, were the doctors to who you are referring here, were they talking about referral or admission?

**A.** I think they were - again, from memory - I think they were referring to referral.

Often, they - sometimes we do just refer a patient, admit the patient straight from referrals, so I can see how the two terms could be used, or mistakenly used, interchangeably. But, to be precise, we are talking about referral.

**Q.** So, that is a lack of clarity in this report?

**A.** Yes.

**Q.** People meant to say referral and wrote "admission".

**A.** That's correct.

**Q.** I am sorry, Ms Lucas, I needed to get that clear.

**MS LUCAS:** Thank you, sir.

Questioned by MS LUCAS

**Q.** Dr Plunkett, are you aware that the reason for undertaking serious incidents requiring investigation is to enable NHS Trusts to look at cases in the aim of learning lessons?

**A.** Yes, that's my understanding.

**Q.** Does that mean that you are actively looking for ways to try and improve care for children of the Trust?

**A.** Yes, that would be fair.

**Q.** So, when you do these investigations - they are called various things; root cause analyses, serious incident requiring investigation and things like that - when you do these, are you looking for potential errors that actually, if they did not directly happen in this particular case, could be an issue that you try to avoid in other cases that children come in with?

**A.** Yes, that's one of the purposes, is to try and anticipate future problems.

**Q.** When Hayley was unwell on the 9th to the 10th of November and she was referred by Dr Dawson to the specialist registrar, Dr Porwall, is it correct that Dr Porwall until recently, before then, had been a specialist registrar on intensive care?

**A.** Yes, he had been working in intensive care just before going to cardiology.

**Q.** If you are a specialist registrar on intensive care at that time, in 2009, when Dr Porwall was there, would he have been involved in going to wards to see patients who

may have been referred to the intensive care team?

**A.** Yes, that would have been part of his job. So, referrals from wards usually go through the paediatric intensive care registrar, and they then go and review the patient and come back and speak to the consultant.

**Q.** And when Dr Porwall was on intensive care shortly before he went to cardiology - and am I correct in saying that you were on intensive care at that time? You were working in intensive care?

**A.** No, I'm sorry, I wasn't at that point.

**Q.** So, you just came in before.

**A.** Because I started work not long before Hayley's death, actually, at the Children's - October 2009, I started. And I think Dr Porwall had rotated to cardiology around that time.

**Q.** So, when you came along to Birmingham Children's Hospital and you came to the intensive care team, did the team at any time say to you that there were five criteria that should all be met before a child was actually admitted, or referred or admitted, to intensive care?

**A.** No.

**Q.** No. So, your understanding of the position in ITU when you got there, which was just short, around the time that Dr Porwall moved to cardiology, there was no criteria in ITU at that time that you were aware of?

**A.** No, the criteria - it's not a criterion-based decision; it's based on clinical judgment. I suppose it's plausible that there may be one or two criteria, such as the patient requires dialysis instantly, which would be technically a binary decision, but the majority of them are based on clinical judgment for when to refer a patient.

**THE CORONER:** We are talking about admission now, not referral?

**A.** Both.

**Q.** Both.

**MS LUCAS:** We have not yet heard the evidence of Dr Porwall. We have seen his witness statement, but not heard him speak. But would it be reasonable to assume that somebody who had been in the intensive care unit shortly before you came along there would have been aware that there was not a set down criteria?

**THE CORONER:** Ms Lucas, that sounds as though you are addressing me rather than

asking a question.

**MS LUCAS:** No. I will put it another way, sir.

**THE CORONER:** Right. I mean, he cannot tell you what people might have thought before he joined the department, can he?

**MS LUCAS:** No. I will take that back. Dr Plunkett, when you saw patients before Hayley who were on the wards, from intensive care, did you get referrals to intensive care from cardiology quite regularly?

**A.** Yes, I mean, I think we did. If you define "regularly" by ... It would be common to go to the cardiology ward, say once a week. I'm guessing. I mean, I suppose I'm basing that on what I've done subsequently, because, remember, I started at Birmingham Children's not long before this. We quite often find ourselves on ward 11 or ward 12 reviewing a patient.

**Q.** And in your experience before Hayley was seen, before Hayley was reviewed by Dr Porwall, and that may include some of your experience afterwards, have you ever come across this five criteria?

**A.** No. I don't know from where they came, these five criteria.

**Q.** Thank you. Dr Plunkett, if we could go back to the points raised about compensating, the body compensating for burning energy, and if I remember correctly, according to my note, you said that there were ways of trying to deal with a child burning off energy because of their potential respiratory distress and having to cope with being unwell. You mentioned physiotherapy - is that correct? That is one way of trying to help the body to manage the fact that it is dealing with something?

**A.** Yes, because physiotherapy in the presence of lung collapse or consolidation, you can potentially make the work of breathing easier and therefore the patient would consume or require less energy.

**Q.** And if the physiotherapists come along and see a child on the ward and, as with Hayley on the 10th, does percussion and at the end of that time say that they have cleared the secretions as best as they can, is it generally then that you take the advice of the physiotherapists, if they feel that they need to return or continue with their provision of care, or do you say to them, essentially, "That's fine", or do you say to them, "I'd like you to come back even though you feel you've dealt with the secretions"?

**A.** We make a plan together in that situation. So, I will take the physiotherapists'

advice and they will take my advice and we make a group decision.

**Q.** You also mentioned positioning the patient as well. Can you explain a little bit more about that, please?

**A.** Yes, it's sometimes useful for patients who have lung collapse, particularly if the collapse is caused by a plug of mucus or secretions within one of the airways, if you position the patient to allow that to drain out using gravity alone, and that's quite commonly done in intensive care, where it's easier to control the patient moving, but also it can be done in patients who are not in intensive care. Whether that formed part of Hayley's physiotherapy, I'm not sure, but it's certainly a recognised modality of physiotherapy.

**Q.** I have the medical records here. I am just going to read out one section. Would you like a copy to be given to the witness, please, if possible? 665. Thank you.

**THE CORONER:** Tell me again - 565?

**MS LUCAS:** 665, sorry, sir. Is this exhibit C3, sir?

**THE CORONER:** 665 is what I have got.

**MS LUCAS:** Sir, you were giving them exhibit numbers until recently.

**THE CORONER:** C7.

**MS LUCAS:** C7. Thank you. Dr Plunkett, this is the note that Dr Porwall wrote in the medical records when he saw Hayley overnight on the 10th to the 11th of November. You can see he said that there is increased work of breathing ...

**A.** Sorry to interrupt - is this on the 9th to the 10th or the 10th to the 11th?

**Q.** 9th to the 10th, yes. He was called by Dr Dawson to come and see Hayley on that night. We have got, "Increased work of breathing. Collapse/consolidation on left base and loss of volume at right base. Chest x-ray reviewed." He said, "Oxygen 25%, low grade pyrexia, 37.5 degrees, pink, CRFT" - is that the capillary refill time?

**A.** Yes.

**Q.** "2 seconds."

**A.** "Less than 2 seconds."

**Q.** "Less than 2 seconds." Sorry, and then we have, "R", which I assume is "right"?

**A.** No, this is the "R", with the circle, is "respiratory", I think. So, he is going through a systematic assessment, breaking down the organs.

**Q.** So, he is saying "AC"?

**A.** I think that's "AE": "Air entry decreased on left base."

**Q.** Thank you.

**A.** Which would make sense with the x-ray findings.

**Q.** "Good on right. Conducted sounds. Respiratory rate 48 per minute" and then can you help us with what it says next?

**A.** "Cardiovascular system" - "CVS", that says. "S1 and S2 plus" - that means the heart sound, the normal heart sounds are present and I think he's saying the second heart sound is loud, and 2 out of 6 systolic murmur, which is, one would assume, is the murmur - it's an extra heart sound which is conducted through the conduit that Hayley had fashioned as part of her heart reconstruction. So, that's a normal murmur to find in this situation.

**Q.** And then we have "PA" - is that the abdomen?

**A.** Abdomen, yes.

**Q.** "Soft. Liver, plus 1 centimetre."

**A.** Yes, so that means the liver is palpable 1 centimetre below the costal margin, which is the bottom of the ribcage. So, the normal level is either not palpable or approximately 1 centimetre palpable.

**Q.** So, that is normal?

**A.** That would be within the normal limits.

**Q.** "Heart rate 140 per minute." And then his plan says, "Nurse left side up." So, that was one of the things we were talking about earlier to try and ease a child who is - we accept he is using energy to breathe?

**A.** Yes, exactly. I mean, the principle behind that is, for the reasons I have just explained, gravity alone may assist a collapsed lung and enable it to re-inflate. So, the way to do it is to take the lung you think is most effected and put that up, so that it drains using gravity, and also air will preferentially fill the higher part of the lungs. So, that's fairly standard practice.

**Q.** Also, we mentioned earlier physiotherapy, and at this time Dr Stumper had asked for physiotherapy input. So, we have got somebody, a child who has been nursed left side up, is going to have physiotherapy, and we have a mixture of what looks like blood test, "FBC" - that is full blood count?

**A.** Yes.

**Q.** And I cannot read the rest. Is that "bloods" and "CRP"?

**A.** I think it's a culture, the middle one is a culture, I think, which is when you suspect a new infection; you take a blood culture, again, particularly, if you are about to start antibiotics. So, those tests he has taken there will give a general snapshot of what's going on, but particularly infection oriented investigations.

**Q.** And Dr Stumper the day before when he had seen Hayley had already started to augment her antibiotics.

**A.** Yes, she was on Floxicilyn and he changed it to Augmentin, which is a broader antibiotic aimed at covering chest infections.

**Q.** So, if we look at this entry into the medical records that we have here, is there anything on this entry that - and I know it is only of the medical records, so you may say you cannot say - but is there anything in that entry there that gives you concern that on that alone Hayley should have been considered for referral to intensive care?

**A.** No, on this information, there's nothing to say the patient should have been referred to intensive care, and the plan was appropriate.

**Q.** Is that the kind of plan that, if the intensive care team felt Hayley did not need ventilation, which was the other option you said for supporting a child who was having to breathe more heavily, if the intensive care team had come along and looked at Hayley and thought she did not need ventilation, is there anything else in addition to that plan, with the physiotherapy, that you feel should have been instituted at that time?

**A.** No, but the only thing that we would do is have a plan to then review within - usually, we would say within a few hours time. We often pick a time at the instant to make an examination, in say six hours.

**Q.** About six hours. So, in that case, this would have been ... Let me just check ... Dr Porwall does not give us an exact time when he saw Hayley, but if we were to say that he saw her, for example, in the middle of the night - I am not sure exactly what time that would be. Dr Porwall actually saw her at 3 o'clock in the morning. Sorry, Dr Dawson saw her at 3 o'clock in the morning on the 10th and then Dr Porwall was asked to review afterwards. So, if we were to say after 3 o'clock in the morning, she was seen by Dr Porwall, and then she had the ward round the next morning. Would that be roughly in line with what you would expect a further review to take place?

**A.** That would fall into, within the range of times in which we would review. Each

patient is different, but that would fall into the range.

**Q.** You also mentioned as well to support children who were having to breathe, had an increased work of breathing, support on a nutritional basis. Were you aware that Hayley was on fluids?

**A.** Intravenous fluids.

**Q.** Intravenous fluids.

**A.** Yes. I remember reading the notes, that happened on and off at various times, yes.

**Q.** So, would the use of intravenous fluids help to support a child whose reserves were potentially flagging?

**A.** Yes, the reason we would choose intravenous fluids is to provide adequate glucose and electrolytes, which is the salts and sodium. It enables us to - for the patient to have an empty stomach, which is important because the process of having a full stomach can impact significantly on breathing in small babies. It also allows us to very strictly regulate how much fluid is being given, because an excess of water in a situation can make lung disease worse - lung disease meaning consolidation or collapse. So, being on intravenous fluids is fairly standard for this clinical situation. It wouldn't provide adequate nutrition for long-term, but it's standard management like this.

**Q.** So, if the cardiology team on the ward were aware that Hayley's lungs had a tendency to collapse and that she was having to breathe harder and required over time increasing oxygen, instituting fluid therapy, physiotherapy, positioning her to try and ease her breathing - all of those things, and monitoring on a continuous saturations monitor - that is one of those things that goes on your finger - and monitoring throughout the day by nurses, would that suggest to you that there was an awareness that she was a little baby who was dealing with a problem but she was managing with it and they were supporting her adequately?

**A.** Yes, it suggests that the problem was recognised and - I think this is what you're asking - appropriate therapy has been suggested, and provided there is a contingency for what happens next if things get worse, then that's all that we would have potentially done from intensive care.

**Q.** If I can refer you back to the letter that my learned friend referred you to earlier - it is page 398, the second page of the letter from the Trust. And if we can look at the paragraph that starts, "By the morning of the 10th of November" - I think it might be

paragraph 4, referred to by my learned friend. It says, "The investigation has highlighted that there was an incorrect perception amongst the cardiology doctors" - this is the five criteria again. Did you hear the evidence of Dr Stumper today?

**A.** Yes.

**Q.** Did Dr Stumper, when you were listening to the evidence, say that from his point of view that there were five criteria for referral?

**A.** No.

**Q.** Thank you, Dr Plunkett, I have nothing further.

**THE CORONER:** So, we will take a break now. It is 3.41. We will come back at 3.55.

**MS LUCAS:** Sir, are you happy for Dr Plunkett to be released?

**THE CORONER:** Yes.

(Short break)

**THE CORONER:** We will move on to Jacqueline Clinton, please.

JACQUELINE CLINTON, sworn

Questioned by THE CORONER

**Q.** Tell me please your full name.

**A.** My name is Jacqueline Ann Clinton.

**Q.** And tell me your qualifications.

**A.** I am an SRN, a State Registered Nurse and a Registered Sick Children's Nurse.

**Q.** So, read through your report if you would, starting with the third paragraph, "I have been employed by Birmingham Children's Hospital ..."

**A.** "I have been employed by Birmingham Children's Hospital NHS Trust since 1984 and I am currently employed as a ward manager. I have held this position since 2000. As a ward manager, I am responsible for the daily running of the ward. This includes providing clinical and professional leadership to the ward team, to ensure the delivery of high quality care to children and families. My role is divided into both the delivery of clinical care and management responsibilities. I did not provide hands-on care to Hayley Fullerton. However, I was fully aware of her and, therefore, my statement is based on recollection and discussions with my team members. I always aim to speak to all the families every day, even if it is a brief conversation. I recall Paula Stevenson used to stay on the ward overnight with Hayley, so I would only see her first thing in the

morning prior to her leaving the ward, until the 10th of November, when Miss Fullerton felt Hayley was too unwell to leave. On the occasions we spoke, Miss Stevenson appeared happy with the care and did not raise any concerns to me. I have no reason to believe Miss Stevenson was unhappy with any aspects of her daughter's care until 10th of November, when the nurse allocated to her that day informed me early into the shift that Miss Stevenson had concerns and she felt Hayley was being neglected. I asked the nurse allocated to Hayley Fullerton if her mother wished to speak to me about her concerns immediately and she declined as the doctors were with Hayley and there was a lot going on. We agreed I would meet her the following day to discuss her concerns. Sadly, Hayley died on the morning of the 11th of November 2009.

**Q.** You say you are employed as a ward manager.

**A.** That's correct.

**Q.** At the time, was that ward manager of ward 11?

**A.** That's correct.

**Q.** Did you have a different ward manager for ward 12?

**A.** That's correct.

**Q.** And how many children are there on ward 11, or were there then?

**A.** 16.

**Q.** One six?

**A.** That's correct.

**Q.** And when you say you aim to speak to every family at least once a day, how difficult is that?

**A.** Depending on the dependency of the patients and depending on whether I am clinically based that day. At that time Hayley was on the ward, we had a number of high dependent patients and I worked a fair few clinical shifts.

**Q.** And give us an idea of how big this ward is.

**A.** It is actually an 18 bedded unit. There are six cubicles as you enter the ward, four double cubicles and then two single cubicles along the corridor, and then off on a dogleg in the middle of the ward, there are two four bedded cubicles on either side, one of which we designate as our high dependency area.

**Q.** So, 18 bedded unit. Six cubicles.

**A.** That's correct.

**Q.** Four double cubicles.

**A.** Yes.

**Q.** That is 10. Tell me the rest.

**A.** There's four double cubicles, two single cubicles and then two four bedded cubicles, one of which of those is designated as our high dependency area.

**Q.** And how important is it to the nursing of a patient where you are on the ward?

**A.** We keep a four bedded unit as the high dependency area, which means the ratio of staff is two nurses to one patient. It is not a stand-alone unit; it is integrated into the ward and the nurses rotate on the ward area to the high dependency area. On the main wards, there is the ratio of three nurses, generally three patients to one nurse. However, should we have high dependency patients on the ward, then we can escalate the nursing.

**Q.** There seems to be a perception that if you are close to the nurses' station, you are in a favoured position.

**A.** No, not necessarily because the nurses' station may have a computer, but the nurses aren't seated, don't sit at the nurses' station; the nurses are in cubicles, caring for patients.

**Q.** And Paula was referring to being near the door. What does that mean?

**A.** The layout of the ward means that there's a cubicle on the entrance to the ward and then the cubicles go up in a line, along the line of the ward. So, it was the first double cubicle as you come into the ward.

**Q.** And so, how many other cubicles or beds are there which are further away from the nurses' station than that one?

**A.** The nurses' station is at the side of cubicles 3 and 4, and then obviously cubicles 5 and 6 are up at the far end of the corridor and cubicles 2 and 1 towards the door.

**Q.** So, was Hayley in an unfavourable position?

**A.** No. Nowhere on the ward is unfavourable because you escalate the nursing depending on the dependency of the patients. Because of the nature of the work we do, it does, it means that we have highly complex patients, often there are patients on the ward that necessitate a high input of nursing.

**Q.** When you try and speak to every family every day, do you actually make a record that you have spoken to them and tick them off, or you just try and remember?

**A.** No, I try - and then again it depends if the families are there, and on your own

workload.

**Q.** Yes. So, is it possible that there would be days when you did not see all the patients?

**A.** That's right. Correct.

**Q.** And is it possible that there would be periods when you did not see the same family, two/three/four days in succession?

**A.** At that time I was part-time as well, I worked four days a week, so obviously when I'm not there, I would not speak to families. Sometimes, families don't come in until the evening. My duties are dayshifts, so in that case I sometimes would not see the families.

**Q.** Yes, but we have a fairly clear indication that Hayley's family, one or other of them, or more than one usually, was in all the time. What I am trying to find out is, if you do not actually keep a record which says, "Yes, I saw them at 8 o'clock on Monday and 9.30 on Tuesday", is it possible that by mischance you would not see them for two days/three days/four days/five days/six days?

**A.** Well, it's unlikely to be five or six days. Maybe a couple of days.

**Q.** But you knew who they were?

**A.** Certainly.

**Q.** Yes?

**A.** Yes.

**Q.** And who was it who came to you and said that the family were not happy?

**A.** Yes.

**Q.** Who was it?

**A.** That was Staff Nurse Sanjet Bandel.

**Q.** And, presumably - well, do you talk about families as being a child's family? I mean, are you likely to say, "Mrs Fullerton isn't happy" or, "Mr and Mrs Stevenson aren't happy", or would people say, "Hayley's family aren't"?

**A.** Hayley's mother wasn't happy.

**Q.** So, you would commonly refer to families by reference to their child?

**A.** Not necessarily. In that case, I seem to remember, although I'm not 100% sure, that it was Hayley's mother wasn't happy.

**Q.** Right, but you do not necessarily refer to them in that way?

**A.** No.

**Q.** But you knew who she was talking about?

**A.** Yes.

**Q.** However she referred to it?

**A.** Definitely.

**Q.** And then you sent a message back to her, or you spoke to her?

**A.** No, I asked Sanjet, because she had come to me, and I was on an administration day, and she came to the office, and I said, "Would you like to ask Hayley's mother if she wishes to speak to me now?" and I think the physio was there and then the registrar was there and it was felt by Hayley's mother that there was too much going on, and she wanted to be with Hayley, obviously.

**Q.** That was the message that was sent back to you?

**A.** That's right.

**Q.** But you had not picked up any bad vibes prior to that?

**A.** That was the first time I was aware.

**Q.** Now, when the advocates ask you questions, talk to me.

Questioned by MR WEITZMAN

**Q.** Mrs Clinton, on the 10th - you were not there the 6th to the 8th.

**A.** No.

**Q.** So, that is Friday ----

**A.** And I wasn't there on the 5th. I wasn't there on the Thursday.

**THE CORONER:** It has taken you one and a half seconds to get it wrong. Talk to me.

Yes?

**A.** I believe I was not there on the 5th, which was a Thursday. I was there on the 6th, not there the 7th or 8th. The 10th was a Monday and I was clinical, I had two high dependency babies on the ward, and I spent the entire shift in that cubicle. And then on the Tuesday, I was on duty and I had administration work.

**MR WEITZMAN:** So, you think you were on the ward on the 6th?

**A.** Yes, I think so. I think so because I was completing a course on Thursdays, so I should have been at the course on Thursdays.

**Q.** You were there during the day. Were you aware on the 6th that Hayley's grandparents, rather than her mother, who was coming in at night, were concerned about her state?

A. No.

Q. So, if they spoke to nurses, it was not raised with you by the nurses?

A. I can't 100% say that, in all honesty. I can't recall that.

Q. Can we look at pages 542 and 544, please. This will be exhibit C8. I am going to pass them up to you, sir. They are just being found for you. C8, please, sir. These are notes from a discussion with you on the 2nd of February 2010, which I presume would be part of the root analysis - yes?

A. Okay.

Q. If we just run our finger down the first page to, "**Perception of well-being**", in bold - do you see that?

A. Yes.

Q. Second paragraph below that, "Jacky had a long weekend off 6th to 8th of November."

A. I must be mistaken, then. I honestly can't remember. I know I did a course on Thursdays. If this is what I wrote then, this must be correct.

Q. Let me be clear with you, Mrs Clinton. This is not what you wrote yourself. This is what someone else has noted down as you saying.

A. Okay.

Q. So, if you are off from the 6th to the 8th, the first opportunity to hear complaints from the family following Hayley's deterioration on the 6th would be the 9th, would it not?

A. Yes.

Q. The day of the ward round.

A. Yes.

Q. I suspect, you having been off for a long weekend and come back, you would be pretty busy - is that fair?

A. Correct.

Q. Undoubtedly, the family were expressing concerns to the doctors, because we have heard the doctors - for example, Dr Stumper, say so. Yes?

A. Correct.

Q. Were you aware of them expressing concerns to the nursing staff at that point?

A. No. As I said, I was clinically based on the Monday and I was not in charge of the

ward because the nurse that was looking after the ward on the Sunday then, for consistency, took charge of the Monday. She was an experienced nurse. I had no reason to doubt her capability, and I was allocated to patients who were, as I said, high dependency, and I spent the entirety of that shift in that cubicle, and in fact I didn't come out of there until it was time to go home. So, I was unaware of what was going on.

**Q.** So, what it boils down to, is it not, Mrs Clinton, is the first opportunity that you had as the ward manager to hear a complaint was the 10th?

**A.** Correct.

**Q.** When you did.

**A.** Correct.

**Q.** And I am going to - is it Sanjet Moore?

**A.** Bandel.

**Q.** She raised Mrs Fullerton's concerns with you, did she not, about the treatment that Hayley was receiving?

**A.** That's correct.

**Q.** Now, did you say that Mrs Fullerton should make a formal complaint?

**A.** I did not, no.

**Q.** So, if that was communicated back to Mrs Fullerton, that was an error?

**A.** I believe so.

**Q.** It was not left that Mrs Fullerton did not want to discuss it with you - she did want to discuss it with you, but that point on the 10th, it was not opportune - is that fair?

**A.** That's correct, yes.

**Q.** And you got the clear impression that, rather than wanting to get involved in any formal complaint, what Mrs Fullerton wanted was for you to recognise that concerns she had about her child?

**A.** Yes, correct.

**Q.** Which, given the circumstances, is, frankly, only natural?

**A.** Yes, certainly.

**Q.** And, certainly, on the 10th, after what had happened on the night of the 9th, one can understand why she was concerned?

**A.** Yes.

**Q.** Now, on the ward you have the system of paediatric early warnings.

**A.** We do.

**Q.** And there is a policy which provides the guidelines for that, yes?

**A.** Yes.

**Q.** And I can take you to the policy, but the copy I have came out in 2008. Would you like to see a copy if we are going to refer to it?

**A.** Yes, please.

**Q.** It is 157 to 188. So, if we look at the front page, page 157 - and I presume, sir, this is going to be C9 - June 2008. Yes? Do you have that, Mrs Clinton?

**A.** I do.

**Q.** And, as the ward sister in charge of nursing on the ward, would you have been familiar with this policy?

**A.** Yes.

**Q.** So, if we look at page 160, paragraph 3.0, "Reasons for development":

"Deterioration that goes unrecognised or untreated can lead to a life-threatening event. Early identification and stabilisation of the deteriorating child can reduce the incidence of in-hospital cardiac arrest and death." And that is the purpose, is it not, of the system, to identify deterioration early?

**A.** Yes.

**Q.** If we turn to page 161, 4.0, first point, 4.1, "Observations on admission" - underlined, yes?

**A.** Yes.

**Q.** But then the next bullet point: "... should be calculated with each set of observations." Yes? And what that means, Mrs Clinton, is that all of the PEWs scores should be calculated when carrying out the observation - is that correct?

**A.** That is correct.

**Q.** I am going to ask you to answer rather than nod because this is being tape recorded and so if you do not answer we will not know what your reaction was. And if we look at page 168, please. At paragraph 6.5 - do you have that, Mrs Clinton?

**A.** Yes.

**Q.** It says, "Children receiving oxygen." Now, receiving oxygen means getting oxygen other than by breathing in the air around you - is that right?

**A.** That is correct.

**Q.** And the next bullet point is: "Hourly recording of respiratory effort, rate and pulse oximetry. Document method of administration, amount of oxygen and respiratory effort" and then it goes on to say, "Oxygen is a drug and therefore must be prescribed. In the case of an emergency, oxygen can be administered without prescription. Nurses may increase the amount of oxygen a patient is receiving. They must contact the team the patient has been admitted under ... if the patient has an oxygen requirement exceeding 40% or 10 litres versus the oxygen ..." - yes?

**A.** Yes.

**Q.** Now, Hayley throughout her time on ward 11 was receiving oxygen not from the air but either by nasal prongs, a headbox or, at the very end, by a mask, is that right?

**A.** That's correct.

**Q.** And the observations were not hourly, were they?

**A.** No.

**Q.** So, that was in breach of the policy?

**A.** Yes.

**Q.** Similarly, on a number of occasions, when she was considered for the PEWs scores, not all of the scores were carried out, so it was impossible to calculate the final result and therefore properly carry out the observations - is that fair?

**A.** Yes.

**Q.** And this was something picked up in the report following Hayley's death that we have been looking at with Dr Plunkett, was it not?

**A.** Correct.

**Q.** I do not know if those papers have been returned or are they - do you still have the report in front of you?

**A.** No.

**Q.** Sir, you still have a copy, I believe - or have you given yours back?

**THE CORONER:** No, I have still got a copy.

**MR WEITZMAN:** I think it is paragraph 5.1.3, which is going over from page 418 to 419. Do you have that please, Mrs Clinton?

**A.** 418?

**Q.** Yes. At the very bottom we see a paragraph heading in italics, "5.1.3 Clinical monitoring systems"?

**A.** Yes.

**Q.** Do you have that, sir?

**THE CORONER:** No. Which page number are we on, again?

**MR WEITZMAN:** 418 in the pagination bottom right hand corner.

**THE CORONER:** Yes, I have that.

**MR WEITZMAN:** Thank you very much. There should be a heading at the very bottom of the page, sir?

**THE CORONER:** Clinical monitoring systems.

**MR WEITZMAN:** And if we turn over, first observation: "The observation and monitoring policy recommends that a patient receiving oxygen should have hourly observations. This was not undertaken for this patient." Second observation: "The PEWs scores were not always calculated on the observation chart and occasionally not calculated correctly, even though appropriate observations have been performed. The review team also observed that PEWs scores can only be correctly calculated and interpreted when all seven parameters, including blood pressure, have been documented." Now, were you aware at the time of the requirement to monitor hourly?

**A.** Yes.

**Q.** Why was it not done?

**A.** The PEWs scoring was in its infancy. The cardiac wards have many children on oxygen. Although it wasn't documented, children and babies on oxygen have continuous monitoring through a pulse oximetry.

**Q.** Alarms?

**A.** Well, machines. Pulse oximetry.

**Q.** An alarm will go off at a certain point?

**A.** Yes.

**Q.** And you set the parameters for the alarm?

**A.** That's correct.

**Q.** So, in the absence of hourly monitoring, if the parameters on the alarm are not significantly sensitive or if there are problems with the alarms, as we know there were, you are not really monitoring the oxygen levels, are you?

**A.** In what way were there problems with the alarms?

**Q.** Well, we have been told that they went off regularly and the nurses said that there

were some problems with the machines.

**A.** Well, a variety of alarms or monitors are used on the wards. Because of the nursing ratios, we can't administer one to one care because we're not an intensive care unit. The nurses often have three patients, if they are on the main ward. If they are caring for a child in a cubicle, they can't continually put down children and go and - go to some of the alarms. Through experience and intuition, many of the girls, who have a vast amount of experience, recognise the alarms. If an apnoea, for instance, goes off, which is a breathing mattress, and a baby is picked up, or a baby has stopped breathing and the alarm goes off, then the nurses attend to that immediately. Pulse oximetry - alarms can be triggered by the baby wriggling, by mum picking up the baby and feeding. So, the girls learn to know which ones they should rush to, in a sudden emergency.

**Q.** So, what you have told us, Mrs Clinton, is that you are not doing the hourly observations because of the alarms, but you do not always respond to the alarms because you know which ones to pay attention to?

**A.** I think we respond to the alarms appropriately. We work within the resources we have. Like I say, we don't have one to one nursing and it's not always possible to rush to the alarms that we know do not need urgent attention. In the cubicles, there are alarm calls and nurse buttons. If the parents are there, then they have got the availability to pull those should they feel that they need to call the nurse.

**Q.** The policy is 2008 - June 2008. And we are talking about November 2009. So, it is not right to describe PEWs as being in its infancy, is it?

**A.** Well, we are on to our third print now, so it's changed. Also, the PEWs is very good for normal babies and to give those parameters for a normal child. We are looking at the context of cardiac infants, where the parameters are slightly different. A baby with a respiratory rate - a cardiac baby with a respiratory rate of 40 or 50 is not abnormal on our ward. A baby with a heart rate ----

**Q.** Mrs Clinton, that is not the question I asked you. Can you answer the question, which is simply this: the policy that we have got, which was the policy I understand current at the time, because that is what the Trust has disclosed to us, is dated June 2008 - this happened in November 2009: so, the policy and the use of PEWs was not new or in its infancy - would you agree?

**A.** No, I think it was in its infancy. Certainly, for the type of babies we nurse. It's a

generic PEWs chart. Our babies are very different to ordinary medical babies.

**Q.** So, are you saying that you felt that you should not apply the Trust's guidelines in relation to PEWs scores?

**A.** No, what I'm saying is, at the time we were looking at ways of utilising it to the best ability and most appropriate for the environment we worked in.

**Q.** Well, the policy in June 2008 says hourly monitoring, and in November 2009 you are not doing that, and that is, as I understand it, you are telling us now, a deliberate choice?

**A.** Well, what you're saying is right, we weren't following the policy.

**Q.** And, as I understand it, the reason you are saying that you were not following the policy is, one, you did not consider it appropriate and, two, you did not have sufficient resources?

**A.** No, that is not what I'm saying.

**THE CORONER:** Mr Weitzman, that is not fair. She tried to explain to you what she was doing.

**MR WEITZMAN:** I apologise.

**THE CORONER:** And you stopped her, and now you are putting a bowdlerized version to her. So, you have got to let her explain what she was trying to say when you stopped her, and then say, "Okay, that's what you're doing."

**MR WEITZMAN:** Certainly. Do you want to tell us why you did not follow the policy?

**A.** We were working with the people that developed that PEWs, because we had got concerns on the cardiac wards because they weren't, we thought, specific enough for our needs.

**Q.** You say they are not specific enough for your needs, and yet in the root report that we have, they are expressing a concern that you are not following the policy - is that fair?

**A.** I can't answer that. I have said what I have said.

**Q.** I read the section of the report to you, did I not, Mrs Clinton?

**A.** Where was that?

**Q.** It was page - it was the section, "Clinical monitoring", paragraph 5.1.3, page 419.

"Observation and monitoring policy recommends that a patient receiving oxygen should

have hourly observations. This was not undertaken for this patient."

**A.** No.

**Q.** Was it clear that there was an agreement - you are saying that was not followed because you were developing the PEWs system?

**A.** It's used in the context - it's a framework; the PEWs scoring is just a framework of the overall look of a child. Although we obviously weren't in this case following the hourly observations, Hayley was on continuous monitoring and the nurses were aware of her condition. So, we were getting an overall picture.

**Q.** You say the nurses were aware of the condition. My understanding from the evidence of the nurses is that you considered Hayley, certainly right up until the very end, to be one of the more healthy children on the ward?

**A.** None of our babies are healthy.

**Q.** It is a comparison, is it not?

**A.** I wouldn't consider any of them low dependency. They all have significant heart defects, they need equal consideration.

**Q.** And yet a number of the doctors considered her to be the sickest child on the ward?

**A.** I can't answer that.

**Q.** Well, if the doctors had a different perception to the nurses, does that indicate that the nursing monitoring was not picking up Hayley's condition properly?

**MS LUCAS:** Sir, I am not sure that this witness can actually answer that.

**MR WEITZMAN:** I will move on, then. I want to understand - when the PEWs were calculated, on occasions not all the scores were entered. Yes? You agree?

**A.** I have not got the PEWs here.

**Q.** Shall we have a look at them, to be fair? And I think we will need the full run, please, which is 648, 649 and we will need to go back to ... We start at 646 and 647, I think.

**THE CORONER:** Are we going back to exhibit C2?

**MR WEITZMAN:** Yes, but I am putting in another couple of sheets, sir, because we need to start earlier.

**THE CORONER:** So, I will not do anything until I get the new sheets. This will be C10. Mr Weitzman, could I just summarise, while the lawyers are sorting out those papers, can I just summarise what I think the witness has said so far? You are sorting

out the papers?

**MR WEITZMAN:** Yes, please do, sir.

**THE CORONER:** You are sorting out papers for me? Not you, but ...

**MR WEITZMAN:** Yes, we are.

**THE CORONER:** What I think you established is that the policy says that Hayley should have been monitored every hour. This witness is saying - sorry, that she should have had hourly observations because she was receiving oxygen in one form or another. This witness is saying, "Yes, that's right, the policy does say that and, yes, you are right, we didn't do hourly observations, but we didn't do hourly observations because Hayley was being monitored throughout the period. And, no, we didn't always answer the monitor when it went off because we hadn't got sufficient resources and because it isn't necessary because we know when the monitor goes off from the sound what it is and we can make an intelligent guess as to what's been done about it. So, if we think that it's simply because a baby has been picked up, then we wouldn't go because that's perfectly all right." Is that what you are saying?

**A.** Yes.

**Q.** You are also saying that the PEWs system which we are about to go into is a generic system to cover the whole of the hospital and the babies in ward 11 are special because they have all got cardiac problems, they have all got heart defects - is that correct?

**A.** That's correct.

**MR WEITZMAN:** I had also understood the witness to be saying - and I may have got this wrong, which is why I asked her the question - that it was not possible, given the needs of the babies on ward 11, to carry out hourly PEWs scores, given the staff resources.

**A.** That is something that we do now.

**Q.** I am so sorry, I did not hear that, madam.

**A.** That is something that is done now.

**Q.** With less or more staff?

**A.** We have no more staff. In fact, our ratios are more unqualified to qualified than they were when Hayley was with us.

**Q.** So, you do now calculate the PEWs scores on an hourly basis for a child receiving oxygen?

**A.** Yes.

**Q.** Is that since the investigation into Hayley's death?

**A.** That has come, yes.

**THE CORONER:** So, you now do hourly PEWs scores?

**A.** Yes. We don't calculate PEWs - we don't always do blood pressures, and that again wasn't just what was written on the PEWs charts.

**Q.** Do not tell us more because we are going to go through those now. Is that right?

**MR WEITZMAN:** We are, yes.

**THE CORONER:** Just get the PEWs scores out and then counsel can take you through it in his way.

**MR WEITZMAN:** I am just going to check something, sir. I hope that everyone has four sheets, and if I look in the bottom right hand corner ----

**THE CORONER:** I have five sheets.

**A.** I've got six.

**MR WEITZMAN:** Can I collect them and make sure that everyone has got the right thing? If you just give it to me, I can do it quickly.

**THE CORONER:** I start with sheet ... I am looking at the top right hand corner: 278.

**MR WEITZMAN:** Can you discard that and start with 279, using the numbering in the top right hand corner.

**THE CORONER:** So, 279 we start with. Then 280?

**MR WEITZMAN:** Yes.

**THE CORONER:** 281?

**MR WEITZMAN:** Yes.

**THE CORONER:** 283?

**MR WEITZMAN:** You should have a 282. I think you already have that, sir, because that was passed up before.

**THE CORONER:** I have 282 as exhibit C3.

**MR WEITZMAN:** Thank you. Can I check that Mrs Clinton has got the same?

**A.** 279, 280, 281, 282.

**Q.** All right. If we start at 279, that is the 1st of November, is it not, in the top left hand corner?

**A.** Yes.

**Q.** And at this point Hayley is not on your ward; she is on ward 12. Yes?

**A.** Yes.

**Q.** And we see that monitoring is hourly, is it not?

**A.** That's correct.

**Q.** And then if we go to the second, she remains there, monitoring roughly hourly, until the transfer to your ward on the 3rd, where it is approximately every four hours. Would you agree? End of the 3rd, going into the 4th, page 280?

**A.** That's correct.

**Q.** And we can see, for example, during the 4th, that on a number of occasions the blood pressure is not calculated - is that right?

**A.** That's right.

**Q.** Now, if we look at the left hand column, you have got seven criteria: respiratory rate, heart rate, blood pressure, oxygen saturations, oxygen delivery, respiratory distress and CRT. Can you help us with CRT, please?

**A.** It's a capillary refill time.

**Q.** I am grateful. And these are scored because the charts are coloured and, depending in what band it falls, you assign a score. Sir, can we give you a colour code, and Mrs Clinton, please? So, if we look at the colour code, which I think is C2, I have it labelled as C2, sir: on the left hand side, we have: zero, clear; 1 is yellow, 2 is orange, pink is 4. Yes?

**A.** Yes.

**Q.** And the different levels within the seven fields I have identified are banded by colour, and depending where the score falls within them, you get a number which you add up to give the PEW score at the bottom.

**A.** That's right.

**Q.** You will be much more familiar with this than I am. And the point in the guidance, and the point raised by the report is that, if you do not score all seven fields, you cannot accurately calculate the PEWs score. That is correct?

**A.** That's right.

**Q.** So, if we look, for example, on the 4th, or rather the 3rd at 2200, 2 o'clock, 10 o'clock and 1400, the blood pressure has not been scored. Yes?

**A.** 10 o'clock and 2 o'clock, yes.

**Q.** 2 p.m., I should say. My apologies.

**A.** Yes.

**Q.** And if the blood pressure has not been scored, one cannot be sure that the score at the bottom is accurate?

**A.** No, but now we put, "PEW scored without BP" on the chart. So, PEWs are scored but they are not including blood pressure, and that is deemed acceptable.

**Q.** But not according to the guidance at the time that Hayley was on the ward?

**A.** No.

**Q.** And if you do not get the full score, at the bottom, you may not get the right result because we have on the right hand side, "PEWs response" - yes?

**A.** Yes.

**Q.** And, basically, if the score is between 1 or 4, you, "Discuss with nurse in charge and consider increasing frequency of observations"?

**A.** Right.

**Q.** If it is between 5 or 8, "Inform nurse in charge, call patient's own team or call H&N - hospital at night after hours", and if it is 9 or more, "You should be very concerned. Call patient's own team or hospital at night. If no response or unable to attend immediately, call PICU." Yes?

**A.** That's what it says, yes.

**Q.** So, the whole purpose of this is to monitor by taking seven readings, each period, the level of the patient's well-being, and if it rises, an appropriate response is to seek medical attention?

**A.** Dr Stumper this morning mentioned the PEWs and also mentioned that this has to be used in the context of the babies that we nurse. They are not normal babies. This is right for a child that's coming to a medical ward and has normal parameters. If you come on to my ward now, you will go to the PEWs chart and you would find nearly every child has got a high PEWs score.

**Q.** The question I asked, and we can come back to what you have just told us, but the question I asked: if the score gets into a certain range, according to this, there is a response required so far as medical attention is concerned - would you agree?

**A.** According to this generic chart, yes.

**Q.** You were filling in the PEWs charts for Hayley.

**A.** Not me personally.

**Q.** The nurses on the ward, of course.

**A.** Yes.

**Q.** If you were filling them in, surely one should fill them in, (a) correctly, and (b) take the response identified in them?

**A.** I have had and still have a core of extremely experienced nurses who are experts in cardiac infants, many of whom have been with me for 10 years, and I would completely trust their judgments in looking at the PEWs score and would expect more junior staff to go to them for advice.

**Q.** Can we look please at the next page, 281, and we can see there that on a number of occasions blood pressure is not taken - you would agree? For example, I cannot find at 2 o'clock in the morning on the 8th, towards the right hand side, that respiratory rate has been measured. Would you agree?

**A.** That's correct.

**Q.** Could we now look at the 22 hours on the 6th, please. Do you have that?

**A.** Yes.

**Q.** The note says, "Saturation 90 to 91% in 0.5 litres nasally."

**A.** Correct.

**Q.** I can take you to the nursing note in relation to that, but what has happened is that the nurse has written down that she has increased the oxygen level because Hayley's saturations dropped to 91%. Yes? And yet no PEWs has been calculated for that drop, has it?

**A.** No, the nurse has acted on the drop in saturation level, which I would consider a normal and appropriate action to take.

**Q.** If it had dropped to 91 or less, the score would have increased, if we look at oxygen, to the top band, would it not, which would be a score of 4? Would you agree?

**A.** Can you repeat that, please?

**Q.** Yes, if you were observing Hayley and her oxygen saturations dropped to 91 or 90, i.e. less than 91, it would fall in the top band or the top row there for oxygen saturations.

**A.** That's correct.

**Q.** And that would score 4, rather than zero, which is what in effect has been scored for oxygen saturations.

**A.** That's correct.

**Q.** And if we add 4 to the PEWs score at that point, it would be calculated at 8 rather than 4, would it not?

**A.** That's correct, yes.

**Q.** And then one would inform the patient's own team or the hospital at night?

**A.** That's just one observation in a row of observations, and looking either side at the saturations, they're 95, 98, 99 and then she had a dip to 90/91. Given a little bit of extra oxygen, her saturations have come back to 98 again. That would be appropriate action on a cardiac ward.

**Q.** If her oxygen saturation is dropping so that her PEWs scores fall at 8, a doctor should have been consulted?

**A.** I don't, no, I don't agree. I think, if you've got an experienced cardiac nurse with more, many years experience, then it's appropriate that that nurse looks at the child and decides what to do.

**Q.** Well, let me rephrase the question, then. According both to the policy, the document we are looking at in front of us and the case review in respect of Hayley, if it is calculated, there should be a response as set out in the document - is that fair?

**A.** I don't think you're looking at it in the context of what I've said; the cardiac patients that we nurse.

**Q.** Well, in effect, you are ignoring both the policy and the document?

**A.** Well, yes, I suppose, if you look at it like that.

**Q.** Thank you. If we look then at 2 o'clock on the night of the 8th - yes?

**A.** Yes.

**Q.** You can see that the oxygen saturation is 84%.

**A.** Yes.

**Q.** But it is entered in the wrong row, is it not?

**A.** Yes, it is.

**Q.** So, it is scored as zero rather than 4.

**A.** Well, there isn't a PEWs score for it.

**Q.** Well, 84% saturation would attract a PEWs score or PEWs units of 4, would it not?

**A.** But then I notice that there is a comment made of, "Unsettled", so therefore, as an experienced person, I might consider that Hayley was unsettled, that it wasn't picking up

the correct saturations - again, I'm looking in context of the saturations before and after, that show 96 and 99. So, as an experienced person, I might think to myself I need to reposition that sats probe or I need to do another recording, but that's coming from experience.

**Q.** Well, look at the next entry, which you say is 99. What time was that done?

**A.** It says 10 o'clock.

**Q.** So, that is an eight hour gap.

**A.** It is, yes.

**Q.** So, if you were resettling Hayley, you would not wait eight hours to read the result, would you?

**A.** I can't make speculation here because I wasn't there on duty caring for this child.

The child would have been on continuous monitoring, so therefore the sats would be continuous.

**Q.** Mrs Clinton, with respect, you were speculating, and I asked you about your speculation given the records. You were speculating that it may have been that the oxygen saturation was mis-positioned, but that could not be the case if you left it for eight hours, could it?

**A.** I believe the child was on continuous monitoring, so although it's not been documented, there would have been a monitor in place.

**Q.** There is no respiratory rate for that entry, but I calculate, assuming that the respiratory rate was constant to those either side of it, a PEWs score of 9, and that would have required Hayley to be brought to the attention of the, at the very least, the H&N team, would it not, because it was at night?

**A.** According to policy, yes.

**Q.** And so, what we have is an entry in the records which says at 2 o'clock in the morning on the 8th of November, Hayley is suffering mild respiratory distress, her oxygen saturations are falling, she needs to see a doctor, according to the record, and yet nothing is done for the next eight hours. No further observations taken for the next eight hours.

**A.** Well, I can't comment on that.

**Q.** Well, you were the ward sister. Is that not a matter of concern?

**A.** I would have to ascertain what was going on there as a ward sister. I don't believe I

was on duty then.

**Q.** I accept, Mrs Clinton, that you were not on duty, but if you are getting the wrong entry, putting 84 in the wrong row, so misscoring the PEWs scores and no further observations for another eight hours, as the ward sister, are you able to say that that must be a matter of concern?

**A.** Looking at this and in the context you are saying, then, yes, it is.

**Q.** Can we turn to the next sheet, page 282, and we have an entry for - well, we have a number of absent blood pressures, do we not? And then we have an entry at 10 o'clock on the 10th, and this is the day that Mrs Stevenson is concerned about Hayley, is it not? Yes?

**A.** Yes.

**Q.** And, again, we have an entry of 86% in the wrong row, do we not?

**A.** We do.

**Q.** And on this occasion it is annotated with "crying", so it would seem that Hayley was distressed?

**A.** Correct.

**Q.** And I calculate that PEWs score as 9. So, again, that indicates a need for medical attention.

**A.** Correct.

**Q.** Now ...

**A.** But I believe that medical attention was given there.

**Q.** Well, certainly during the 10th there were ward rounds and the doctors were seeing Hayley, but part of the reason the nurses monitor the babies, the nurses monitor Hayley, is so that they can bring to the doctors' attention any ongoing problems or deteriorations - would that be fair?

**A.** Correct.

**Q.** And if you do not score it properly or if you do not do the observations, then the nurses cannot do that - would that be fair?

**A.** Correct.

**Q.** Is it right that on the evening - sorry, during the 9th, Hayley was being nursed by a clinical support worker? Have you got page 542, please, Mrs Clinton?

**A.** 542 of which ...

**Q.** It is the bottom right hand corner. It is your note or the note of the conversation with you on the 2nd of February. Do you have that?

**A.** Yes.

**Q.** Now, "Perception of well-being" is a heading - does the learned Coroner have that?

**THE CORONER:** Page?

**MR WEITZMAN:** 542. It was the note of the conversation in February 2010.

**THE CORONER:** This is C8. Yes. Which bit am I looking at?

**MR WEITZMAN:** 542, "Perception of well-being." "Jacky explained that in terms of nursing staff the children who are considered to be less dependent are nursed by clinical support workers. HF was considered low dependency, so was allocated a clinical support worker." So, she had a clinical support worker, so we can assume that the nurses did not consider that there were any problems?

**A.** That's correct.

**Q.** And if that is in a period when the family were concerned about Hayley's deterioration, it would appear that the message from the family was not getting through to the nurses?

**A.** Clinical support workers are allocated to patients under the umbrella of the qualified nurse. So, they will have somebody overseeing them. So, the patient is observed by the nursing staff as well as the clinical support workers.

**Q.** I accept that, but it is those who you consider to be least problematic, to whom you assign the clinical support worker, is that fair?

**A.** Yes, in the context of what's going on in the broad picture of the ward, and at that time we did have a large number of patients that needed high nursing intervention on the main ward as well as in the high dependency unit.

**Q.** Are you able to tell me on what dates Hayley was nursed by a clinical support worker?

**A.** No - without looking at the notes.

**Q.** Well, I think it was the 7th and the 8th. Carol Franklin - was she one of your clinical support workers?

**A.** She is.

**Q.** Well, do you want to see the notes or can we take it as read? So, on the 7th and the

8th, Hayley has a clinical support worker, and that is the period where the family are very concerned about her, is it not? Yes?

**A.** It seems to be.

**Q.** I am sorry, could you address your answers to the Coroner.

**A.** It seems to be.

**Q.** So, it certainly indicates that the nurses were not as concerned as the family, does it not?

**A.** Not necessarily. I think I'd have to read the nursing entry to see the concerns.

**Q.** Let's deal with that. 660 and 661, please. 660, you see it says Carol Franklin in the left hand column, Mrs Clinton?

**A.** Yes, I can see. (Pause)

**Q.** You have had a chance to look at the nursing notes. Do you want to comment?

**A.** Yes, she was looked after by a clinical support worker on the 7th and the 8th. I can't see anything untoward in that. There's nothing written in the doctor's notes that are also on that page.

**Q.** And would it be the clinical support worker who was filling out the PEWs scores, or would it be the nurse?

**A.** It would be the clinical support worker.

**Q.** So, if we look back at 281 - do you have that, Mrs Clinton?

**A.** I do.

**Q.** We were looking at 2 o'clock on the 8th and 9th, were we not?

**A.** Yes.

**Q.** Where the PEWs scores were entered incorrectly. Would that be the clinical support worker, then?

**A.** Well, if it correlates to the notes, then, yes.

**Q.** Well, does it correlate to the notes?

**A.** Well, there's no signature, because we don't sign it, but I would assume it was.

**Q.** And it would also be her who failed to enter any scores between 2 and 10?

**A.** That's correct.

**Q.** Just looking back at your note of February, please: the last part of that bit, "Perception of well-being": "Overall, though, Jacky felt that there were no alarming indicators in relation to Hayley Fullerton compared to the spectrum of children within

ward 11 and their levels of dependency. It is her recollection that until Tuesday evening HF was only on four hourly obs, which is correct. However, without having reviewed the medical records, Jacky was unable to comment further about this." So, certainly, your perception, I presume from talking to the nurses on the ward and looking at the nursing records, which you say you did at the top of the page, was that Hayley, until the evening before her death, had no alarming indicators in relation to the spectrum of children on the ward?

**A.** Well, I have written it, but I don't recall that and, looking at this, I wouldn't have said Tuesday evening - oh, yes, Tuesday. Well, there is no, there does not seem to be, apart from ... looking at the PEWs chart in relation to cardiac infants, there isn't anything that actually is that alarming. I know you've highlighted a few of the PEWs that have been incorrectly calculated, but on the whole ...

**Q.** Well, on the evening, on the Monday evening, which is the 9th to the 10th, SHO Dawson was considering sending Hayley to PICU because of sternal recisions. Hayley was so ill that she asked the x-ray to be brought up to her.

**A.** I was not there Monday evening.

**Q.** The point I am putting to you, Mrs Clinton, is that the nursing staff had a very different view of Hayley's well-being, summarised by you in that note, than the family and the medical staff.

**A.** I am aware that the nurses were concerned, as were the medical staff.

**Q.** Can we look at 496 and 497, please. I think this is C10 - am I right, sir?

**THE CORONER:** Sorry?

**MR WEITZMAN:** Is it C10, sir?

**THE CORONER:** 13.

**MR WEITZMAN:** My apologies. This is, again, a note, "Comments from Jacky Clinton. Hi Nina ..." and if we turn the page please, Mrs Clinton, it says it is copied from an email that you sent, I presume, because it says, "Regards, Jacky", on the 14th of January 2010. Do you have that please, Mrs Clinton?

**A.** I have that, yes.

**Q.** Thank you. If we can look on the first page of your email, the paragraph beginning, "There were no new concerns regarding Hayley's condition over the weekend of the 6th and 9th of November. Her wound continued to be redressed in accordance with the

surgical team's instructions. It is usual practice to leave dressings on for 48 hours if possible, and there is no oozing. Hayley's dressing was changed when it oozed, so the dressing - unfortunately, it was not always documented by some of the nursing staff, and I think this was picked up as not being done by the family." First point. You have a special record for when dressings are done, and that was not being completed properly?

**A.** Yes.

**Q.** "The nurse in charge on Sunday the 8th felt that Hayley was one of the least dependent patients on the ward and could be cared for by a clinical support worker, who was happy to do so. They are valuable members of our team and work under the supervision of a qualified staff; usually the nurse in charge." Next paragraph: "Monday the 9th was a very busy day. The nurse in charge normally has no patients to care for - taken up with grand ward round. However, there was a member of staff off sick and she allocated herself three patients who were lower dependency and had parents visiting. Hayley was seen on the grand ward round and no concerns expressed on medical examination." Well, you have heard Dr Stumper. I mean, he was concerned and required the x-ray because he felt that there was something wrong with her - yes?

**A.** Yes.

**Q.** Turning the page - sorry, we need to put it in context. Tuesday the 10th: "Hayley required an increase in oxygen. She was put in a headbox so as to give humidity to loosen secretions and accurately measure the oxygen concentration. The nurse in charge of the shift noted that, due to Hayley's deterioration, it was decided to take samples of secretions from her nasopharyngeal airway to test for swine flu and bronchialitis. Hayley did not have any obvious flu-like symptoms but all reasons for her deterioration need to be eliminated. On microbiology's instructions, if a child is tested for swine flu, they must be nursed in isolation." Mrs Clinton, that rather suggests to me that it was a nursing decision to test her for swine flu. Is that right?

**A.** No.

**Q.** So, it is just the way that that is expressed?

**A.** Yes.

**Q.** I just wanted to check that. Thank you. So, up until the 10th, which is the day before she died, I repeat the point, and I am sorry to labour it: the nursing staff were not clearly as concerned as either the parents or the medical staff?

**A.** No, the nursing staff were concerned, particularly one nurse who had been on prior to the weekend and been in charge of the ward and came back after a few days and had noticed a difference in Hayley, and she herself had escalated that to one of the medical staff, that she had noticed a difference in her.

**Q.** Who was that, please?

**A.** But the nursing staff were concerned.

**Q.** Who was that, please?

**A.** That was Junior Sister Bennett.

**Q.** Thank you very much, Mrs Clinton.

**THE CORONER:** It is 10 past 5. We will take it tomorrow. So, the nursing staff were concerned. Junior Sister Bennett had been off over the weekend and escalated her concerns to the medical staff - that is what you said?

**A.** That is correct.

**Q.** What do you want to do with the exhibits, which the witness has got, overnight?

**MR WEITZMAN:** May they be handed back to my solicitor, please?

**THE CORONER:** Ms Lucas, are you content with that or do you want the witness to have availability to them or not?

**MS LUCAS:** Sir, we do have an extra copy of the bundles that were given - they are at the back, so I can make those available to her.

**MR WEITZMAN:** Sir, my learned friend has just told me she is only going to be 10 minutes. Is it not possible to finish this witness today?

**THE CORONER:** I have to confess that it is for my own benefit; I want to simply go through this again and check through the fairly large number of exhibits we have been going through and work out just what it is that we are saying, and I am hoping that when your learned friend asks her questions, she is going to be able to summarise it so that I get it right. I remind you, in September, I am going to have to sum up and actually understand what all this is then, which is not easy. Unless I get it clear now, it is going to be very difficult to get it clear in five months time.

**MR WEITZMAN:** Sir, I understand that completely.

**THE CORONER:** Take a seat if you would.

(The witness stood down)

**THE CORONER:** So, we are now breaking for today. I need to talk to the advocates

about timing. Anybody who wants to stay is very welcome to stay, but you do not have to. We will not be hearing any more evidence today. I do not mind. You can either stay or go, but what I do not want to do is start talking to the advocates and then - I am only going to be two or three minutes with them. So, the time slip is not yet desperate but it is becoming more noticeable.

**MR WEITZMAN:** I accept that, sir.

**THE CORONER:** What I will not do is to speed up in the last half day and rush things through. So, if we do not complete naturally, we are going to have to adjourn, which means finding another day well before the September. So, as I say, I do not think it is as yet desperate, but it will be this time tomorrow if we have not made significant progress. Sometimes, when situations like this arise, counsel say, "Well, we both agree that we can do without this witness/that witness." I am unlikely to accept that approach. We have discussed witnesses at great detail. I have made my views clear on the witnesses early on and I am not happy to start shredding them or shedding them now that we have got them. I am not asking you to try and speculate. I do not think we are yet in a desperate situation, but we are beginning to run out of time.

**MR WEITZMAN:** I suppose the only thing I can say, without speculating, is: is it possible for us to start any earlier than 10?

**THE CORONER:** Can you get me the court list for tomorrow, please? I have a hearing at 9 o'clock, one at 9.30 and one at 9.45.

**MR WEITZMAN:** Well, then the answer to that is self-evidently No, sir.

**THE CORONER:** Sorry?

**MR WEITZMAN:** The answer to my question then is self-evidently No.

**THE CORONER:** Not necessarily. We have started the court here at half past 7 in the morning. If you all wanted to, I would be happy to start at 8 o'clock and do an hour and then interrupt. Whether that actually achieves very much is another matter, but I am quite happy to steal an hour like that.

**MR WEITZMAN:** Can I ask when it gets listed, sir? When does your list come in, as it were? I mean, if we are in difficulties tomorrow, would it be able to save the first hour so that we could start at 9, on Thursday?

**THE CORONER:** The difficulty is that these lists are accumulating all the time. We have 5,020 deaths reported. When I do these short cases, it is because someone has died

in the last few days and families are understandably very keen to get the process started so that the funeral can proceed. We cannot do it the first 48 hours because people are usually too upset, and so we have to try and work round their timing. So, we try and keep 8.30 to 10 and 1 to 2 clear as a matter of routine so that these can be fitted in, and, sadly, some of these people, although I am saying a few days, sometimes it is seven days.

**MR WEITZMAN:** Speaking to my learned friend, if we can start at 10, we will see if the situation becomes desperate and what needs to be done.

**THE CORONER:** Yes. It does seem to me that some of the later witnesses are less significant than the others, and it seems to me that we should be able to cope.

**MR WEITZMAN:** I agree entirely. These first three witnesses have been much more generic than the later witnesses, who will simply speak to what they did on the particular dates.

**THE CORONER:** Yes. So, I will see you again at 10 o'clock.

**MR WEITZMAN:** Yes, sir.

(Adjourned until the following day)

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**HM CORONER'S COURT**

50 Newton Street  
Birmingham  
B4 6NE

Wednesday, 2nd May 2012

Before:

**MR AIDEN COTTON (THE CORONER)**

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**INQUEST TOUCHING THE DEATH OF**

**HAYLEY ELIZABETH FULLERTON**

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MR ADAM WEITZMAN (Counsel) (instructed by Irwin Mitchell Solicitors, Imperial House, 31 Temple Street, Birmingham, B2 5DB) appeared on behalf of Hayley Elizabeth Fullerton.

MISS TRACEY LUCAS (Solicitor from Capsticks Solicitors, 35 Newhall Street, Birmingham, B3 3PU) appeared on behalf of Birmingham Children's Hospital.

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**PROCEEDINGS - DAY 4**

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Transcription by  
**John Larking Verbatim Reporters**  
Suite 91, Temple Chambers, 3-7 Temple Avenue, London EC4Y 0HP  
Tel: 020 7404 7464 Fax: 020 7404 7443  
[www.johnlarking.co.uk](http://www.johnlarking.co.uk)

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Wednesday, 2nd May 2012

MR WEITZMAN: Sir, with your permission I would like to ask Mrs Clinton one more question before my learned friend starts.

THE CORONER: Yes.

MR WEITZMAN: Thank you very much.

THE CORONER: Mrs Clinton, please.

Mrs Jackie CLINTON (Recalled)

Cross-examined by Mr Weitzman

MR WEITZMAN: Mrs Clinton, I have here a handwritten note of the typed interview transcript that I showed you yesterday, of 2nd February 2010. I have only got one copy, so I am going to pass it first to you and then to the learned Coroner. At the very bottom it says:

"She was over nice, outrage, tantrum. Tuesday stayed all day."

Could I just pass that up to the witness and then to the Coroner, please (handed). It is at the very bottom of the page with the pink highlighter.

THE CORONER: What is this, where has this come from?

MR WEITZMAN: This is disclosed to us by the Trust, it is the handwritten note of the notes that I handed to you which was typed up, as I understand it taken by Bryony Winnall or someone else who is part of the investigation, sir, and it is a handwritten note of the interview with Mrs Clinton. (To the witness): You remember being interviewed in February in relation to the events surrounding Hayley's death.

A. I do.

Q. Can you remember who interviewed you?

A. It wasn't Bryony. May I look at that again, please, because that's not true.

Q. That is what I wanted to ask you.

MISS LUCAS: Sorry, is it possible it could be read out again, because I only saw it briefly.

MR WEITZMAN: Certainly, I will read it out.

MISS LUCAS: Thank you.

THE CORONER: I think what I am going to do is just get that photocopied, then we will all know what we are talking about. (Pause)

MR WEITZMAN: It is the last part, Mrs Clinton:

"She was over nice, outrage, tantrum. Tuesday stayed all day."

"Tuesday stayed all day" must be a reference to Paula Stevenson, would you agree?

A. Sorry?

Q. "Tuesday stayed all day" must be a reference to Mrs Stevenson, Mrs Clinton. Very bottom of the page, please.

A. I can't see "Tuesday stayed all day."

Q. At the very bottom of the page?

A. Oh.

Q. Yes. Someone has recorded, it appears you saying about Mrs Stevenson: "She was over nice, outrage, tantrums." Is that correct?

A. No. I absolutely refute that. I would never, ever say that. I never experienced Miss Stevenson having tantrums, and - no.

Q. Thank you very much.

A. Absolutely not.

THE CORONER: Whose writing is this?

A. I am not sure. Whoever interviewed me. I don't recognise all the things that are written down here, but I absolutely would never say that about .....

MR WEITZMAN: So we can confirm that your evidence is that Mrs Stevenson, as Hayley's mother, was concerned about her child but in an entirely appropriate way.

A. Yes.

Q. And if staff drew other conclusions, that would have been unfair.

A. I can honestly say that nobody ever told me that.

MR WEITZMAN: Okay, that is very kind, thank you, Mrs Clinton.

THE CORONER: So, Miss Lucas, if that has been produced by the Trust, I am going to want to know where it came from and I want to know whose writing it is. I do not expect to trouble you now, but I am going to want to hear. Yes?

MISS LUCAS: Yes, we will investigate that, sir, because at the moment behind me nobody knows who it is.

THE CORONER: Okay. Before you start, there are the questions I wanted to ask from yesterday, and then you can finish off. (To the witness): We heard your evidence fairly late yesterday. I just want to check that what I have got is correct. I think you said that, yes, the Trust's observation and monitoring policy of 2008 meant that Hayley should have been formally monitored every hour and a record made. Yes?

A. Mm-hm.

Q. You have to answer, not nod.

A. Yes.

Q. Yes. You also said, no, Hayley was not monitored on an hourly basis.

A. Not documented, but was on a monitoring - a continuous monitor.

Q. Yes. I think you also said that that is because she and all other babies on the ward are on continuous monitoring.

A. That's correct.

Q. Is that right? So I think you said that technically you were wrong, but it does not mean that she was not monitored.

A. That's correct.

Q. Is that right?

A. Yes.

Q. You also said, I believe: yes, the PEWS observations should have been carried out and recorded every hour. They were not recorded every hour and there is at least one gap of eight hours.

A. Yes.

Q. You also agreed with counsel that even when the observations were recorded, they were not always all recorded.

A. That is right.

Q. When calculations were made, errors were made in making the scores.

A. That's right.

Q. You said that now they are kept properly, but in 2008 they were not.

A. That's right.

Q. My understanding is that you were saying that it was not just with Hayley, you are saying that as a general thing .....

A. That's correct.

Q. .... PEWS records were not kept properly then.

A. That's correct.

Q. You were saying that again, although technically you accept that that is wrong, you do not accept that meant that Hayley was being neglected.

A. That's correct.

Q. You were saying a PEW score is generic across the whole hospital.

A. Yes.

Q. By which I presume you mean that every ward uses the same bit of paper.

A. Yes.

Q. But because you are a cardiac ward for babies, all your babies would score above the nine .....

A. Generally, yes.

Q. .... on a very regular basis.

A. They would score higher.

Q. Score higher, not necessarily over nine.

A. No, they would have a higher PEW scoring.

Q. I think that you were also referring to what Dr Stümper had said, that if you are going to keep a PEW score it depends whether you list Hayley as one to five, being her chronological age, or zero to one, being her development age.

A. That's right.

Q. Is that the point you made?

A. Yes.

Q. You were agreeing what he was saying.

A. Definitely.

Q. A couple of other points that were not taken up but I want you to comment on if you can. Paula said in her statement that she felt that Hayley had been:

"..... dumped at the door, the furthest from the nurses' station. I felt as though Hayley was being punished and placed as far out of the way as possible because I was reluctant for her to be transferred to the ward."

Heard her say that?

A. Yes.

Q. Is that true or not?

A. That's untrue.

Q. We also heard reference to a gift voucher of £100. Do you know anything about that, yes or no?

A. Yes.

Q. Who actually received that gift voucher?

A. A staff nurse that was looking after Hayley on a shift was actually offered £100 to care for - or as a gesture, I believe, I was not there myself at the time - and the nurse -----

Q. Who was it?

A. Staff Nurse Emma Wright.

Q. What happened to that?

A. She said she could not accept money, so Paula kindly went out and got a gift voucher and a thank you card. The nurse said that Hayley's Mum would be upset if she did not receive it so she took - this is my understanding from the nurse. She received the voucher, which she handed over to myself. I contacted my line manager, who contacted the Head of Nursing, and it was treated as a gratuity and put in as a ward donation.

Q. So cash was offered to Emma Wright.

A. I believe so.

Q. She was told that that could not be accepted.

A. That's correct.

Q. A voucher was given.

A. Mm-hm.

Q. The nurse felt that it would be unkind to refuse it.

A. My understanding was that Miss Stevenson said she would be unhappy if she did not receive it.

Q. Okay. So it was handed to you.

A. Yes.

Q. As Ward Manager.

A. That's correct.

Q. And you took advice from whom?

A. I spoke to my line manager, Helen Watson, and she spoke to the - I think, I don't know a hundred per cent - to the legal team, and it was written in a ..... gratuity book? Yes.

Q. Now, the position with regard to the monitors. You were saying yesterday that there was more than one, and an experienced nurse could tell from the sound which one it was.

A. That's right.

Q. Do you mean you could tell which room it is, or are there different monitors for different things within the same room?

A. There can be: monitors for heart rate; a Philips monitor that we use for sats and heart rate and respiratory; (inaudible) symmetry is for the saturations and heart rate, which has a different sound to the Philips monitors; and then we use - our babies lie on apnoea mattresses, which means if they stop breathing or they picked up the apnoea goes off, and that's a different sound.

Q. The family would say that these were constantly going off.

A. I can't comment on that, I can't comment on that.

Q. In his statement Mr Stevenson said that the impression he got was that people did not know how to set them.

A. I feel that's untrue. There's training on all the monitors. The nurses have to complete competencies.

Q. You would say that sometimes you could tell that there was no need to actually go into the room.

- A. Through experience, intuition - like I said, if you are nursing a baby in another cubicle, it is not always possible for the nurses to put the baby down, go to a monitor, go back to the baby, go back to a monitor, because we have a duty of care for all of them, so we have to prioritise.
- Q. But then what happens? I am holding a baby in one cubicle, I hear a monitor going off in another, I finish dealing with the baby - it may take ten minutes.
- A. If you know that there are a parent in that cubicle, as I said there's an alarm call. If the parents are concerned, because the parents know their own babies, then they pull the alarm pull or shout for help. If the baby is not with a parent, then obviously the concerns are higher, and you would expect, I would expect, a nurse to go and deal with the monitor. Maybe not immediately, but certainly .....
- Q. Tell us about this alarm call system within the cubicle.
- A. There's a button that can be pulled or pressed, which will highlight an alarm and the light outside the cubicle.
- Q. Is it the same system in every cubicle?
- A. Yes.
- Q. So they are on a cord or on a wall, or what?
- A. They're on the wall.
- Q. It sounds an alarm.
- A. Yes.
- Q. And lights up over the door.
- A. Yes.
- Q. Are they obvious within a cubicle?
- A. Very.
- Q. Were they working at the time?
- A. Yes.

Q. We also heard about a clinical support worker.

A. Correct.

Q. You were saying that the mix now is less favourable than it was then.

A. The skill mix is 80:20.

Q. Sorry?

A. 80 qualified - 80 per cent qualified to 20 per cent unqualified.

Q. When you say unqualified, that means clinical support worker.

A. Correct, yes. Having said that, they all go through a training programme, which was present at the time as well.

Q. Tell us a bit more about that. At the lowest, it would be work experience someone.

A. No, not work experience. We have band 3 and band 4 clinical support workers.

Q. Sorry?

A. They have two bands of clinical support workers, band 3 and band 4. Both bands go through a period of - oh, gosh - six to eight months training, where they attend study sessions or study days, which include observation monitoring, how to write notes, all sort of clinical things, wound care and various things like that.

Q. Okay, and they are under direct supervision of you or a nurse, or what?

A. They are under the care of - when they are allocated a patient, then they are supervised by a qualified nurse, somebody that is clinical that day.

Q. Do you get clinical support workers of many years' experience, or do they automatically go on and qualify as nurses?

A. No. I have a variety, some that are inexperienced or relatively inexperienced, and then some that have worked for twenty years.

Q. Were they called clinical support workers twenty years ago?

A. I think they were probably called auxiliaries, or they were state enrolled nurses then.

Q. Right. Auxiliaries or .....?

A. At that time, depending - state enrolled nurses, or the clinical support workers now to band 4 do what state enrolled nurses did then, apart from the drugs.

Q. There are just two bands. You do not know why they call them band 1 and 2? Why 3 and 4?

A. Band 1s are domestics, porters .....

Q. Oh, right.

A. Band 2 is housekeepers.

Q. It goes on.

A. Also, can I point out that the clinical support workers also care for babies with complex needs. They will look after babies with CPAP, if they are long term and stable, tracheostomy patients, so they are trained to high skills.

Q. So they are not just supernumeraries to be .....

A. Absolutely not, no. They are part of the team, and they are included in the numbers.

THE CORONER: Okay. Yes, Miss Lucas?

Cross-examined by Miss Lucas

MISS LUCAS: Thank you, sir. Mrs Clinton, can I just first of all ask you about cubicles, because I am not sure what is meant by a cubicle. Is a cubicle a part of the ward where you cannot see in it apart from the door?

A. All the cubicles on the ward are glass fronted, so although the walls between the cubicles are solid, the door and there are windows so you can see directly into them from a variety of views.

THE CORONER: Sorry, you say glass fronted. How much of it is glass?

A. The whole of the front, apart from - up above, the windows and the door is glass. Just the base is solid.

MISS LUCAS: So would it be correct to say that if you walked past them you can see in and see what is happening?

A. Yes.

Q. On your ward there has been reference to Hayley being by the door.

A. Yes.

Q. So if there are people coming in and out of the ward, as they walked along the ward would they be able to see into the cubicle themselves?

A. Yes.

Q. Is it correct to say that opposite that cubicle is the office of the ward clerk?

A. Yes.

Q. Is the ward clerk in that office most of the day?

A. Yes.

Q. So if there was a need to get help or anything that was going on, alarms and things, there is somebody in the office opposite.

A. Yes.

Q. Has it ever been your experience that if a concern is raised, that the ward clerk has got help in the past, or is that something you would expect the ward clerk to do?

A. No, she will. It's not an office where the walls are blocked in, it's a desk, so she's got visibility. If she's concerned or the parents are concerned then she will come and find a nurse. She's not a ----

THE CORONER: Who sits in that room?

A. The ward clerk.

Q. Is that all day long?

A. That's from 8.00 till 4.00.

Q. Doing what?

A. Administration duties.

MISS LUCAS: To be clear for the Coroner, that is not somebody who is a nurse.

A. No.

Q. No. But that is somebody who works on the ward, and if there was a need to summon help urgently that would be somebody else who could get help very quickly.

A. Yes, certainly.

Q. Can we look at the ward hierarchy as such and how people can get help from somebody more senior, or how they can make a complaint. By complaint, I am not talking about anything formal, but how they can get somebody if there is a concern. If you are not on the ward, are there other people that can raise concerns or deal with concerns in families?

A. Yes. Anyone can raise a concern. It could be the clinical support worker, or families can ask to see the nurse in charge. If the concern can wait till I'm there, then they wait. If not, there's a hierarchy where you can go to the line manager. Out of hours there's a clinical co-ordinator, so there are people around that can be contacted at all times.

Q. If you are not on the ward - you said before that you often see families pretty much every morning if you are on the ward and you are not doing clinical duties. If you are not on the ward, is there somebody else who regularly sees the families, somebody, a liaison person?

A. Yes. Yes. There are four liaison nurses, sisters, who work with the families, and their role is to, as I say, liaise between the doctors, families, nursing staff, community.

Q. Is that just Justine Kidd on this occasion?

A. That's correct.

THE CORONER: That is what?

A. Justine Kidd was the liaison nurse allocated to Hayley.

MISS LUCAS: Is Justine Kidd, as a liaison nurse, somebody who is experienced in children that have had cardiac surgery and are under the cardiology team?

A. Yes, she is. She has worked for many years - for many years she worked in the intensive care unit, and then I can't recall how many years in cardiac work but many years as well with us.

Q. Is there also a Pals team?

A. Yes, there is.

Q. Is it correct to say that the Pals team deal with things on the ground, so anybody can go to them and they will deal with it straightaway?

A. That's correct.

Q. Can I ask you about PEWS and PEWS monitoring in 2009. We saw that the policy for monitoring observations was from 2008 - you were referred to that by my learned friend yesterday. Is it your understanding that PEWS was still relatively in its infancy in 2009?

A. Yes.

Q. I understand that PEWS was a completely new concept that was introduced around then, is that correct?

A. It was, yes.

Q. You calculate a PEWS score from observations, is that correct, that are made?

A. Yes.

Q. But is it the case that the really important information to assess how a child is doing is the observations?

A. Yes.

Q. Is it correct to say that prior to having PEWS all you had were the observation charts?

A. That's right.

Q. So is it correct to say that nurses were used to using observation charts .....?

A. Yes.

Q. .... in their care?

A. Yes.

Q. And that if they - prior to PEWS if they had concerns about a patient from the observations they could go and get assistance if they needed it.

A. That's right, yes.

Q. Also, the PEWS - we recognise that the PEWS scores were not always recorded, not calculated on a number of occasions, but is it the case that at any time if a nurse was concerned with the observations, that the nurse could raise concerns with anybody on the ward?

A. Most certainly.

Q. So is it fair to say that they still involved some clinical judgment?

A. Yes.

Q. Yesterday you referred to the Trust's serious untoward incident or serious incident report. You did have a copy of this, sir, but I am not sure what exhibit number it has. It was page 419 of the documents that you were given.

THE CORONER: Does the witness have a copy?

MISS LUCAS: You were given a copy yesterday, but I know the copies came back so we are just getting one for you to have a look at. Sir, do you have an exhibit number on that report, so I can - it may assist?

THE CORONER: C6.

MISS LUCAS: C6, thank you, sir. 419.

THE CORONER: Page 9 of 19.

MISS LUCAS: Yes. (To the witness): The bottom of the page should have some pagination, is that correct, on the copy you have? Does it have page numbers at the bottom?

A. Yes.

Q. If you look at 419 of those page numbers, as the Coroner said page 9 of 19 of the report .....

A. Okay.

THE CORONER: Just before you ask any questions, have you read this report before?

A. I believe I have. Yes.

THE CORONER: Yes?

MISS LUCAS: If I can just read out what is said on the second paragraph:

"The PEWS score was not always calculated on the observation chart and occasionally not calculated correctly, even though appropriate observations had been performed."

Do you agree with that?

A. I do, yes.

Q. Is it your view, from looking back at the care provided by the nurses in your team, that the observations generally were of a reasonable standard?

A. Yes, I do.

Q. Is it your view that those observations when taken, when they raised concerns, that those were appropriately escalated?

A. Yes.

Q. My learned friend yesterday referred you to the PEW charts where occasionally there was a very low oxygen saturation.

A. Yes.

Q. If you get a low oxygen saturation when an observation is being taken that does not fit with the trend of observations of oxygen saturations, what do you normally do, or what would you expect your nurses to do?

- A. I would expect the nurse to reassess the patient, whichever observation is abnormal, to repeat that, see if there was any reason perhaps why the saturations were low: was the child crying, had the probe come off, did it need repositioning? But I would also expect them to look at the child clinically, see if there was any change in colour, respiratory rate, that sort of thing, so to do a visual observation. For an experienced nurse the visual observations is in some ways more important than what you have got written on a chart.
- Q. Is it the case that for various reasons, for example a child is crying, a child that is unsettled, that their oxygen saturations and their other observations can decrease, can become - I am not wording this very well, sorry, I will start again. Is it the situation that if an oxygen saturation, for example, is low and the child is crying or unsettled, that the low observation can be as a result of the child being upset?
- A. That is right, yes.
- Q. Also, is it the case that even though now you have a PEW system, if all the PEW scores are low and the PEW scores themselves are not causing any concern but a nurse has concerns about a particular patient, that they can get assistance even if the PEW scoring is normal?
- A. Yes.
- Q. With regard to hourly monitoring of oxygen, is it the case that some children are sent home on oxygen?
- A. Yes, that is fairly common practice nowadays for children, is to go home on oxygen.
- Q. So even though in the Trust now the position is that you enforce oxygen monitoring every hour, that children actually do go home and are not closely monitored on oxygen.
- A. That's right, yes. We de-escalate monitoring to go home, because it would be impractical for parents to do that at home.
- Q. Can I also ask you about transfer from Ward 12 to Ward 11.

THE CORONER: Just before you move on, you have finished with the PEWS, have you?

MISS LUCAS: Yes.

THE CORONER: I just want to take up one small point. I know you say PEWS was new at this stage, but PEWS is only a variation of MEWS, is it not?

A. Yes.

Q. Your nurses had all been using MEWS, had they not?

A. No, we didn't. That's an adult system.

Q. Right.

A. And paediatrics is very different.

Q. Right. So your nurses would not be familiar with the MEWS system.

A. No.

Q. But you are, or were.

A. I wasn't, no.

Q. Right. MEWS is an adult system, so I shall forget all about it.

A. Okay.

THE CORONER: Sorry, Miss Lucas.

MISS LUCAS: Thank you, sir. I just wanted to ask you about the transfer from Ward 12 to Ward 11. Do you have any recollection of the time of that transfer?

A. Yes, I clearly remember Hayley or the provision for her coming from Ward 12 to Ward 11. I was actually at a meeting with Ward 12 manager on that day, and she was recalled to the ward to speak to Miss Stevenson about Hayley coming across, because I know that she had got concerns. Hayley at that time was on Milrinone, a drug to support her heart, and we had a high number of patients that needed a high nursing input on the ward. The girls, when I went on to the ward, were trying to make provision in the high dependency area for Hayley, but I was told by the Ward 12 manager that Hayley's mother did not want to go into high dependency because she wished to stay by the bed. She had not been in high dependency on Ward 12 and she wished to stay with Hayley. We were uncomfortable about having another high dependent child because of the Milrinone on the ward and so I believe Hayley stayed on Ward 12 and the

Milrinone was weaned off, and she came to us later that day. I don't recall what time because I was not then on duty.

THE CORONER: Can you just spell that medication for me again?

A. M.I.L.R.I.N.O.N.E, Milrinone. We then had to - the girls, the nurse in charge was an experienced cardiac nurse, had been in position for some years, had to then look at the allocation of where to put Hayley. As I said, we had cubicles 2, 3 and 4 which had six babies in, who had high dependent needs. We had two C-pat babies, a tracheostomy, a child that needed constant suctioning, so these patients needed, as I said, a high nursing input. And it was negotiated, I believe, with the ward manager, who had worked with me for many years on Ward 11 before going to 12 - she knew the layout of the ward, and she negotiated where Hayley's family would be happy being on the ward. When I spoke to Hayley's mother the next morning she seemed happy with the position she was in.

MISS LUCAS: Is it also the case, Mrs Clinton, that even though there were a large number of patients that needed quite a lot of care on the ward, if Hayley had have needed high dependency care at any time, that could be provided anywhere?

A. It can. We can escalate high dependency care anywhere. All the cubicles have oxygen and suction and appropriate monitoring. All you need to do is allocate the nurses appropriately. There's provision for getting extra staff in from other areas of the hospital, you can get bank staff if you feel that the numbers are inappropriate, but there's always provision to make high dependency care on any part of the ward.

THE CORONER: You say anywhere, you mean anywhere on Ward 11 or Ward 12.

A. Yes.

MISS LUCAS: Thank you, sir. I have no further questions.

THE CORONER: Thank you very much.

A. Thank you.

(The witness withdrew)

THE CORONER: Dr Nidhi Gupta, please.

Dr Nidhi GUPTA (sworn)

Examined by The Coroner

THE CORONER: Tell me, please, your full name.

A. Dr Nidhi Gupta.

Q. Confirm your qualifications.

A. I'm MBBS, Bachelor of Medicine, Bachelor of Surgery, and I have also attained membership of the Royal College of Paediatrics and Child Health, MRCPCH.

Q. Tell me when you first qualified as a doctor.

A. In 2004.

Q. And when you gained the paediatric qualification.

A. In 2009.

Q. Are you still at Birmingham Children's Hospital?

A. No, I'm at Sandwell and West Birmingham Hospitals NHS Trust, and I've been there since March 2010.

Q. You confirm you are duly registered with the General Medical Council.

A. Yes.

Q. Okay. What I want you to do is to read through your statement, and then we will ask general questions.

A. I, Dr Nidhi Gupta, MBBS, MRCPCH, care of Birmingham Children's Hospital, Steelhouse Lane, Birmingham, B4 6NH, state: this is my first statement relating to the care and treatment given to Hayley Fullerton during her admission to Birmingham Children's Hospital from 12th October 2009 to 11th November 2011 - sorry, I have written 2011 but I meant 2009 then.

Q. Yes.

A. I was employed by Birmingham Children's Hospital NHS Foundation Trust from 4th February 2009 to 2nd March 2010 and I worked as a Senior House Officer in Paediatric Cardiology from 2nd September 2009 to

2nd March 2010. I have been employed by Sandwell and West Birmingham Hospitals NHS Trust as a specialist trainee since March 2010.

I remember some aspects of the care provided to Hayley and I have also reviewed relevant sections of her medical case notes. During Hayley's admission my involvement was as a senior house officer in paediatric cardiology. I was involved in her clinical care from 3rd November 2009 to 10th November 2009. My role involved doing ward rounds with my registrar or consultant as part of the team, documentation of findings, completing tasks from the ward rounds and responding to concerns of the nursing staff.

I first saw Hayley on the ward round of 3rd November 2010 with my registrar, Dr Porwall. Her respiratory rate was slightly elevated at 40 to 44 per minute and heart rate was 127 to 128 per minute. She was maintaining her saturations 97 to 99 per cent in 0.2 litres of nasal prong oxygen and did not have any temperature. She was on antibiotic (flucloxacillin day 9) to cover for superficial chest wound infection. Her chest was clear. She was pink, well perfused and heart sounds normal, with a soft systolic murmur and abdomen was soft. A plan was made to continue her antibiotics.

I then saw her on 6th November 2009 on ward round led by consultant Dr Vishvinatin. She was maintaining her saturations 95 per cent in 0.5 litre nasal prong oxygen. There was no temperature. Heart rate was 130 per minute and respiratory rate of 30 to 50 per minute. As she was settled on examination we weaned oxygen on ward round to 0.3 litres, with plan to increase it again if not tolerated. Due to ongoing concerns regarding her wound infection, despite being on day 12 of antibiotic, we decided to discuss with microbiology. I then discussed with Dr Batil, microbiologist, and we changed her oral antibiotic (flucloxacillin) to intravenous antibiotic.

I then saw Hayley during ward round on 7th November 2009 with registrar Dr Assing. She was maintaining saturations 97 to 98 per cent in 0.75 litres of nasal prong oxygen. Her respiratory rate was 36 per minute and blood pressure 91 over 51 millimetres of mercury, and heart rate 114. She was mildly tachypneic (slightly elevated respiratory rate) and had mild recessions. Air entry was good both sides and abdomen was soft with one centimetre of liver. We planned to continue her oxygen.

Subsequently I saw her on ward round led by registrar Dr Anderson on 8th November 2009 at 11.00 hours. She was gaining weight and was stable.

During ward round of 9th November 2009 with consultants Dr Stümper and Dr Vishvinatum her respiratory rate was 40 to 42 per minute, heart rate was 110 to 130 per minute and she was maintaining her saturations at 97 to 98 per cent in 0.75 litres of nasal prong oxygen. On examination Hayley was comfortable, chest clear with good air entry both sides and abdomen soft with one centimetre liver palpable. We reviewed her most recent bloods and CRP was 21 (done 5th November 2009). We repeated her bloods the same day and CRP was 29, and chest X-ray showed massive consolidation of left lung and volume loss of right side. We requested physiotherapy, which she received the following day.

I then saw Hayley during ward round of 10th November 2009 with registrar Dr Reinhardt, and Hayley had saturations of 93 per cent in 40 per cent (inaudible) oxygen. We noted the overnight worsening respiratory distress when she had been reviewed by the night team. She had respiratory distress and plan was made to repeat her bloods to rule out infection and to test for swine 'flu. A repeat blood gas done at 13.00 hours was normal, with pH of 7.47 and PCO of 5.9. Her repeat bloods showed a rising CRP of 69, and we started her on IV Augmentin.

My last involvement with Hayley was on 10th November 2009 at approximately 16.30 hours. I believe the facts stated in this witness statement are true to the best of my knowledge and belief.

Q. So when you last saw Hayley on 10th November at about 4.00 in the afternoon she would by then have had the first physiotherapy in the morning.

A. I think by then she had had two lots of physiotherapy.

Q. Was she better for that?

A. She was better after the physiotherapy. She was even better on the ward rounds of 10th November compared to the night of 9th/10th November when she had much increased work of breathing.

Q. And you were present on the ward round on 9th when the consultant, Dr Stümper, said there should be physio.

A. That was decided in the evening when I reviewed the chest X-ray with Dr Stümper.

Q. Right, so not at the ward round; after review.

A. After we had done the X-ray, and it was reviewed at about - in the evening time, between half five to six.

Q. Who else was there? Just you and him, or someone else as well?

A. Reviewing the X-rays, sir?

Q. Yes.

A. It was just me and Dr Stümper.

Q. Thank you. The impression he gave me when he gave evidence was that he thought he made it pretty clear that he wanted that physio straightaway, although he accepts he did not actually say so and he did not write it down, he did not do anything about it himself. What impression did you get?

A. My understanding at that point in time was physiotherapy was needed but that it wasn't urgent, but I have heard Dr Stümper's evidence yesterday and it may have been that my consultant meant something different to what I interpreted.

Q. So when you say your consultant you mean Dr Stümper.

A. That's right.

Q. Yes, okay. If you had needed to get physio at that stage - so that is, what?, about half past four.

A. Half past five .....

Q. Half past five.

A. .... to six, it was.

Q. Would you have been able to get it? How normal is it to get physios out at that time?

A. It would have been the on call physio at that particular time, but they are contactable through the switchboard if we want to get it. It's not something we do very often, but we can do if we had to.

Q. Okay. Can you recall the circumstance in which the chest X-ray was asked for?

A. Not exactly, no. I know that she had a gradually increasing oxygen requirement, though it was relatively low. But to be honest, there were lots of team members on the grand round, so you're not always the first person by the patient's bedside often.

Q. The impression I get from the family is that a chest X-ray was only asked for because they insisted - it was them asking for it rather than the doctors saying: this would be a good idea.

A. I have to be really honest here, sir, and I don't remember conversation from either part. I have written in the notes chest X-ray, so it was one of the things that was done as part of the plan made, but I must admit that I don't remember whether - who - if the family stressed for it and that's the reason we got it done, or if it was something we ourselves initiated.

Q. Okay. You saw Hayley on 3rd, then you saw her on 6th, 7th, 8th, 9th and 10th.

A. That's right.

Q. Is that right?

A. That's right.

Q. The impression I got from the family's evidence was that throughout that period she was certainly, they say, ill, noticeably ill from 6th and getting worse day by day by day. Is that the impression you had, or not?

A. No, sir. I did not have that impression because on 6th November 2009 I do not have the full memory of what exactly happened, but from my notes and from what I can tell is we had weaned down the oxygen because we perceived her to be stable, and this is something we often do because we don't want children to end up being on oxygen for a long time, so we do try and wean down. And the plan was there to increase it if she did not tolerate it. I know that the wound infection was one of the main concerns on 6th, and it wasn't getting better despite being on 12 days of antibiotics, which is a reasonably long time, and which is why the plan was made to discuss with microbiologist. And I did discuss with microbiologist and get back to my seniors with the plan made to change her antibiotic to intravenous. But on 6th November she was perceived to be very stable.

Q. What about 7th, 8th, 9th? Was there a marked deterioration day by day, or not?

A. I must say that when I retrospectively reviewed the notes for the root cause analysis and subsequently for the inquest, I did note that we hadn't really reflected that the oxygen requirement was 0.75 litres and it had

gone up from 0.2, 0.3. We had more looked at 0.5 and kind of accepted that. I was on call on the weekend of 7th and 8th November, which was Saturday and Sunday, and I do not remember there being any concerns from our end that, you know, she needed some extra support or that we needed to organise a chest X-ray then and there. Also, I was on call the whole day which means I was on call from half eight to half nine in the evening, or half eight to half eight because I start handing over at half eight, but no-one asked me to review Hayley because they were concerned. Had somebody asked me to review her because they were concerned, I would have reviewed her.

Q. The information we have heard generally about the ward, have you got any comments on that?

A. Sorry, sir, which aspect of the ward?

Q. So far as the cubicle that Hayley was in, that the door, when shut, was actually mainly glass that you could see through. Is that right?

A. That's right.

Q. And that the position of the cubicle was such that doctors and other people walking through the ward would be able to see.

A. That's right, sir.

Q. Is that right?

A. That's right.

Q. When you walk through the ward are you generally looking at the babies, or what?

A. Not if we are - not if I'm doing one task after the other, because there is one cardiology SHO the whole day over the weekend for both wards, apart from a cardiology registrar and a consultant, and we usually do get tied in one thing or the other. I mean, I have worked in other specialities, I have worked in general paediatrics at Birmingham Children's Hospital, and I found cardiology to be extremely busy compared to the workload I had in general paediatrics. I would say that in my normal practice, no, I would not see every time; maybe on one odd occasion when I am just passing by or I am just going to look at the computer for some results, but I would not normally, each time I am walking through the ward, look through each cubicle to see if patients are stable.

THE CORONER: Okay. Now, when the advocates ask you questions, talk to me, okay?

A. Okay.

Cross-examined by Mr Weitzman

MR WEITZMAN: Can I just ask you about that last answer, Dr Gupta. Maybe I need to understand the hierarchy.

Were you the junior senior house officer at this point?

A. Well, although I was the senior house officer, I worked in a junior most capacity in the medical team. So although I was senior house officer I was only two months into the job, and cardiology is a highly skilled speciality, so I was the junior most medical team member, if that makes sense.

Q. Yes, it does, thank you. As I understand it, what you were doing on many of these ward rounds was trying to make an accurate note of the decisions by your more senior colleagues. Is that fair?

A. That's right.

Q. But you would be in the ward for quite a long shift, as you have just told the Coroner. Can you repeat the hours?

A. It would be half eight in the morning, but we would have a handover in a sort of a general seminar room where all of the specialities come, and by the time we would reach the ward it would be about nine/half nine, when we would just go around, sit down with the consultant, and the registrar on the weekend, and just sort of flick through the patients, you know, and I would mention if I had received any other information from the handover that I had been to. Because we do not look after just cardiology patients; at times on the Ward 11 and 12 there are patients other than cardiology, like respiratory or some other speciality if they have not had beds anywhere else, that they would be there. So I have to look after them as well, so we would start our work normally at about half nine or ten, and then I would finish about half eight because then I have to go back to hand over to the night SHO who would then be looking after not just the cardiology wards but all other - quite a lot of other wards in the hospital.

Q. Thank you. What you have explained to us, if I can summarise, is that you were very busy, so you did not have time, as you told the Coroner, to walk along checking on patients. It would be a question of you relying on the nurses to bring who needed your attention to your attention. Is that fair?

- A. What I was saying to you, sir, was more giving a general impression when you asked me the question if I would be looking at cubicles each time I walked past. I was trying to say clearly that's not what I would do each time, but it's not to say that I was busy and so I didn't review a patient. Yes, if someone came across to me and said: "Oh, we are concerned, can you have a look?" I am duty bound to review that patient. And if I'm busy I sure would ask my registrar to look at that patient instead.
- Q. Dr Gupta, that is not what is being suggested. What is being suggested to you is you rely on the nurses to bring a patient to your attention, and then you will deal with it.
- A. That's right.
- Q. Because you had many tasks to do. So there is a hierarchy; you are at one point, the nurses are below you, but the nurses are fulfilling another task: they bring a patient to your attention, you deal with it.
- A. That's right, sir. Or even the parents, sometimes they catch us in the corridor and would ask us to review their child because they are concerned, and I would do that equally with them.
- Q. You were aware that Hayley's family from at least 6th were very concerned about her, that is her grandparents and her mother. Is that fair?
- A. I must admit that the first time I actually had a direct contact with mother was on Tuesday 10th November, and I did not have a direct contact with grandparents either.
- Q. Okay, on the grand ward round on 9th, the grandparents were certainly quite vocal in their concerns for Hayley.
- A. I'm sorry, sir, I've already mentioned that in grand round there are lots of people that are there in the teams doing the ward round, so apart from the consultants, although I've written ward round Dr Stümper and Dr Vishvinatin, there sure were other registrars and other cardiology SHOs there, about six/seven/eight people. I do not remember if any conversation happened between the family and Dr Stümper or Dr Vishvinatin or anybody else, and I'm being really honest here because you usually kind of stand behind and scribe because there's lots to scribe. I do not know if concerns were raised or not raised.
- Q. Could you look at a note I am going to pass up to you, copy to you and the Coroner. Which exhibit number is this, please, sir?

THE CORONER: 14.

MR WEITZMAN: C14, thank you. Sorry, 531, 532. This is a Trust note made of a conversation with you in relation to the enquiry following Hayley's death. Yes?

A. Yes. I haven't fully read it, but from what I can see from the start, yes.

Q. Look at page 531, please, Dr Gupta.

A. Yes.

Q. You see the last entry: "How was Hayley Fullerton at the grand ward round on Monday 9th?" Yes?

A. That's right.

Q. In bold. "Grand round, grandparents raised concerns."

A. I must admit that I did not say this. I know somebody was scribing that root cause analysis, but I did not say this. You know, I would have some memory if I would have said that explicitly.

Q. So someone has had an interview with you, written this down, although you did not say it.

A. I don't remember saying it.

Q. On 6th you were trying to wean Hayley off oxygen, yes?

A. that's right, sir.

Q. And she did not tolerate that and she had to in fact be raised up to 0.5 litres from 3.

A. Well, she was already on 0.5 litres on 6th November 2009. I have said that in my statement, that she was maintaining her saturations, 95 per cent, in 0.5 litres of nasal prong oxygen, on 6th.

Q. Was she not on 0.3, you tried to wean her down and then had to bring her up to 0.5?

A. Sorry, sir, I was only going by what I have documented in the notes, and I have documented ward round on 6th November, led by consultant Dr Vishvinatin, and in my statement also it reads: "She was maintaining her saturations 95 per cent in 0.5 litres nasal prong oxygen. There was no temperature, heart rate was 130 per minute and respiratory rate of 30 to 50 per minute. As she was settled we weaned her oxygen on ward round to 0.3 litres, with plan to increase again if not tolerated."

Q. Your notes is really all you remember.

A. Sorry?

Q. The notes are all you remember.

A. By and large, yes. I do have some memory of the conversations I had with Mum.

Q. On 9th.

A. On 10th evening when I went to convey the blood results.

Q. On 7th you did a ward round with Dr Assing.

A. That's right.

Q. At that point oxygen was 0.75.

A. That's right, sir.

Q. And there were mild recessions and she was mildly tachypneic.

A. That's right.

Q. So there had been a deterioration from 6th.

A. That's right, sir, and I've already mentioned this, that this is something I noted in retrospect, that her oxygen had increased from 0.2 to 0.5 and then to 0.75, and not just from 0.5 to 0.75.

Q. On 8th the note is reasonably brief, with Dr Anderson, is it not?

A. That's right, sir. I have mentioned it briefly, only because I have started scribing for the ward round on 8th November, and then for some reason Dr Anderson has taken over the scribing, so my bit of entry is more about the medications she was on. I did see her on ward rounds with Dr Anderson for a bit, but I don't know if I was then called to answer a bleep, or I clearly do not remember what happened then, because usually it's the senior house officer who scribes while the consultant or registrar examines the patient. So I must admit I don't remember what happened then, and that's why I haven't - I've only put in my statement what my personal involvement was, although I'm not denying that I wasn't there on the ward round of 8th November. The reason I haven't put everything in is because it's more in Dr Anderson's handwriting.

Q. So you cannot really comment at all about 8th because you were only there for a short time.

A. Well, I'm not saying I was only there for a short time, I'm only assuming, looking at the scribing. I do remember being there on the ward rounds with Dr Anderson

Q. We know on 9th that you had the X-ray taken showing quite severe consolidation. You saw the X-ray, did you not?

A. That's right, sir.

Q. We have heard Dr Stümper's evidence that that would have been built up during 8th, prior to 9th, yes?

A. That's right, sir.

Q. So we can assume there is a deterioration on 8th as well, can we not?

A. I'm unable - I don't think this question .....

Q. Fine.

A. .... is within the limit of my expertise to say if there are X-ray changes then.

Q. On 9th there was certainly a deterioration, and the grandparents were complaining about it, but you do not remember that.

A. Yes, sir.

Q. On 9th at the grand ward round, which I think is about 11.00, an X-ray is asked for, and it is not reviewed until 6.00 that evening, some seven hours later.

A. Well, the grand round was done at about 12.00 pm. I do not remember the exact timing when the X-ray took place, but it was reviewed at 6.00 pm, yes.

Q. Why did it take six hours?

A. I must say, sir, I have mentioned this briefly before, but cardiology is a busy job and although we do try and chase results of investigations as soon as possible, this is not always possible. And as Dr Stümper mentioned yesterday, I do remember clearly him asking in the handover if any one of us had reviewed the X-ray and none of us had, which is why I went off to be handover with him to review the X-ray. So I must

apologise, but although in our best intentions we do try and chase results of investigations as soon as they happen, but there are other patients on the wards and sometimes you do not always get a chance to review things straightaway.

Q. You have recorded at 6.00 pm: "Plan physio 10th 11 09."

A. That's right, sir.

Q. Do you know why you did that?

A. I have already mentioned, sir, that I do not remember. I know Dr Stümper wanted physiotherapy but my understanding at that point in time was that it's needed but that it's not urgent. In hindsight probably I should have clarified whether it was specifically needed then and there, but I'm really sorry, at that point in time this is what my understanding was.

Q. Then you were present on 10th when you spoke to Mum.

A. I spoke to Mum on 10th evening when I went to tell her the blood results, because Staff Nurse Sanjet Moore, now Sanjet Bhandal, had asked me to go and speak to Mum about the blood results.

Q. Certainly at that point Mum was very concerned.

A. That's right, sir.

Q. She was concerned about the state of Hayley's lungs and the state of her wound.

A. That's right, sir.

Q. And you said you had to deal with the handover and then you would come back and talk to her.

A. I would like to go a bit more in detail about this conversation, sir. I was asked to go and speak to Mum just when it was nearing the handover time, and I had looked at the blood results. And I went and spoke to Mum, and it was a very brief conversation in that I told Mum about the CRP, the C-reactive protein, the infection marker, which had risen. And I did mention to - at that point in time I was unable to have a lengthy conversation with Mum, and Mum was mentioning about things that had happened in PICU, at which point I had to stop Mum and say: "I have to go to handover," and Mum clearly got very upset at that, but I did apologise then and there ..... (Witness crying) I'm sorry, I did apologise then and there for that.

Q. I was simply trying to make the point: this is ..... (Pause)

A. I'm sorry, sir.

THE CORONER: Yes, all right. (Pause)

MR WEITZMAN: Dr Gupta, I tried to take the conversation shortly, because the simple point is this: Mrs Stevenson was very concerned about Hayley's state and was trying to communicate that to you as a member of the medical team.

A. That's right, sir, but I did not dismiss her concerns, and that I straightaway went to my registrar and discussed the blood results, and I even discussed in the handover and I mentioned Mum's concerns to all the members of the team present at handover.

Q. Thank you, doctor. Can I just ask you a couple more questions, and it is back to pages 531 and 532, please. Do you have those in front of you, please? You were asked in the middle of the page, 531: "Were you making any connection between a poorly heart, increase in oxygen and a history of collapsed lungs?" and your answer is noted: "We knew bad consolidation in PICU. Throughout she had poor lungs, intermittent tachypneic, focus shifted on the wind." So your concern, and obviously you are with your more senior colleagues, but the concern during this period by your senior colleagues, noted by you, was Hayley's lungs. Is that fair?

A. That's right, sir.

Q. If we go to page 532, it is the first entry involved, Dr Gupta. Do you have that?

A. I have, thank you.

Q. "We note that radiology was reported at 15.00. Are you aware why there was a delay?" "Always busy. Not sure why the delay. Planned physio next morning. Compared new X-ray with previous X-ray. New changes, collapse happening, new problem." So what you are saying there, and I think it is right that this was the case, was that the two X-rays showed a deteriorating condition in the lungs, is that right?

A. That's right, but at that time we had only looked at the X-ray, that had happened on that particular evening, and I did not say not sure why the delay, I did specify to them that cardiology is a busy job.

THE CORONER: Just stop for a moment. What I really need to do, Mr Weitzman, is to understand just what the authenticity of this is.

MR WEITZMAN: They have been disclosed to us by the Trust as to notes on which the report is based.

THE CORONER: Are we going to hear from that person?

MISS LUCAS: Sir, I am not sure they have been disclosed in that - I certainly have not disclosed them in that degree of detail, and my understanding is I have disclosed the SUI folder at the request of the family's solicitors. SUI investigations, as I understand them, are made in a variety of ways, but I do not know who made this note of the conversation, and they are not the only thing, is my understanding, on which the investigation is -----

THE CORONER: Yes.

MR WEITZMAN: I accept that. I am not saying that they are anything. They were disclosed to us as part of that, and they are clearly - for example, you saw Dr Stümper's written statement, which I took him to, from February 2010 following the statement to you. As I understand it, we have had the whole lot as a set.

THE CORONER: Let me just ..... Just take a seat for a moment. Just clarify so we all know what we are talking about. You know that when I run an inquest what I am interested in is the evidence I hear from the witness box.

MR WEITZMAN: Absolutely.

THE CORONER: My own view is that when you get other briefer investigations they are never as thorough as an inquest is. You do not get everyone here, you do not have the benefit of trained advocates, you do not have people on oath. What I am not happy about is whether this witness has actually seen this and had a chance to study it and knows what its provenance is, because you are simply saying to her: "This is what it says, and what you mean is this," whereas I would much prefer for her to have the opportunity to read it, the whole thing, make sure she understands what it is, which bits she agrees with, which she does not, and

then for her to tell you, and me, what she means by it, not be told: "This is what you mean, this is it." I would rather someone said to her: "Tell us what you mean by that. Why would you say that?"

MR WEITZMAN: Sir, I think that is what I have been asking her to do. I have been citing it and asking her to comment upon it.

THE CORONER: Okay. It is not how it has been coming across to me.

MR WEITZMAN: Certainly.

THE CORONER: Okay? So what I am going to do is to suggest we take the break early - it is twelve minutes past - we will still have the same length of break, do not worry, we will not waste time, we will take it early. What I want you to do is to read through all of this, work out what it is that you agree you said and did not say, and I would like you to say when you come back who it is you had this conversation with, and when, and in what circumstances. Okay? So were you sitting down at a table with someone, with all the notes. Did you have a chance to read the notes? Or is this a phone call from somebody, or is it a conversation which someone goes away and writes up afterwards? Okay. You tell me what you remember about it, and then counsel will ask you about it and say: "Tell us what you meant."

MR WEITZMAN: Can I make two points, sir.

THE CORONER: Yes.

MR WEITZMAN: First of all, these were all in the bundles which we had provided in advance of the hearing.

THE CORONER: Sorry?

MR WEITZMAN: These notes were all in the bundles which we provided in advance of the hearing, both to yourself and to the Trust.

THE CORONER: Yes.

MR WEITZMAN: The Trust is more likely to be able to tell you the precise provenance of this document than I.

THE CORONER: Yes.

MR WEITZMAN: This is a running note where each of the four more junior doctors - and by that I mean the two SHOs, Dr Gupta and Dr Dawson, and the two registrars, Dr Reinhardt and Dr Porwall, were asked similar questions, and the notes appear in series. We have put in each set of notes in relation to each doctor in the bundle. So I think I will ask questions about each of the notations, so if those other witnesses are here, can they take this opportunity to look at the same notes in respect of them.

THE CORONER: Okay, so all of the future witnesses take note that you are going to be questioned about these notes, so make sure you have got copies, that you read through them, you know what it is all about before we start. Yes?

MR WEITZMAN: Yes.

THE CORONER: Okay. So it is now 11.15, we will break until 11.30.

MR WEITZMAN: Can I detain you whilst the witnesses are elsewhere, please, sir.

THE CORONER: Can you address me while they are out? Yes, of course you can.

(After a short while)

THE CORONER: It is now 11.30, the court is in session again. Yes, Mr Weitzman.

MR WEITZMAN: Dr Gupta, you have had a chance to read this note of a conversation with you.

A. That's right, sir.

Q. It is part of the investigation, as I understand it.

A. That's right.

- Q. There is really only one further entry I would like to ask you about on the second page, please. The question asked of you: "Why was the planned physio next morning rather than the night?" You say: "It was 18.00. Our focus was on a possible chest infection, wound infection." Yes?
- A. I must admit I do not remember what exactly I said at that point in time.
- Q. The note says: "General approach unchanged, still thought same approach," and it is these last four words I want to ask you about: "Gas okay blinded us."
- A. Yes.
- Q. Do you recall that?
- A. I do recall that.
- Q. Could you explain that comment, please?
- A. Yes. The questions and my answers are not exactly phrased in the order that they were asked, and they were asking me more about the 10th November afternoon and if we had considered referral to PICU et cetera, et cetera. All I had told them was that the gas done at that time at 13.00 hours on 10th November 2009 showed a pH of 7.47 and CO<sub>2</sub> 5.9, and that it was unchanged from the last night one. One would normally expect some rise in CO<sub>2</sub>, carbon dioxide, by this point, you know, eight/nine hours down the line, but that it was unchanged, and it blinded us. What I meant by blinded us was that it falsely reassured us to say things are okay.
- Q. This was your response in relation to a comment about a referral to PICU on 10th.
- A. It wasn't a response in the answer to question referral, it was just in response to why we weren't concerned enough to escalate the care to like a higher dependency. I did tell them that the gas was okay, and it did blind us to a certain extent, in that, you know, usually we do find some abnormality in the gas if the child is that unwell.
- Q. Can I ask you: what did it blind you to?
- A. I'm really sorry, sir, I cannot answer this question. All I was trying to answer to the team who did the root cause analysis was that it falsely reassured us, as in if you would have a normal gas then you one would not be assured to not do anything, i.e. do CPAP, et cetera, or anything like that, but in this case the gas was completely normal, so it just reassured us that we were doing the right things.

Q. I would like to ask you about criteria for referral to PICU. What was your understanding at that point in time, about what was necessary before a paediatric patient would be referred to PICU.

A. At that point in time I wasn't aware of any set criteria for referral to PICU, and all I knew was that it was the overall picture that we took into context, it was the overall assessment of the patient, that if caused us concern we would ask the PICU registrar or consultant to come and view the child on the ward.

Q. Was that something, as an SHO, you could do, or would you refer it to a registrar who would then contact the ICU?

A. Because I was in the junior most capacity, it's not something I could not do but normally my response would be to go to the cardiology registrar who would be on call or in charge of that particular ward, and speak to them first, rather than just going and making a direct referral to PICU.

MR WEITZMAN: Thank you, Dr Gupta.

A. Thank you.

Cross-examined by Miss Lucas

MISS LUCAS: Dr Gupta, the documents you have read over the break time that my learned friend has been referring to, those you think, from what has been said, are notes of a discussion with you made by somebody else. Had you ever seen them before today? Had you been asked to review them and check their accuracy?

A. No, I haven't seen these before. I was sent the summary of the root cause analysis report, but not in particular what the discussions I had had to check if this was all okay.

Q. Also, Dr Gupta, you have just said, when my learned friend referred to the notes, that the gas result falsely reassured everybody that Hayley was actually coping quite well. Is that because you have looked at these knowing the outcome? Is it you feel now that you can say it blinded you because you have seen all the notes and you know what happened to Hayley?

A. That's probably right, sir, because one knows the outcome, you can always go in hindsight and think, you know, if those results blinded us. But if the child did well, then I would say this gas was acceptable or normal then, so we did the right thing.

Q. Also there was a question earlier about the nurses, if they are concerned you would deal with any queries. But is it the case that if you are doing an intervention with a child or you are providing some care to the child, and you see something that concerns you, would it be the case that you would escalate that yourself within the medical team?

A. That's right, sir, I would go to my registrar, even the consultant is available for most part of the weekend, I would go and speak to them directly and mention.

Q. On the occasions that you saw Hayley and provided care to Hayley, was there any time when you felt that you needed to go and speak to a more experienced or senior doctor?

A. I only saw Hayley as part of ward round led by a registrar or a consultant, so, no, there wasn't a particular occasion when I felt - each of the times .... 10th November was the only time, my registrar was actually there with her most of the time, so ..... I did not on any particular occasion feel that I needed to specifically - 10th November was the time when I did go and speak to my registrar, and also in the handover mention Mum's concerns to the team as a whole. But I did not sort of at any point in time other than that feel that I needed to escalate the concerns to another member of the team.

MISS LUCAS: Thank you, Dr Gupta. Thank you, sir.

THE CORONER: Okay, so now just tell me about this. Tell me how it happened. This is someone had phoned you, or you were with someone, or what?

A. Sir, this root cause analysis was chaired by Dr Phil Debenham, consultant general paediatrician, also head of hospital at night. And there was also another member present during that time. It was done face to face, and round about February 2010. The person present was Liz Nalcra. I have only just come to know after - you know, I recollect the surname, so when somebody mentioned the name I have only just recollected. I do not know the sort of ins and outs of who this other person was, but I understand she was a solicitor, but I can't say that with certainty. Dr Debenham was asking questions while this other person was scribing intermittently, so would not scribe each and every thing you would say but would listen to a few bits and then scribe.

Q. So it was Dr Debenham, you and this other person.

A. That's right, sir. We were all given a set date and time to go to sort of a building where there's the risk management wing, and this meeting happened. And Dr Debenham was asking most of the questions whilst this other person was scribing intermittently.

Q. And this was in - when?

A. As far as I remember, it was February 2010, but I do not remember the exact date.

Q. Were you given the hospital notes when you went through all of this?

A. We did have the opportunity to go and look at the hospital notes, but having said that, I must admit at that point in time I hadn't done a statement of any sorts, all I had done was scribe on a piece of paper some relevant points to remember whilst answering questions.

THE CORONER: Okay. Do either of the advocates want to come back on that?

MR WEITZMAN: No, thank you.

THE CORONER: No? Okay. Take a seat, if you would.

A. Thank you, sir.

(The witness withdrew)

THE CORONER: Dr Reinhardt, please.

Dr REINHARDT (sworn)

Examined by The Coroner

THE CORONER: Tell me, please, your full name and your full medical qualifications.

A. My name is Zenke Reinhardt, and I am medical doctor.

Q. Tell me when you first qualified as a doctor.

A. I have qualified abroad, in Belgrade, in 1992 and I got my degree in paediatrics in 1997.

Q. You qualified as a doctor in 1992.

A. Medicine, yes.

Q. When did you come to the UK?

A. In 2002. I am full member of GMC from 2003.

Q. Okay, so read through your statement and then we will come back over it.

A. Yes. This is my first statement relating to the care and treatment given to Hayley Fullerton during her admission to Birmingham Children's Hospital from 12th October 2009 to 11th November 2009. I have been employed with Birmingham Children's Hospital since September 2007 until September 2010 as a paediatric cardiology SPR. I am currently employed as a paediatric cardiology SPI by the Hospital Leicester. My duties involve looking after in and out patient patients with congenital heart diseases.

I remember the care I provided to Hayley Fullerton and therefore my statement is based on both recollection and the medical notes. During Hayley's admission I was looking after her in the role of paediatric cardiologist specialist registrar. Hayley underwent surgery at BCH on 14th October 2009. Her post-operative course was complicated by two failed extravations due to lung collapse consolidation which required antibiotic treatment. She was successfully excavated on 23rd October. Her other problem was a (inaudible) wound infection treated with antibiotics. Her post operative echocardiogram demonstrated good result following her surgery.

Hayley was transferred from intensive care unit to ward on 31st October 2009. She continued to have a problem on the ward with low oxygen requirement and wound infection, for which antibiotic Flucloxacillin was continued. Her intravenous (inaudible) (Milrinone) was discontinued on 2nd November 2009, while diuretics Furosemide 6 mg three times daily and Amiloride 0.6 mg twice daily were continued.

I first met Hayley on 9th November 2009 during the grand ward round led by Dr Oliver Stümper. Our concern on that day was that Hayley continued to be breathing fast with persistent low oxygen requirement. A repeat chest X-ray on that day showed significant consolidation of the left lung and volume loss on the right side and therefore physio treatment was arranged. The blood test showed no evidence of infection and Hayley was afebrile.

My second contact with Hayley and her Mum was in the morning of 10th November 2009 when I was doing the ward round, being the registrar on call for that day. Hayley continued to have evidence of mild respiratory distress, with subcostal recession and respiratory rate of 40 to 45 per minute. Her oxygen requirement was around 30 to 40 per cent (inaudible) with saturation in the mid-nineties. Hayley also had one documented low grade temperature of 37.5. I had therefore requested that she have a repeat blood test to exclude infection and also viral test to exclude swine 'flu. With that suspicion Hayley had to be kept in isolation. I have also requested capillary blood test which showed good gas exchange, with hydrogen ions of 34 pc of 5.9 and (inaudible) of 2.1. I had arranged surgical team to review the wound. There was a small amount of pus drained from the wound and therefore we continued with intravenous Flucloxacillin. In view of her increased CRP from 29 to 69 along with significant chest X-ray changes, after discussion with Dr Oliver Stümper we decided to add intravenous Augmentin to her other treatment.

Hayley remained mildly tachypneic during the afternoon but warm (inaudible) with acceptable blood gases. We felt that she should improve with the measures which we had put in place.

I reviewed Hayley again in the middle of the night and my impression was that she was less tachypneic, her breathing was more comfortable than had been during the day. Her Mum was also happier with her status and progress.

However, at around seven o'clock on 11th November 2009 Hayley developed more respiratory distress. The SHO repeated her capillary blood gas which showed respiratory acidosis with a pH of 7.12 and PCO<sub>2</sub> of 11.4. I was in the intensive care unit there and when the blood gas was done and with that I had immediately requested a PICU team to review Hayley. We went together to the ward.

On our arrival Hayley looked clammy with (inaudible) increased respiratory distress (inaudible) intercostal and subcostal recession. She required 50 litres of oxygen via face mask and her oxygen saturation was 85 per cent. She then became bradycardic and decision was made to intubate her. Cardiopulmonary resuscitation was commenced on 7.55. I had performed a brief echocardiogram at that time which showed standstill of ventricular function. There was no evidence of pericardial effusion. Despite our effort there was no return of cardiac output and Hayley sadly died at 8.15.

Prior to 9th November I had not been involved in the care of Hayley Fullerton and my last involvement with Hayley was on 11th November 2009.

THE CORONER: Now, looking at page 2 of that statement, about halfway down - this is the first time you have met Hayley, it is on 9th November, the first time you met was during the grand ward round.

A. That is correct.

Q. Then you saw her on the morning of 10th November.

A. That's correct.

Q. You say:

"Hayley also had one documented low grade temperature of 37.5. I therefore requested she had repeat blood test to exclude infection and also viral test to exclude swine 'flu."

A. That's correct.

Q. Was that the first time that anyone had mentioned swine 'flu in relation to Hayley?

A. Not first time. There was mentioning of swine 'flu on the ward and during handover we had.

Q. Mention of swine 'flu on the ward - about Hayley?

A. When we had the sitting ward round in the morning and handover.

Q. Yes. That is when swine 'flu was first mentioned.

A. On that day, to me, yes.

Q. So was Hayley already in isolation then?

A. She wasn't, no, she wasn't, only in the later afternoon when we actually physically sent the test, when we agreed to send the sample to be tested.

Q. So that is the stage when the decision is made to isolate her.

A. In the afternoon of 10th.

Q. That is your decision?

A. It wasn't particularly my decision but that's the Trust policy. As soon as we send sample, if we suspect, if we suspect viral illness, especially swine 'flu, patient has to be isolated.

Q. But it was you who -----

A. I was informed by Sister in charge that she had to be isolated.

Q. Right. Just trying to get it clear in my own mind - is it you who say: "Hayley must now be isolated because of hospital policy" or is it someone else telling you: "Hayley will now have to be isolated"?

A. I think I was informed that according to policy she had to be isolated.

Q. You heard the fear that the family had that she did not really have swine 'flu, that there was never any belief that she might have swine 'flu, it was just a ploy to put the family into isolation.

A. Certainly not, there was a ploy - that was the time when children were dying of swine 'flu, and that was the first season when we really feared the most of swine 'flu. We just didn't want - in the view of her deterioration we didn't want to miss anything. We just needed to be sure.

Q. Okay. Were you here when Dr Stümper gave evidence?

A. Yes, I was.

Q. You heard the evidence he gave.

A. Yes.

Q. You remember that I put to him the conclusions from the internal investigation - I am going to read that out again for you.

A. Yes, please.

Q. "Overall impression. Hayley began to objectively clinically deteriorate on 9th November 2009. Treatment to address this deterioration was started by the clinical team based on their assessment of the patient. This treatment was in line with standard practice. The cardiology medical team failed to put the clinical deterioration into context of the prior respiratory complications experienced by Hayley on the paediatric

intensive care unit. The patient should have been referred to the paediatric intensive care unit for review on 10th November 2009." Do you agree with that now, or not?

A. I can just start by saying I wish we did refer now, looking in retrospect, but on the day when I saw Hayley that was the first day when we actually implemented some measures to help her breathing. That was the day, when I saw her first, we started physio, we decided to intensify physio and we have also started antibiotics in case she was developing pneumonia. So at that time when I saw her, surely I have considered escalation of treatment should the treatment we were putting in the place was failing.

Q. So you are saying that you wish you had, but you think you did the right thing at the time.

A. At that time that was my best clinical judgment, supported by the rest of the team.

Q. I can understand obviously now you wish you had done .....

A. Yes.

Q. But now do you think that there were clinical signs that you missed then, or are you merely saying: "I wish I had done it"?

A. I am saying I wish I had done it, but at that time I had carefully reviewed everything which was presented to me, so by the time we did ward round I was aware of her difficult post-operative course, I was aware of her two X-rays and excessive changes of her X-rays, I was aware that she had a difficult night and during ward round we spent some time discussing what our plan - making sure that we will be covering all aspects, and first on our list was to address the lung problems, which we did by intensifying physio, by giving oxygen and repeating blood gas to make sure that she's having adequate gas exchange. Then after second physio she has improved, and I personally myself had discussion with physiotherapist at that time: would they feel that she will need CPAP that day? But we all were confident that we have only started physio, that she should improve with that. And we felt that CPAP or continuous pressure, positive airway pressure was not needed at that time, because she was responding well to physio and to some, or the little extent she has improved during the day of 10th. So we were pleased with the result of physio, with her observation during that afternoon.

Q. What I want you to do is just run through that list again for me, keeping it simple so I note it down.

A. Yes.

Q. We know that you had all appreciated that she had had a very bad night on 9th.

A. That's correct.

Q. On 10th you actually see her twice, once at the ward round ----

A. I have seen her - I have examined her during the ward round, but all afternoon I was in and out, and actually being in that cubicle was convenient for me because as soon as I entered the ward I was able to see her and see her saturations. So I even myself spoke to surgeon who reviewed the - that was the second line of our worries, her wound infection, and I myself spoke to surgeon to address that problem as well. Although I haven't examined her, I have seen her observation several times during the day.

Q. Right, so just let me get it right: one, the ward round where you examined her.

A. Examined, formal examination during ward round.

Q. Then secondly you saw her in the afternoon.

A. Yes.

Q. Then you say you saw her observations.

A. Yes, yes.

Q. I am not quite sure what you mean by that.

A. I mean by nursing observations, charts, and also passing by because she was on continuous observation.

Q. So see by reading the notes of the observations, and, four, by seeing her as you go past.

A. Yes. And speaking to different specialists, including cardiac surgeon and physiotherapist, second physiotherapist.

Q. Okay, and now run through for me the actual steps that were taken.

A. On that day, so number one, address to her lungs.

Q. Sorry?

A. Number one was respiratory, or her breathing issues. That was number one. Including oxygen, physio and repeated blood gas.

Q. Yes.

A. Number two, repeated blood test, which came as increased CRP, which we acted upon, by adding antibiotics.

Q. Yes.

A. So number three was test for viral illness.

Q. Yes.

A. And number four was to address wound infection. And in addition to that, we decided to carry on not to feed her in order to save her energy until we see her improvement, so only IV fluids and not oral feeds, in addition to ..... With the plan to review her later, how she's going to respond to all the measures we put, and discuss whether she needs further escalation.

Q. And you say that that is the concerted plan of the team.

A. That was the plan from my ward round.

Q. Yes.

A. With the SHO, with the nurse in charge, and if I remember it was also nurse who was looking after Hayley, I think she was present as well, although I can't remember whether present all the time or not - I can't remember that. But surely we again, after the ward round we discussed our plan again, I have discussed with the nursing staff, with the SHO again. I have discussed Hayley again at some point during the day with Dr Stümper and then again in the evening of that night as well.

Q. Okay.

A. Although it is a busy ward, I had devoted and focused on Hayley on that day quite a lot.

Q. Okay then, page 3 of your statement, you say that you reviewed Hayley again in the middle of the night.

A. Mm-hm, that was some point of the night, I can't remember exact time but again it wasn't physical examination, it was me being on the ward looking at the observation and her saturation.

Q. You say that her breathing was more comfortable than it had been during the day.

A. Yes.

Q. And you say her Mum was also happier with her status and progress.

A. I think again at some point of the night I met Mum - again I can't remember exact timing - and when I asked Mum is she pleased now with Hayley? And Mum said that she looked better, and she was pleased. So this is when I was reassured, and after that I went home.

Q. When it said: "However, at around 7.00 am on 11th November Hayley developed more respiratory distress," how long before that was it that you had last seen her?

A. I haven't seen her during the night because my - my on call is from home actually, so some time in the evening of the 10th I saw her. During the night I haven't seen her, until half seven when I came with the PICU registrar, that was first time after the night, after the evening.

Q. Okay, it is my problem. I am not getting the timing right. 10th November, that was when you saw her on the ward round.

A. Ward round.

Q. Yes?

A. Yes.

Q. So what time do you go off duty that night?

A. I went home around midnight. Around midnight. Exactly I can't remember exact, maybe one o'clock, maybe midnight. I can't remember.

Q. Then you came back on again when?

A. Can't remember exact time but I was - around seven o'clock I was in PICU. I happened to be in PICU for some other reason when my colleague SA John showed me the gas and he has informed me about Hayley's deterioration.

Q. So we have Hayley collapsing round about eight hours after you last saw her. About right, or not? Yes?

A. Approximately.

Q. Yes, I am not going to hold you to it, but approximately eight hours.

A. Yes.

Q. What we seem to have is a very bad night on 9th, the physio not being got that night, the physio had been done at about 8.30 on the morning of 10th, done again at about 3.00 in the afternoon, her condition appearing to improve, your thinking that it is improving.

A. It is working, yes.

Q. You see her again then shortly before midnight, and yet just eight hours later she is dead.

A. Yes.

Q. So how can it be that an experienced doctor can view a baby and think she is all right .....

A. Yes.

Q. .... and eight hours later she is dead? How can that happen?

A. I have been asking that question myself, but looking all the parameters, what I was looking on that day, including her respiratory rate, her oxygen requirement, blood gas exchange, everything was showing me towards some degree of improvement. I must admit that that wasn't dramatic but it was a little improvement. One cannot expect dramatic improvement after one day of intensified treatment. That was less than 24 hours of the treatment we had put in place.

Q. You see, the family may feel that the fact is that Hayley died and therefore there must have been signs which you all missed.

A. Surely I acknowledged that Hayley was not progressing and even more that she was deteriorating. I had acknowledged that and I had seen that, and that's the reason we had put all these measures in place. Those signs have not been ignored.

Q. Yes.

A. Surely acknowledged, and definitely on 10th November Hayley had full attention of the team, surely from what I can say. And on that date her deterioration has been acknowledged and the measures were put in the place. We all felt that collapsed lung and consolidation, treat with oxygen, physiotherapy, in addition with antibiotics in case of - collapsed and consolidated lungs are very good source of infection. Although

she had a low grade temperature and small rise in CRP, we covered that aspect as well, so we covered potential pneumonia, although we did not have a great evidence apart from X-ray and one or two low grade temperature. In addition, we haven't ignored other potential aspects, because often it happens when people think of one thing, ignore the others, but we had addressed her wound infection as a potential source of the deterioration, and also swine 'flu also as a potential source of deterioration. So I felt, and the team also felt, that we had implemented the measures and she should get better with that.

Q. Okay. You heard the evidence given yesterday and the suggestion that it may be the right ventricle that explains it.

A. Yes.

Q. Do you have any views on that?

A. I do have now, in retrospect, and that's again quite possible that the question of making the wrong or right decision to start with comes up. You know, was she SIRItable to be completely repaired, with her condition and with her complex cardiac condition and her weight, that question comes up. Was that the reason for - you know, we are all asking, including myself, we are asking ourselves that question. Was that the reason for continuous deterioration? And very difficult, unusual post-operative course, a long course. So that's - surely, no-one can be sure, but that's something I did think of.

THE CORONER: Okay. The advocates are going to ask you questions, but look at me, yes?

A. Yes.

Cross-examined by Mr Weitzman

MR WEITZMAN: You just told the Coroner that one of the things you considered retrospectively was the right ventricle, and I just want to make sure my note is right: because of the very difficult and unusual post-operative course. Is that right? Is that what you said to the Coroner?

A. Yes, that's correct.

Q. Are you referring there to the extended period on PICU?

A. Yes.

Q. And also the deterioration on ward 11 from 6th.

A. Yes.

Q. I am going to, with the Coroner's permission, pass up a slightly larger ..... If I could pass you up some of the running notes, and I want you to look at page 667, please, to 669. (Handed) I make that C15, sir.

THE CORONER: C15.

MR WEITZMAN: This is the note of your ward round on 10th.

A. Yes.

Q. You had seen Hayley before on 9th on the grand ward round.

A. That's correct.

Q. You at that point are deferring to Dr Stümper, is that fair?

A. Yes.

Q. So this is when you are, as it were, acting independently.

A. Yes.

Q. A note is taken by Dr Gupta who we have just heard from.

A. That's correct.

Q. "Current issues: wound infection. Two chest X-rays." Is that two, in the circle?

A. Two.

Q. Yes, because she has had one on 9th and one on the evening 9th and 10th.

A. That's correct.

Q. "Massive consolidation and volume loss right. An overnight worsening respiratory distress."

A. Yes.

Q. "Only one temperature," is it now .....

A. Low grade pyrexia.

Q. "Low grade pyrexia 37.5. Chest on examination is respiratory distress. Plan: full blood count, CRP, U and E and gas."

A. Mm-hm.

Q. You then told the Coroner that you contacted the microbiologist because of swine 'flu.

A. That was the plan, but I hadn't contacted myself, member of the team .....

Q. So can you tell me whose writing this is. Is it your writing?

A. No.

Q. Okay. So you have arranged for that. Hayley did not have any symptoms of swine 'flu, did she?

A. Hayley at that time when we discussed, the policy of the Trust was new or increasing respiratory symptoms, that was the policy of the Trust, that was the fear most of us felt. So not necessarily cough and cold, or just increased respiratory symptoms. In a view of clinical deterioration, in a view of increasing respiratory effort, increasing respiratory rate, increasing oxygen requirement, so not necessarily cough, or increased secretions or temperature.

Q. These are all signs which are perfectly consistent with lung problems .....

A. Correct.

Q. .... arising post cardiac surgery.

A. Correct.

Q. Which are not unusual.

A. Correct.

Q. But because of the date or the time it was, when there was such great concern about swine 'flu, as a matter of almost generic policy, because of these symptoms you had to check.

A. You might put it that way, that's correct. There wasn't high suspicion of swine 'flu.

Q. Sorry?

A. That was not high suspicion of swine 'flu, I must admit.

Q. It was a possibility you wanted to exclude.

A. Yes.

Q. Can we turn to page 668, and here we have gas at 1300.

A. I'm sorry, I don't have 668. I do, I do, sorry. Yes, 668, yes.

Q. Gas at 1300. Is that your writing?

A. No, it's not, it's probably SHO's.

Q. Okay. Then you have got the cardiac surgeon in, he's done the wound review, and has opened the wound and debrided it of pus.

A. That is correct.

Q. Then turning the page to 669, we have a note which is again bloods taken, later on 10th, and again that is Dr Gupta's.

A. Yes.

Q. We see that is where you have the rise in the CRP.

A. Yes, correct.

Q. There is a mercy entry, and then you have got another plan - is this your writing?

A. That's my writing.

Q. That is your writing. So is this before you go off at midnight, or in the late afternoon/early evening?

A. That was late evening, after sitting ward round.

Q. So what time would that be, roughly?

A. Usually it's around five o'clock, six o'clock.

Q. And this is a discussion with Dr Stümper, is it not?

A. That's correct.

Q. If I can read it to you, you tell me if I have got this wrong. "Plan: start intravenous Augmentin."

A. Yes.

Q. "In view of X-ray changes and raised CRP."

A. CRP, that's correct.

Q. So you have got the two X-rays, there is a clear deterioration between evening of 9th/10th in Hayley's lungs, and there is also the raise in the protein.

A. Yes.

Q. C-reactive protein, which is a potential marker of infection, which you think may be causing the problem in the lungs.

A. Correct.

Q. So you prescribe the antibiotics.

A. Correct.

Q. Looking at the history - sorry, you told the Coroner that you sought help from other disciplines, almost.

A. Correct.

Q. From cardiac surgery, from physiotherapy.

A. Correct.

Q. You have described an unusual history, problems with lungs.

A. Correct.

Q. And we have a really serious event over the night of 9th/10th, did we not?

A. Correct.

Q. Did it not occur to you that it might also be helpful to seek the advice of a paediatric intensivist?

A. Yes, it did occur, when I was considering CPAP, continuous -----

Q. Why did ..... Sorry, I interrupted you, please finish, madam.

A. It did - CPAP as option to recruit and help Hayley's breathing was an option I have considered, and this is continuous positive airway pressure. This is something we do in intensive care, not on the ward, and it's usually not the first step you want to help patient. So first step would be oxygen and second step will be physio, intensified physio. So it did occur to me, I even mentioned that during my ward round, our ward round, that that is something I will be considering should she fail to improve. And that was something in the line I was considering on that day.

Q. I just want to make sure I have understood, so would you mind if I ask you a couple of questions about that. First of all, CPAP is oxygen into the lungs under pressure.

A. That's correct, it keeps other line open, because that they collapsed or consolidated full with fluid or mucus, positive airway pressure keeps them open which helps patient to exchange gas more efficiently.

THE CORONER: What do you actually do? What equipment do you use?

A. You put a short tube, yeah?, and attach patient to type of ventilator.

MR WEITZMAN: This is the treatment which Hayley had had on PICU before she moved to ward 12.

A. Discharge, correct.

Q. You cannot do that on the ward, it would have to be on PICU?

A. It can be done on the ward but this is usually done when patient is discharged from the PICU, from the long term patients. It can be done on the ward but it's not usually initiated on the ward.

Q. So you can do it on the ward if you are coming from PICU to the ward.

A. Correct.

Q. But not usually if you are going from the ward.

A. Correct.

Q. Which is why to do it you would need a referral to PICU.

A. Which is referral to PICU is never a problem.

Q. But to do the CPAP you would have had to -----

A. So that didn't stop us. When I say me, as you probably know by now, decisions are made in -----

Q. In teams.

A. .... a team, yes.

Q. So all of your decisions in effect are being reviewed by Dr Stümper .....

A. Yes.

Q. .... who is there on 10th.

A. He is more senior and he will be informed of all changes and decision making, but again that wouldn't stop me directly making decisions.

Q. Unless he told you not to.

A. Unless, yes, correct.

Q. So what you feel is: let's see if we can take these other steps first.

A. Yes.

Q. If they don't work, then there will be a referral.

A. Yes.

Q. You would not take those other steps first if Hayley's condition was already so serious that she required CPAP.

A. I would.

Q. You would always go through that chain.

- A. Not necessarily. If I felt, if I felt that Hayley again had another significant respiratory distress, I would make a referral directly, without waiting for physio or anything.
- Q. When you saw Hayley on your ward round in some sense the chance to send for CPAP had passed, had it not, because she had had the distress at two o'clock the morning before, she had been seen by the night registrar, he had made the decision not to send her, so you are rather left with a position: this is how we are going to deal with it.
- A. I have seen Hayley when she was improved, but again despite of that I had CPAP on my mind, but I wanted to see how she - I wanted to implement physio and see how she - whether she will improve with physio, and I also wanted to discuss with - which physio CPAP, need for CPAP, with the rest of the team. And we felt that she has improved, and again I repeat that was the first day she was getting treatment for her collapsed lungs.
- Q. So the treatment for her collapsed lungs is delayed.
- A. Correct.
- Q. There is some improvement, and that allays your fears.
- A. That's correct. Or increases my confidence that she will improve with the measures we put in place on that day.
- Q. At 2.00 am the morning before you became involved - and if you feel I am asking you a question which you cannot deal with, please say so - she had had a very serious event and she had been saved by an increase in the level in oxygen. Is that fair?
- A. Can you repeat, please?
- Q. She had had a very serious respiratory event.
- A. Correct.
- Q. The oxygen levels had had to substantially increased.
- A. Correct.
- Q. So that she could recover.

A. Yes.

Q. There were no guarantees that that would not happen again, were there?

A. No, there is no guarantee, no, or there was no guarantee.

Q. And in fact it did happen.

A. Yes.

Q. In those circumstances would it not have been appropriate at least to ask PICU if, given the history, CPAP or other intensivist support would have helped?

A. Can I just remind you again: at that time she has received no treatment for her collapsed lungs. By that time, when she had - her physio was stopped, if I remember, on 4th November, she had only repeated X-ray on 9th and 10th, so in between we don't know exactly for how long her lungs was collapsed and consolidated; she had received no treatment until that time. So we have started treatment which we felt it was appropriate. So likelihood of having another respiratory distress, significant respiratory distress on 10th, was less than the day before or night before.

Q. Dr Reinhardt, the physio was late and - this is a suggestion, so reject it or comment on it as you wish - the physio was late, and while it might have been an appropriate step the day before .....

A. Yes.

Q. .... prior to the problem at 2.00 pm(sic) on the morning of 10th, by 10th, that problem having occurred, some more forceful intervention was needed, do you agree?

A. I don't, because if I felt at that point, if we felt that more aggressive intervention would have been needed, we would have done so. As you can see from her observation on that day, her respiratory distress was mild, her respiratory rate came back to forties from fifty-something, again her oxygen saturation went up to 97/98, been previously during the night 91, so all parameters we had - I had in place, showed that she was stable.

Q. I am going to ask you to look - have you had a chance to look at the notes taken for the report?

A. Just now, yes.

Q. So I am going to ask you to look at that, please, which is page 532 to 534.

A. Yes.

Q. Can you make sure the Coroner has got a copy, please. I just want to get the Coroner one, please.

(Handed)

A. Yes, 532.

THE CORONER: Thank you.

MR WEITZMAN: Just looking at 532, you were asked about the state of health on the grand ward round. At that point and ongoing, your focus of concern is the lungs, is it not?

A. Correct.

Q. You have been asked by the learned Coroner about the right ventricle, but that is something you are only now considering with hindsight.

A. Correct.

Q. So throughout this period on the ward, the treating team, the cardiologists, consider this to be a lung problem.

A. Correct.

Q. If we could turn the page to 533: "Morning of 10th, had chat with Mum. Mum felt Hayley slightly worse and she looked unwell." So both Mum felt she looked unwell and you felt yourself that she looked unwell.

A. Correct.

Q. If any of this is inaccurate, please say so, doctor.

A. That's correct.

Q. Then you, two entries down, deal with CPAP very much in the way you have described it to the Coroner today, is that right?

A. Correct.

- Q. "Were you worried about the lung collapse on the X-ray? Not surprised by lung collapse, always a problem with these patients. Plan was oxygen and physio, and treat collapsed lung." Is that a correct summary of what you were saying?
- A. Well, I'm not sure what this "not surprised", might reflect the amount of X-rays I have seen, so I have seen collapsed lungs after cardiac surgery, so might reflect my experience that I have seen that before.
- Q. It is what you dealt with earlier, when I said this is a reasonably usual complication post cardiac surgery.
- A. Correct.
- Q. Going down the page, how concerned - it is the fourth bowl from bottom: "How concerned were you about HF compared to other patients?" and you say she was the top of the list of patients to be inspected.
- A. Surely she was my priority that day.
- Q. So so far as that ward is concerned, you considered her to be ----
- A. I had ----
- Q. .... one of the most - sorry, I interrupted you.
- A. She was, in a view that there were outgoing concerns from the family point of view and deterioration overnight and the fact that she was - not only she was not progressing a month after surgery, she was even deteriorating. So, yes, we had difficult patients on that ward, high dependency patients, but although they were high dependency they were going right directions, they were progressing, although they did require lot of input from us, but they were going right direction. So in that sense Hayley was my priority on that day.
- Q. At the bottom of the page you were asked: "If the problem was her heart what were the options for treating the heart?" and you say - it is said that you said, and again correct if it is wrong: "On Monday the liver was enlarged, already on diuretics. Question inotropic support but warm, well perfused and good gases." That is really an illustration, is it not, that you did not consider the heart to be the problem.
- A. Correct.
- Q. "Tell us about decision making, communication with the department and at night." Sorry, you go on to say: "In this one stage repair you can sometimes do a ventriculostomy to relieve pressure, but that wasn't indicated here." So I think that is what Dr ----

A. I'm not even sure about what that sentence means.

Q. Fine, okay, we will leave that. I do not think you can comment on something you do not ..... But the next entry, you are really describing the way it should work, which is the SHO comes to the registrar, much as Dr Gupta has described it to us, and the registrar then escalates the concerns if the registrar thinks it is necessary.

A. Correct, but also if a registrar has concerns, as myself, I don't rely always on SHO coming to me.

Q. No.

A. So that's usual way, but not only way.

Q. I am not suggesting that you -----

A. It's usual.

Q. .... do not make checks yourself, but if the SHO has a concern they should first raise it with their registrar, if available.

A. Correct.

Q. Two further areas I just want to ask you about. One is blood gases, yes? How important is .....

A. Which paragraph?

Q. I am just asking you a question.

A. Oh, sorry, yes.

Q. How important is the blood gas level in determining whether or not you refer to PICU?

A. It's just a part of the general picture. It's not only and it's not crucial.

Q. So it is not determinative.

A. No.

Q. The second question or final question is: if you would look, please, at page 282. I am so sorry, I am using the wrong number. It is 282 at the top, 649 is the ..... Sir, you have a copy of 282, do you not?

THE CORONER: If you had a spare copy it makes it easier than fishing it out from the previous exhibit. If you have not, I will fish it out from another exhibit.

MR WEITZMAN: Would you mind fishing it out? I can tell you which of the exhibit numbers it is. C3, I am told.

THE CORONER: Page 649, is it?

MR WEITZMAN: Yes. It is simply this: if you look at the observations by the nurses during 10th, respiratory distress, they have identified it as mild. Do you see?

A. Yes.

Q. If I look at the key, mild is nasal flaring and intercostal recession.

A. Correct.

Q. In your statement, when you examined Hayley during your ward round on 10th .....

A. Correct, yes.

Q. .... you found subcostal recession.

A. Correct.

Q. Which would indicate moderate respiratory distress.

A. According to this, yes.

Q. Yes. So if your finding is right, she should have been scored as moderate respiratory distress, according to this.

A. Correct.

Q. (Pause) If you could go on looking at 282 for a second, please, you see you have got a 37.5 at the temperature at two o'clock in the afternoon.

A. Correct.

Q. Then it drops later in the night to 36.3 and then 36.2.

A. Correct.

Q. So you have got a reduction in temperature. Is that falling back to within normal levels, or not?

A. I would say 36.5/37.5, it is within normal limits. 37.5 we call low grade temperature.

Q. The fact that it dropped back, did that mean that there should be any re-evaluation of the concern about swine 'flu, or .....?

A. Well, swine 'flu evaluation was just a sample was sent, and following day we got the result. So at that time, as I say, was a low - this drop in temperature wouldn't tell us much. Might indicate, if you don't have persistent temperature it's less likelihood of viral illness.

Q. Can we look at page 651, please, and the Coroner, please - this is a new exhibit. It is in our exhibits bundle.

A. Thank you.

Q. Do you know whose signature that is, for the swine 'flu?

A. Request.

Q. Not yours, anyway.

A. Not mine, no.

Q. It says post cardiac - does it say snuffly?

A. It does.

Q. But that was not right, was it?

A. I ----

Q. From your observations.

A. I haven't seen her being snuffly.

Q. No, okay. How long - when was the swab taken?

A. I think the afternoon of 10th, or (inaudible due to coughing) midday of 10th. I can't be accurate with time, sorry.

Q. If you look at the top right, it says: "10th, time 11.10."

A. That's probably then correct, yes.

THE CORONER: Just give me one moment, will you?

MR WEITZMAN: Yes, sorry, sir.

THE CORONER: Right, so we are on page 651. You have established that it is not this doctor's signature.

MR WEITZMAN: We have established that the entry "snuffly" or "snuffy" was not this doctor's observation of Hayley, so we do not know where that has come from. We have established that the swab was most likely taken at ten past eleven, time in top right hand corner of the document. Just a second, please. (Pause) Do you know when the nurse took the swab?

A. I am sorry, I don't know timing.

MR WEITZMAN: I think that is all I can ask you. Thank you very much.

THE CORONER: Yes, Miss Lucas.

Cross-examined by Miss Lucas

MISS LUCAS: Thank you, sir. Dr Reinhardt, can I ask you about swine 'flu in 2009. I know now with retrospect we know what has happened to Hayley, but the decision to test Hayley for swine 'flu and to put Hayley into - well, use isolation procedures, because she is not put into isolation, is she, the procedures around her are changed and the parents are requested not to use communal areas, is that correct?

A. Correct.

Q. Can you answer the Coroner, sorry.

A. Correct.

Q. If you have put somebody - if you started isolation procedures with a patient and their condition changes, if you think that there is no reason to consider swine 'flu as a possibility any more, then can you change the isolation if you think it is appropriate?

A. Yes, we can, yes.

Q. On 10th when you saw Hayley, it seems, quite a lot through the day, did you feel there was any need to stop the isolation procedures that Hayley was under?

A. Isolation procedures started, I think, in the afternoon, and at that time I hadn't seen any need to change isolation procedure because by tomorrow we would have had results, and also I don't think that has had any impact on Hayley's care. If we isolate patients we don't give them less care, so that doesn't - to us doesn't make a difference whether patient has been isolated or not. Surely to me, and to the rest of the staff as well.

Q. So when the decision was made that Hayley would have isolation procedures, if you had thought for any reason that was inappropriate with regard to Hayley - and you had seen Hayley the day before as well - is that something you feel you could have raised?

A. Yes.

Q. Were you quite content that you could have either not used those procedures with Hayley or that you could have arranged, as Jackie Clinton said earlier, extra nursing or different care, if you were concerned?

A. Can you repeat the question, please?

Q. Yes, sorry. Sorry, that is the way I have put it. You said that isolation procedures being instigated did not mean there was different care.

A. Yes.

Q. If you felt that in Hayley's case that isolation was not appropriate for a particular reason, then you would have raised that.

A. Yes.

- Q. Also, you mentioned a little earlier that if a registrar - sorry, my learned friend raised earlier - if a registrar is not available, then a senior house officer could go direct to PICU. Is that correct?
- A. That is correct. There is no hierarchy in place who can refer, who cannot refer a patient to ..... Even any member of the staff can refer patient to PICU, being a nurse, SHO, registrar - there is no hierarchy in the pattern of referral.
- Q. My learned friend also mentioned, and went through with you, that you were not focusing on a potential right ventricular problem in the heart, but would it be correct to say that you were aware, on a cardiac ward, that problems with the lungs could have an impact on a patient's heart?
- A. Yes, we are aware. Lungs and heart work together, so surely yes.
- Q. Even if you were not considering right ventricular failure as a particular concern, would it be correct to say that you were aware that pressure on the heart, in a child that has had cardiac surgery, is something that you try to mitigate as much as you can?
- A. That's correct, yes.
- Q. You said in your evidence earlier that you could not guarantee that an increase in respiratory distress such as Hayley suffered on the night of 9th to 10th November would not happen again, but when you were looking at Hayley on 10th and once you had instituted the treatment that you had put in place for her, did you feel comforted that that was less likely to happen?
- A. I was comforted by the end of the day, by the end of the afternoon, after second physio, that the measures we have implemented are working.
- Q. When you saw Hayley on 10th, if we can look at the second page of your witness statement, which I think everybody has copies of, seven lines down in the second paragraph you start referring to the ward round on 10th. Do you have that, sir? It is not an exhibit, I think it was .....

THE CORONER: No, but I have put it with these papers. Which page?

MISS LUCAS: It is page 135 of the bundle but it is the second page of the statement, sir, and it is seven lines down of the second paragraph, about the ward round on the morning of 10th November. You said: "When I was doing the ward round, being registrar on call for that day, she continued to have evidence of mild

respiratory distress with mild subcostal recession." In the PEWS charts you said earlier that subcostal recession is labelled here as moderate respiratory distress. Mild subcostal recession - are there degrees of subcostal recession?

A. Yes, (inaudible). There is a degree in amount, when a patient breathes, how difficult is for patient to breathe: is it either mild or more severe? So there is a degree.

Q. So when you refer to mild subcostal recession there, would it be fair to say that that, to you, meant mild respiratory distress or moderate respiratory -----

A. That's correct, although according to - any subcostal recession, according to chart, it does say goes into moderate, but I would say mild, yes, because it was mild degree of recession.

Q. If that had, as in the PEWS charts, have been moderate, would it have changed your treatment plan in any way?

A. I don't think so, no. At that point of time, no.

Q. We heard in Mum's statement - I know you were not here when she gave her evidence but I understand you have read the statement, is that correct?

A. I have.

Q. Mum mentions head bobbing. Can you tell us what that is, please.

A. Head bobbing, it's a sign of severe respiratory distress, sign of severe respiratory distress when patient needs all muscles to help breathing, including - it usually goes with subcostal intercostal tracheal (inaudible) and head bobbing as well. It's a severe form of respiratory distress.

Q. When you saw Hayley throughout 10th, did you see head bobbing at all?

A. On that day I haven't, no.

Q. You discussed with the physiotherapists - you met the physiotherapists after they had provided the first care for Hayley -----

A. Second.

- Q. The second, on 10th, and you discussed with them CPAP. Why would you discuss that with the physiotherapists?
- A. There was in the morning, with the history of severe respiratory distress this is something we all considered she might need, and especially after first physio - first physio had discussion with their seniors as well, I think there was a lot of discussions whether would she need CPAP or extra support. So after second physio, physiotherapist felt that they will be able to help her breathing, to clear her lungs and secretions and to open her lungs with physio. So they felt that she won't need physio at the time - sorry, CPAP at the time.
- Q. You have mentioned the team making decisions as a team. Did you generally feel that communication within the team was good?
- A. I did feel, I did feel on that day - I myself had a lot of communication, a lot of conversations regarding Hayley with different specialists, including nurses, including senior member of the staff, all of the staff, and cardiac surgeons and physio. So I felt that communication on that day were adequate.
- Q. We sometimes see it referred to as like multidisciplinary team, where there is lots of people that do different things - nursing, physiotherapy -----
- A. This happens every day on the ward. We had sitting ward round in the morning with the consultant, registrars, SHOs and nursing staff. This is usually around nine/half nine, when night person or day before registrar and SHO will tell us what was happening during the night. Then in the evening, around five, half four/five o'clock, we have again sitting ward round including nurse in charge, including nurses who are looking after the patients, registrars and SHOs, so you might call this - it's not multidisciplinary but it's a team handover or team sitting ward round. Every day regularly.
- Q. So is it correct to say that every day, as you just said, there is a sitting ward round, sometimes called a handover, first thing in the morning.
- A. Handover, yes, when we discuss all patients, in details.
- Q. Then there is a ward round.
- A. There's a ward round then.
- Q. On a Monday it is called a grand ward round.
- A. Yes.

Q. Then you have a sitting ward round in the late afternoon as well.

A. Correct.

Q. Then within those times as well you have various other interactions with patients, staff caring for the patients, parents and others.

A. Correct.

Q. Is that an average day.

A. That's every day, every day.

MISS LUCAS: Thank you, I have no further questions.

THE CORONER: I just want to go back on one point. You were asked whether it made any difference, Hayley being in isolation, and you said: "We don't give people less care because they are in isolation."

A. Correct.

Q. That is exactly what the family felt was happening to them.

A. I read their statements.

Q. Can you comment on that.

A. Surely from our point of view, I can say for myself, I don't give different care to patient in isolation. I can answer for myself, and the Board policies as well: we provide equal care for everybody, the care as needed.

THE CORONER: Okay, thank you very much. Take a seat, if you would.

MISS LUCAS: Sir, are you content to release Dr Reinhardt and Dr Gupta, if they go at lunch time?

THE CORONER: Sorry, release this doctor and the other one?

MISS LUCAS: And Dr Gupta, who was previous, gave previous evidence.

THE CORONER: Right.

MR WEITZMAN: Sir, I am rising for a different matter, so I will let you answer that first.

THE CORONER: Right, let me deal with that first. If it is necessary, they have got duties they have to go to and it means that children are not going to be looked after, then, yes, of course they can go. It is just that it seems to me that when you are having various matters come up and various criticisms, it is much better that people are here and they can actually hear what is being said. At the end I shall be giving them an opportunity to come back and say: do you want to add anything? A lot of things being said. If I was in their shoes I would want to be there and know what was being said, so that I had a chance to say: "Actually, that is not - it may be true of other people, it is not true of me, I did not do that." So it is up to you. If you want to go, if you have got to go, then all right, you can go, but I would have thought it was much more sensible for you to be here.

MISS LUCAS: I have not checked, sir, I am just asking just in case - I have not checked yet.

THE CORONER: Right, okay. So if you would like to take a seat and sort it out.

MR WEITZMAN: Sir, can I ask Dr Reinhardt one question arising out of what you asked at the very end.

THE CORONER: Oh, yes, yes, of course you can.

Further cross-examined by Mr Weitzman

MR WEITZMAN: Dr Reinhardt, you were asked by the Coroner about isolation.

A. Yes.

Q. If someone is in isolation is it not Trust policy that they cannot be transferred from one ward to another?

A. I am not aware of that policy.

Q. So would isolation have been any impediment on transferring Hayley to PICU had that been necessary?

A. I don't think so.

Q. Thank you.

A. Should patient require escalation of treatment, that's not an obstacle.

THE CORONER: No suggestion it arose, is there?

MR WEITZMAN: There was not a decision to transfer her, no.

THE CORONER: No.

MR WEITZMAN: So it did not arise, you are right.

THE CORONER: Okay. Thank you very much.

(The witness withdrew)

THE CORONER: It is now 12.55 and we will break until 2.00. There will be, I think, three other families during the lunch hour, which I think my deputy will be dealing with, so as long as we have this table empty that will be good enough. Okay, thank you very much, start again at two o'clock.

(After the short adjournment)

THE CORONER: It is two o'clock so the court is in session again. Sanjet Bhandal, please.

MR WEITZMAN: Sir, it would be, I think, helpful to you and to us if we could deal with the doctors today, and we have both Dr Dawson and Dr Porwall here. I have discussed it with my learned friend, and we both agree it might be sensible to take the doctors in order.

THE CORONER: So what is the advantage of taking it out of order.

MR WEITZMAN: In that order, what is the advantage? We are dealing with the same sets of notes, that we hear Dr Reinhardt, Dr Dawson and Dr Porwall, whose evidence all goes together. If it causes you inconvenience, sir, but to both of us it would make more sense in explaining the story. I think Dr Porwall is in some difficulties being here tomorrow as well.

MISS LUCAS: Sir, you have summonsed him and he is aware of that. He is having difficulty with his employer about coming tomorrow as well, but that was not the main reason for suggesting he gave his evidence after Dr Dawson, we just thought chronologically with the doctors you may get a better picture of what is happening.

THE CORONER: Okay. My only problem is I have been through it all in great detail and thought this was the best order. But all right, we will bow to your wishes, we will take it in your order. Do you want me to call Dr Dawson first?

MR WEITZMAN: Please.

THE CORONER: Dr Dawson.

Dr Pamela Mary DAWSON (sworn)

Examined by The Coroner

THE CORONER: Tell me, please, your full name.

A. Pamela Mary Dawson.

Q. And your full medical qualifications.

A. MBChB, which is the medical qualification, and MRCPCH, is a Member of the Royal College of Paediatrics and Child Health, although I didn't have that membership at the time of this.

Q. Tell me when you were first appointed, first qualified as a doctor.

A. 2006, August - oh, no, 2008 - no, 2006. 2008 was when I started paediatrics. 2006.

Q. Tell me when you started with the Children's Hospital.

A. September 2011.

Q. Sorry?

A. 2009.

Q. Confirm you are duly registered with the General Medical Council.

A. Yes.

Q. Okay. So take us through your report.

A. So the statement is by myself, Dr Pamela Dawson, written on 24th March 2012. I first encountered Hayley on 2nd November 2009 on Ward 12 at the Birmingham Children's Hospital where I was working as a senior house officer in cardiology. I was on the grand ward round led by Dr Miller, consultant cardiologist. I documented in the medical notes her state at the time and the plan for the day. I noted her recent medical history that she had failed extravation twice in paediatric intensive care unit and had had a wound infection (staphylococcus aureus was cultured from her pacing (inaudible)). I did not document the time Hayley was seen, the grand round usually took place around 10.00 to 11.00 am.

I had little involvement in her care over the next eight days. I made one entry in the medical notes on 5th November 2009 documenting microbiology results. I wrote that coagulase negative staphylococcus - and it says aureus but it wasn't supposed to say aureus there - has been cultured from the tip of her central venus pressure monitoring tip. Also, staphylococcus aureus had been cultured from her wound swab and it was sensitive to Flucloxacillin (which she had been treated with).

I became more involved in Hayley's care during my night shifts on 9th to 10th November 2009 and 10th to 11th November 2009. She had then been transferred to Ward 11.

I was asked to review her at ten past two a.m. on 10.11.2009 as she was in respiratory distress. When I reviewed her she was grunting intermittently and had sternal recessions, indicating severe respiratory distress. She was also pale and clammy. She looked alert but miserable and unwell. Her lungs sounded clear on (inaudible) with a stethoscope but she had an increased oxygen requirement. She was on 1 litre of nasal prongs oxygen area but was requiring 5 litres of facial oxygen

on top of this to maintain her oxygen saturations. She was also breathing fast (respiratory rate was 55 breaths per minute). I took a blood gas sample and requested a chest X-ray.

I recall having a discussion with the on call radiographer over the phone. They did not want to come and do a portable chest X-ray but I thought Hayley was too unwell to go to the radiology department (I did not document this in the notes). The blood gas result did not show immediate cause for concern about the adequacy of her breathing. I discussed the patient with the cardiology registrar on call, Dr Porwall, and conveyed that I was worried about her. He suggested that we stop her oral feeds so as to decrease respiratory effort during feeds and keep the stomach from pressing on the diaphragm. I started her on intravenous fluids. Dr Porwall said he would review her when she had her chest X-ray.

I noted Hayley's medical history, pulmonary atresia with a ventricular septal defect, operated on 14.10 - and that should say 2009. I also noted her post operative course, two failed extractions (coming off a ventilator) and ventilatory support with continuous positive airway pressure.

I documented the results of her chest X-rays in hospital notes. One had been taken on 9th November 2009 which had showed consolidation of the left lung in the middle and lower zones and a decreased lung volume on the right side. The X-ray from 10th November showed a similar picture but with further shadowing at the right costophrenic angle (lower part of the chest adjacent to the diaphragm).

I reviewed Hayley again at 3.00 am. She was still in significant respiratory distress but looked more comfortable and was sleeping. She was still pale and clammy but her central capillary refill time was less than two seconds, indicating adequate circulatory perfusion. She was still breathing quickly, tachypnea, respiratory rate was 50 breaths a minute, and had a fast heart rate (tachycardia), 140 beats a minute. She was maintaining her oxygen saturations in 45 per cent head box oxygen.

I discussed her with Dr Porwall again, who suggested chest physiotherapy and observation. I suggested giving her antibiotics on the basis that if there was not already infection in the chest there was a higher chance of it developing due to collapse and consolidation seen on the X-ray. Dr Porwall

advised not to give her antibiotics at present. The plan was to review her with a repeat capillary blood gas and intensive care involvement if she deteriorated further.

Dr Porwall reviewed her at a later time and planned to discuss with the consultant on call, Dr Stümper in relation to antibiotics.

During the day on 10th November 2009 the overnight events were documented. Hayley was tested for swine 'flu and isolated awaiting the results of this.

When I was on Ward 11 on my night shift, 10th to 11th November 2009, so that is the Tuesday evening, Hayley's Mum asked why she was in isolation. I asked the nursing staff and checked in the notes. I informed her of the policy in regards to swine 'flu screening and isolation until a negative result is gained. Hayley's Mum was much happier with her progress and felt that she had improved from the night before. I have not documented this in the patient's notes.

I was contacted by bleep at approximately 2.00 am on 11th November 2009. The staff nurse asked if Hayley's feeds could be restarted as she was much better than the previous night. I asked if both herself and Hayley's Mum were happy with this, and she said yes. I was also comfortable with this as I had seen Hayley briefly earlier in the evening and felt her to be much improved. I advised to reintroduce feeds at half volume via nasal gastric tube. The remainder of her daily fluid requirement was to remain given intravenously. My documentation in regards to this in the notes appears to have taken place at 7.10 am. However, this was not my recollection and I wrote in the patient notes retrospectively. It is documented by the staff nurse on the PEWS chart to have happened at 2.00 am and I believe this to be accurate.

I was next asked to review Hayley at approximately 7.10 am on 11th November 2009 for increased difficulty in breathing. On examination she had moderate respiratory distress (subcostal and intercostal recessions and nasal flaring). She remained tachypneic (respiratory rate 50 breaths per minute) and tachycardic (heart rate 130 beats per minute). However, she looked well and was warm and well perfused with a capillary refill time of less than two seconds. She still looked much better than she had the previous night. I reassured Mum and did not make any changes to Hayley's management.

I was called back to Hayley's room by her mother twenty minutes later when I was at the nursing desk on Ward 11. Her Mum was panicked that she looked very unwell again. On my arrival Hayley looked very unwell. She was pale and clammy with decreased perfusion (a capillary refill time of two to three seconds). Her respiratory distress had worsened to severe sternal breastbone recessions and a tracheal tug. Her respiratory rate had increased to 60 breaths a minute and her heart rate increased to 140 beats per minute.

I recognised the seriousness of her condition and speed of deterioration immediately. I asked the nursing staff to put her in high flow oxygen (not documented). I took a capillary blood gas sample to the intensive care unit immediately, to get the result but also because I knew the PICU registrar and the cardiology registrar on call were there. The gas result was poor, with a respiratory acidosis, indicating respiratory failure.

Dr Neal attended Ward 11 with me immediately. Dr Neal assessed Hayley and decided to intubate and transfer to PICU. After intubation she developed a severe bradycardia (slow heart rate). Cardiopulmonary resuscitation was commenced and the arrest call put out. My role in the arrest was to keep a time line and write up prescribed medication. The rough draft of the time line documented by myself is filed in the hospital notes. The piece of paper does not have a patient identifier label or date on it, it is not signed as it was meant to aid documentation of other staff rather than to be filed. It is my handwriting with some annotation from possibly Dr Neal. Resuscitation was stopped at 8.15 am because of failure to respond to it, with the agreement of the resuscitation team, including myself. I offer my sincere condolences.

THE CORONER: Okay, you made that statement on 3rd April this year.

A. Yes.

Q. There are two or three points in it at which you say: "I did not document this in the notes."

A. Yes.

Q. No doubt you realise that it would be a lot more convincing if it had been documented in the notes.

A. Yes.

- Q. Why should anyone actually believe that you are correct in thinking back that length of time and saying that did happen - I did not bother to write it down but it did happen?
- A. That's my recollection. It's my recollection, that's what I remember from the time and that's all I can go by, short of what I have documented in the notes, so the statement is comprised of both, and I have tried to do the best with what I have.
- Q. In future when you make notes you will put them in correctly.
- A. Yes.
- Q. Yes?
- A. Yes.
- Q. You say that it looks as though you made a note at 7.10 but your recollection is that (inaudible) should be there.
- A. Yes.
- Q. When you make a note in recollection again, what are you supposed to do?
- A. As I did with this one, I write at the top that it is a retrospective note, you know, so that whoever is reading it does know that actually I didn't write it at the time.
- Q. Yes. When you are doing that, you can remember then when it was, can you not, so you put "retrospective 2.10" or whatever it was.
- A. Yes, I didn't - the problem with that retrospective note is that I wrote it all after Hayley had died and .....
- Q. Yes.
- A. .... I wasn't really in a great frame of mind.
- Q. I know I am upsetting you, but I am just trying to get it across to you and everyone else .....
- A. I know.

Q. .... notes actually matter. It is not just red tape, it is not just someone nagging you, saying: "Do it." The whole point about a note is you are telling people what you have done. When you try and remember it three years later - it is not your fault it is three years. Okay? All right.

Go back to the second page of it, paragraph number 10, the second paragraph down: "I discussed with Dr Porwall again, who suggested chest physiotherapy and observation." And then later on: "Dr Porwall advised not to give her antibiotics at present. The plan was to review her with a repeat capillary blood gas and intensive care involvement if she deteriorated further."

A. Yes.

Q. That is something that you thought of, or he thought of, or you both thought of, or it was discussed, or what?

A. I believe that that was a joint plan that we came up with together, me being on the ward and him being on the phone and discussing it with him.

Q. How much senior is Dr Porwall to you?

A. He was the registrar, and had a lot more experience than I had. When I was doing this job I had been doing paediatrics for a year and had no experience of paediatric cardiology, so I very much trusted his judgment.

Q. Am I right in thinking that when you are at the beginning of your career someone with three or four years' experience is really someone you rely on?

A. Yes.

Q. By the time you are both in your fifties, the three or four years does not make much difference.

A. Yes.

Q. At the beginning it makes a lot of difference.

A. Yes.

Q. Is that right?

A. Yes.

Q. That is why you were going back to him all the time and saying: "What do you do, what .....?" Yes?

A. Yes.

Q. Okay. It is obvious that Hayley has had a very bad night, you are talking about her at 3.00 am, still in significant respiratory distress. Then you go down to paragraph number 12, the last two lines of that you say: "Hayley's Mum was much happier with her progress and felt that she had improved from the night before." Did you also think she had improved?

A. Yes.

Q. When you say something like: "Hayley's Mum felt she had improved," is that because she said so, or because you asked her, or her general demeanour? How do you reach a decision like that about what someone else is thinking?

A. It's hard to say because of it being a long time ago, but that was the general overall impression that I got, but I can't say what exact words we said.

Q. Then we go through 10th November and we go through the evening. Just spell out for me when your duties would have finished. The night of 9th to 10th, what time would you come off duty?

A. The handover, I believe, was at 8.30 in the morning on 10th in the morning, so I went and handed over to the day team and finished, I think the shift finishes at half past nine.

Q. Then you would come back on when?

A. At half past eight.

Q. Half past eight that evening.

A. Yes. When I came back that evening, when I went to hospital at night handover, I remember - and it's not documented in this but was reflected in the statement that we were given this morning - that actually when I was at that hospital at night handover and I had had cardiology handover, the first person I asked about was Hayley and how she was, and was told that she was improved, and the first thing I did on that night shift was to go and see how she was and to ..... Partially because we had had such a busy night the night before, but partially because I needed to know how she was because I was going to be caring for her that night as well.

Q. We have heard from the last witness, Dr Reinhardt, that that day, 10th November, she saw Hayley as her priority.

A. Yes.

Q. Because everyone else seemed to be going the right way and Hayley was not at that stage.

A. Yes.

Q. How did you view Hayley?

A. I was very - I was wary of Hayley's condition because she had been so unwell the previous night, but in handover she wasn't handed over to me or highlighted to me as somebody who I should watch out for. I did have to ask about her.

Q. So then we go through the night and Hayley is better, she has had her two lots of physio and she seems to be improving, and then you are asked to allow her feeds to be restarted.

A. Yes.

Q. Yes? You check that both the nurse and Paula are both happy with that.

A. Yes.

Q. Then you were next asked to review Hayley at approximately 07.10 on 11th November.

A. Yes.

Q. For increased difficulty in breathing. Was that a nurse or was that Paula coming to you?

A. I think Paula had asked the nurse to call me.

Q. You say: "On examination she had moderate respiratory distress, respiratory rate 50 breaths per minute, heart rate 130. However, she looked well and was warm and well perfused, with a capillary refill time of less than two seconds."

A. Yes.

Q. "She still looked much better than she had the previous night."

A. Yes.

Q. "I reassured Mum and did not make any changes."

A. Yes.

Q. Then just twenty minutes later there is the collapse and death. Obviously it surprised you, sudden collapse.

A. Yes.

Q. Looking back, do you think there is anything you missed on that second, the final review?

A. When I reviewed her at 7.10?

Q. Yes.

A. I think that ..... (pause) I think that my assessment was slightly skewed by how unwell she had been the previous night, so I've written that she had moderate distress - she did have moderate distress, and had this been - had she have not been unwell the previous night or not been so unwell the previous night, I do wonder whether I would have acted on it and asked for a review of her, but I can't say. When I was there she was relatively comfortable.

Q. So if she had been perfectly well the day before and then presented like this, you would wonder why.

A. Yes.

Q. Because she had been worse and appeared to be getting better, you think you may not have wondered as much as you would otherwise.

A. Yes. I think that because it was already identified that there was a definite process going on, and it was being treated - there was a management plan already initiated - I think that I attributed how she was that morning to part of that overall picture, which it was, but didn't expect such a sudden decline.

THE CORONER: Okay. Now, the advocates are going to ask you questions, but talk to me and make sure that my pen is moving. Okay?

A. Okay.

Cross-examined by Mr Weitzman

MR WEITZMAN: Just so I understand what you described to the Coroner, Dr Dawson, in your last comments, when you saw her at 7.10 on the morning of 11th she was not in a good state, but compared to how she had been at 2.00 am on 10th, it was not as serious.

A. Yes. Yes, I think that's accurate.

Q. Had she not been in such a serious state at 2.00 am on 10th, you might well have called the registrar when assessing her at 7.10 on 11th.

A. I think so, yes.

Q. Thank you. When you said, when the Coroner asked you about your paragraph 12, Dr Dawson, about Mum being much happier with her progress, that of course again is relative, is it not?

A. Yes.

Q. Mum was very concerned about Hayley, but I think that is fair to say she was very grateful for the way you had behaved on the night of 10th and, as it were, pleased to see you and to say Hayley has improved since then, when she was very, very bad. Is that really the communication that was going on?

A. It's hard to remember completely but I think that's a fair assessment.

Q. Thank you. I am going to ask you about the notes, so I would like you to have, please, the notes you made on the evening of 9th/10th, and they are at page 663 and 664, please. I would also like you at the same time to have the statement you have seen earlier today from the review, which is pages 527 to 529, please.

A. I have already got a copy of that.

Q. You have got that, have you? Can we make sure that the Coroner has a copy, please. (Handed)

A. Thank you.

THE CORONER: C19 will be pages 663 and 664, and exhibit C20 will be 529 and 528. Okay?

MR WEITZMAN: Yes.

A. Yes.

Q. It is your handwriting we see halfway down 663: "SHO 3 hospital at night Dawson."

A. Yes, it is.

Q. "Asked to see patient in relation to respiratory distress. On examination sternal recession, grunting intermittently, pale and clammy. Capillary refill two seconds."

A. Yes.

Q. You listened to the chest. "No added sounds heard. Good AE," and is that the stethoscopic measurements?

A. No, good air entry.

Q. Below the air entry, sorry.

A. So below that is heart sounds, HS, one plus two plus SM, is a systolic murmur, and that's how Hayley's heart had sounded throughout.

Q. Right. And alert but miserable.

A. Yes.

Q. We can see that the oxygen saturations were high but she was having a lot of oxygen, one litre by nasal plugs plus five by facial head box. Is that right?

A. I think it was a facial mask at the time.

Q. Facial mask, my apology. To put it in - Hayley was in a pretty bad way and you were very concerned about her.

A. Yes.

Q. That is what those readings in effect mean.

A. Yes.

- Q. If I look at 527 now, it says: "Explain your involvement with Hayley Fullerton on Monday 9th of 10. Pam was asked to see Hayley Fullerton. Can't remember what the nurses said but Hayley Fullerton was not reported to Pam as urgent. When Pam saw her she was in respiratory distress and looked shocking." First question: is that a fair summary of what you were saying in response to that question.
- A. I think that it's difficult to - things that are related to this document I find difficult to answer, firstly because I have not seen it before this morning, and as far as I am aware that this was a note that was made during when they were doing the SUI investigation, so when I went to the SUI investigation there was Dr Debenham and then there was somebody else, who I don't know who she was, and she was making a few notes, but it certainly wasn't taped or anything like that. As I have said, I haven't seen this before this morning, and actually they didn't even send me a copy of the SUI report, so although this was, I believe, in February 2010 and would be closer to the time, I can't say: yes, I said that, no, I didn't say that; I can only go on what I recall. I can't actually really verify a lot.
- Q. Okay. Dr Dawson, I am going to ask you about extracts of this.
- A. Okay.
- Q. You have already told the Coroner in your evidence about part of it was right because you remember that -----
- A. Yes, I recalled that, yes.
- Q. So if it is something that does not strike a chord in your memory, tell us and we will move on. Is that fair?
- A. Yes.
- Q. So the first thing is you were called to see Hayley Fullerton, which is obviously right.
- A. Yes.
- Q. You cannot remember what the nurses said to you but she was not reported to you as urgent. Is that something you recall?
- A. I don't remember.

Q. You do not remember now. When you saw her she looked shocking, and we have established that already, and she obviously was urgent, was she not?

A. Yes.

Q. All right. Then in fact it very much reflects the note. If we go back now to the note, we see that you have done the blood gases. Yes?

A. Yes.

Q. Capillary blood gases. Just so I understand it, you take a small amount of Hayley's blood.

A. Yes.

Q. And then you put it into a machine to get the reading?

A. Yes.

Q. Where is that machine, please?

A. It's on paediatric intensive care.

Q. So you had to go to the PICU to do that.

A. Yes.

Q. How far away is that, please?

A. So it's along the hospital corridor, probably about two wards down, and down a floor.

Q. So how long does that take, a couple of minutes?

A. Yes.

Q. I suggested that to you. Is it a fair suggestion, or is longer/shorter?

A. No, I think that's about fair.

Q. Can we look at the next part of the notes, page 664. You immediately request an X-ray, is that right, at the same time as doing the capillary blood gases.

A. I don't know if I did the chest X-ray after I'd done the gas or .....

Q. I suspect you had requested one here, you had not yet done it. Is that ....?

A. Yes, sorry, that's what I meant.

Q. Fine. And you were adamant that Hayley's condition was such that, despite wanting her to come to them, you were adamant they had to come to her.

A. Yes.

Q. Then you ring up the registrar on call, who is in a room in the hospital somewhere, is that right?

A. I don't know where he was, they can be from home.

Q. But you are speaking to Dr Porwall.

A. Yes.

Q. This is the results of your discussions, and I suggest this is really what he is telling you: nil by mouth, previously fed on demand. IVI being .....?

A. Intravenous fluids.

Q. Right. So that is in a sense replacing feeding orally, is it?

A. Yes, it would maintain the blood sugar and electrolytes, so salts and enough fluid.

Q. Then review with chest X-ray result. So you ring him and you say: "This is the situation I have found, you are the registrar, what do I do?" Is that a fair summary?

A. Yes.

Q. He says stop feeding her by mouth. Why does he say that?

A. As I wrote in my statement, if you give feeds into the stomach when somebody has significant respiratory distress, the stomach can push up on to the diaphragm and increase the effort required for breathing. So to keep an empty stomach would hopefully decrease the work of breathing.

Q. Tell me if I have got this right or wrong. In a small baby everything is quite close together.

A. Yes.

Q. Obviously to breathe you have to raise and lower the diaphragm.

A. Yes.

Q. To breathe in you have to lower the diaphragm, so if you have got a very full stomach it is harder to do.

A. Yes.

Q. Then you get the chest X-ray - wait a second. You have got the history, you have written down the history. Yes? Chest X-ray. In the history you say she required CPAP while on PICU, so that was supported ventilation, yes?

A. Yes.

Q. Then you compare the chest X-rays, and the second is worst. Yes?

A. Yes.

Q. Are you able now to say without the X-rays in front of you - and, please, if you cannot, do not - how much qualitatively worse it was?

A. I can only really go from what I have documented, so on the X-ray done in the afternoon on 9th the middle and lower zones of the left side were collapsed and consolidated, and in the right lung the volume of the right lung was decreased. Then on 10th the left side was similar but there was also the start of some shadowing in the lower zone of the right lung as well.

Q. When you say the costophrenic angle, that is the angle with the diaphragm and the edge of the rib cage, is it?

A. Yes.

Q. When you say shadowing, what you mean is there was a build up of fluid or consolidation of some form.

A. Yes, one of the reasons that we write haziness or shadowing is it's sometimes difficult to say what's actually causing what you can see on the X-ray, but in this case you would think that it would either be fluid, a consolidation or collapse of that part of lung, or combination thereof.

- Q. Then it looks like at three o'clock - so this has taken approximately 50 minutes - you go back and review Hayley again. Yes?
- A. Yes, I didn't leave the ward.
- Q. I understand that, I am just saying that your actions took you a certain amount - because you have got to get the X-ray taken to examine it. She is sleeping, sternal recessions now but not grunting, capillary refill is the same, still pale and clammy, respiratory rate 50, heart rate 140, sats are up, but you would expect that given that she was having so much oxygen pumped into her. Yes?
- A. Yes, I would expect her saturations to improve with more oxygen.
- Q. It is at that point after you have reviewed Hayley that you ring the registrar Porwall again, is that right?
- A. Yes.
- Q. If we could now turn to 527, as I understand, at 527, the part we looked at, discussion with registrar. At the end of the entry we previously looked at: "Reviewed X-ray Hayley Fullerton at 3. Sternal recession, pale, clammy, discussed with registrar again." "What was the nature of your discussion with the on call registrar?" "Registrar not too concerned. Pam," that is yourself, "was concerned. She saw big white out on the X-ray, wondered if we needed PICU review or antibiotics. Did want registrar to review out of hours, wanted to be proactive. Can't remember if she explicitly asked registrar to attend. The previous plan agreed by the consultant previously was to get physio in the morning so registrar suggested that we discuss with consultant in the morning. If she got worse, then consider getting physio at night. Nil by mouth, but head box to increase oxygen." Yes?
- A. That's what it says, yes.
- Q. That is what it says there. If we then look at what your notes say: "Discussion with registrar Porwall. Needs physio. Not for antibiotics currently. Observe. If deteriorates, repeat capillary blood gas and PICU review." Yes?
- A. Yes.
- Q. Now, tell me how much of this you can remember. You have the note. You rang the registrar. Can you remember saying: "I think we need a PICU review?"
- A. No, I can't remember saying that.

Q. But certainly a PICU review was raised if there was a further deterioration.

A. Yes.

Q. You were reporting back to him what you had found: worsened X-rays, yes?

A. Yes.

Q. And the description I have just given of your review of her at 3.00. Yes?

A. Yes.

Q. The need for physio, was that you or him? We know that the consultant's plan was physio, which had not then been carried out, so were you suggesting physio in the night, or was he saying she needs physio and that is part of the consultant's plan?

A. I think that it was Dr Porwall who said that we should do some physiotherapy.

THE CORONER: Say it again?

A. I think it was Dr Porwall who suggested physiotherapy rather than myself.

MR WEITZMAN: But it was not to happen then.

A. I can't remember. I've been trying to remember since I read Paula's statement. I'm trying to remember as to what time frame we were thinking about with the physiotherapy. I was certainly very worried about Hayley and I think I conveyed that to Dr Porwall, and I was thinking about whether we needed an ITU review and was certainly thinking those things. I can't remember whether I phoned physiotherapy in the night or not.

Q. The next -----

A. I have no recollection of that part.

Q. The next entry is in relation to antibiotics: not for antibiotics currently. Again, I would suggest to you, but you can disagree with it if you want to, that was coming from the registrar because you were raising the issue of antibiotics, and he says not immediately.

A. Yes.

- Q. Then observe, if deteriorate. Looking at that last line, please, it says: "If deteriorates, repeat CVG plus PICU review." As I read that, I understand what is meant: if there is a deterioration, first get the capillary blood gases and then with those, if necessary, go and see the PICU review. Is that right?
- A. I don't think that the PICU review - it was definitely and, it wasn't ..... It was do the blood gas and get ITU, it was not dependent on what the blood gas showed. If she deteriorates further, we needed ITU review.
- Q. If we look at page 527, the next question you were asked is: "What is the hurdle you need to reach to involve PICU?" Do you see, Dr Dawson?
- A. Yes.
- Q. What is said is: "Gas is used as an indicator to get into PICU. If gas is okay then 'they are not really interested'." So was that your perception in February 2010 when you were interviewed by Dr Debenham?
- A. I'm finding it really difficult to comment on it two and a half years on, because obviously my perceptions of ITU now compared to then are completely different, partially with experience of generally doing paediatrics, but partially with experience of actually working in the Children's Hospital a lot longer. I had only worked in the Children's Hospital for just over two months and I was very junior, and a little overwhelmed at the area I was working in; I wasn't confident of my judgment within that area. In regards to ITU, whereas now I would say anyone can phone ITU, this would indicate that that's now how I felt at the time.
- Q. If we turn the page to 528, please, Dr Dawson, we see you are asked the question: "Would it be appropriate for an SHO to independently approach PICU for review?" "Very nervous about speaking to PICU, a bit presumptuous for an SHO to speak with PICU. Need to have back up data gases to justify decision." I would suggest to you that that was how you were thinking at the time. In fact the position may have changed as a result of this incident, at the Trust.
- A. That could be the case. I know that I very much felt like I needed to discuss it with my registrar first, because as I have said, I wasn't confident in my assessment of these cardiac children because they were much sicker children than I was used to looking at, with very, very different problems than I was used to dealing with. I always felt I wanted to discuss with my registrar first. I had also had limited

interaction with ITU. It usually involved children being discharged from ITU on to the cardiac wards into the HDU kind of setting on the cardiac wards, where the children were still very sick but could be nursed on the cardiology wards. I think that I was still working out where those levels were, because as I said, these were children who were much more unwell than I was used to managing on wards, and I very much relied on the registrars to help me, which I think we all did and I think that's how the system works - I had gone from being a more senior SHO to a very junior one.

Q. On the morning of 11th at 7.30 when you saw Hayley in respiratory distress again, in fact the first thing you did was take the capillary blood gases and take them to PICU. You did not immediately ring PICU to come to the ward, did you, and I would suggest to you that that does indicate that you did feel you needed the capillary blood gases before you could get the PICU team in.

A. I don't know that that's the case actually. I remember that one of the reasons that I didn't ask one of the nurses to go with the gas and stay with Hayley, was that I knew that I could find - there was the blood gas machine obviously, I could put the gas in, and while I was waiting for the gas I could go and find the ITU registrar, tell him about Hayley and ask him to come and see her, and also I knew there was a high chance that Dr Reinhardt would be down there because often the cardiology regs, earlier on in the morning, after they have been on call, are in ITU. So I knew that they were there and that was part of my reason for going down myself with the blood gas, planning to be very quick and bring help back, irrespective of what the gas showed.

Q. Dr Dawson, when you saw her at 7.30 she was again in a really bad way, was she not?

A. Yes.

Q. So was it not urgent to get PICU as quickly as possible?

A. Yes.

Q. If they were -----

A. Yes, it was, but I don't think that I added a huge delay. Some of it was a very snap decision that you have to make then and there because you've got a very sick child in front of you. But I don't think I introduced a huge delay - I literally ran down, it wasn't the two minutes that you mentioned earlier, it was 30 seconds to get down there and put it in the gas machine and go and talk to them immediately.

- Q. I suppose, Dr Dawson, I am not suggesting that you introduced a delay. What I am suggesting is that you feel to get them there you needed the blood gas results, so you ran, as you have described, to get the results so you could go and show them to paediatric intensive care and say: "Look, come," rather than just ringing them from Ward 11: "Please come now, something really serious is coming on," is happening - my apologies.
- A. I think it was part of the information, and a useful piece of information, the blood gas, but it wasn't the only piece of information and certainly wasn't the only piece of information that I spoke to the ITU registrar about. And I didn't - I think I anticipated that it all needed doing, not that I couldn't ask for an ITU review without the blood gas.
- Q. I am sorry, I missed the last sentence.
- A. I don't think that I thought that you couldn't get an ITU review without a blood gas, I don't think that was my thinking.
- Q. If it was only one piece of the information, and from your immediate assessment this was an emergency, surely you should just call them to Ward 11.
- A. As I said to you, I don't think it actually introduced any time delay. I did call them to Ward 11, I just - instead of phoning them I ran down to ITU. I don't think it did actually introduce that bit of error. There are lots of things that you can do in that acute situation where you need more information, and a blood gas is a very quick and easy way of getting more information, because you get your reeading in 30 seconds or a minute from the machine, you don't have to wait for all the results to come up for, you know, for lab results, for X-rays or all those kind of things, you do get that immediate thing.

So the first - you know, I asked them to first of all put oxygen on Hayley, and thinking in a very kind of - when we're assessing a very sick child we would always think of ABC: so A would be airway, she didn't have any problems with her airway; B would be breathing, and there was significant difficulty with her breathing; but as part of the breathing and part of C which would be circulation, I could, from the blood gas, we could get an idea about how much this breathing and circulation problem was affecting her. Now, it's not - you don't have to have it, but it's a useful piece of information, and I think part of the assessment I was doing.

I also think it was difficult to think about how much she was compensating at the time, because she had looked terrible the night before but she was actually compensating pretty well, relatively. She was, like when we did her blood gas it showed that she was perfusing her body and she was, you know, still coping, if you like, despite the fact that this serious event was going on, and actually - so the blood gas gave us information about how well she was coping, and the answer was: not. But I did want the gas for information, but I wanted ITU anyway, irrespective of what the gas showed.

Q. Can I ask you about three o'clock in the morning, please.

A. On which night?

Q. My apologies, on 11th.

A. Yes.

Q. You took the call and you were asked: can we return to normal feeds?

A. Yes.

Q. Your statement says fifty/fifty.

A. Yes.

Q. I do not think that is in the notes, is that right?

A. No, it's not. I think I made an entry in the notes that - it was part of my retrospective notes, which I timed 7.10, which is actually when I came to see Hayley in the morning. So I did write a reference in terms of feeding in there, but, as I put in my statement, not in the right place. Although on the PEWS chart the nurse has documented what we did at 2.00 am.

Q. Let's just look at that entry because I want to be clear about something. Can you look at 671, please, and could the Coroner have a copy of that as well (handed). You did not make an entry on the PEWS score so there is no point showing that to you, is there?

A. No, I didn't write on the PEWS score.

Q. What you have put halfway - "Reassured Mum, NG feeds to half, half IVI." So it is still being fed by nasogastric tube, is that right?

A. Yes. So I think the way round that I've got that particular line about NG feeds to half and half IV fluids was the decision made at 3.00 am.

Q. I understand it is a decision made earlier. There is no problem with that. I just want to be clear about the decision that was made.

A. Yes.

Q. The decision that was made is identified clearly there.

A. Yes.

Q. Fifty/fifty.

A. Yes.

Q. Nasogastric and IVI.

A. Yes.

Q. And you would not have recommended any more because of what had happened the night before.

A. I don't know whether we increased it to full nasogastric feeds at a later time. That was originally the kind of plan. It was: can we introduce feeds again? Well, I'd rather be a bit safer so we'll give half, and if she copes well with half then we may be able to reintroduce full feeds. I honestly don't remember. I know that was my plan.

Q. Did you discuss that with Mum, or not, or was it simply with the nurse?

A. Not at 3.00 am. I saw Mum when I came on shift and then I saw her at 7.00 am. I didn't see her in between.

Q. When you saw her at 7.10 - I think we dealt with this at the beginning of your evidence - it was serious, but because of the previous ..... I do not need to ask you about that again. Dr Dawson, thank you very much for your evidence.

A. Thank you.

THE CORONER: Yes, Miss Lucas.

Cross-examined by Miss Lucas

MISS LUCAS: Thank you, sir. Dr Dawson, I only have probably one or two questions for you. When you were answering questions my learned friend asked you a little earlier, you were saying that because you were quite new to cardiology you would usually get a registrar's view if you were concerned. But is it fair to say that on 11th when you saw Hayley when she really did not look very well, you did not wait to get a registrar's view or anybody else, you immediately thought there was a need to go to ITU.

A. Yes.

Q. Did you feel there was a need to go to ITU on that occasion because you could actually give them all the information you had got as well as the blood gas when you did get it?

A. It was all the information, but a lot of it was: my God, when I walked into that room and I saw Hayley, I immediately knew; that despite the fact she was a cardiac baby and it was, you know, not my area of expertise I know what sick children look like, and I went in and I saw her and I knew that she looked very unwell, and I acted on that immediately.

Q. So is it correct to say that when you saw Hayley overnight from 9th to 10th, you saw her early on 10th, you did not have that same level of concern?

A. I was very worried about her, because if she had not had a cardiac problem I would have been very worried about her, and I knew that she looked unwell. I think some of it was that - and it says at the end of this transcript that one of the things I learned was to trust my gut, and that I do know sick children - is that she was unwell. I think that I still acted appropriately, because I contacted my senior, who has done PICU, and I got more information. I initiated the tests without - you know, I initiated some investigation and more oxygen without discussing with my registrar, so I wasn't relying on him for every single thing, I was still an independent clinician, but when I wasn't sure, and because all of the children on the ward are so sick, that I seek help and refer to my senior.

Q. When Dr Porwall came to see Hayley on the early morning of 10th, did you speak to him after he had seen Hayley?

A. I don't remember. I know that I knew that he had seen Hayley before I went to hand over. So I knew that I had checked that she had been reviewed, later on. No, I don't know what time she was reviewed

because I couldn't see that it was documented, but I know that I had made sure that that had happened. I don't remember talking to Dr Porwall about it after he had reviewed her, but I know that I knew that she had been reviewed.

MISS LUCAS: Thank you, Dr Dawson. I have no more questions, sir.

THE CORONER: Thank you very much.

A. Thank you.

(The witness withdrew)

THE CORONER: We will take Dr Porwall next.

Dr PORWALL (sworn)

Examined by The Coroner

THE CORONER: Tell me, please, your full name and your full medical qualifications.

A. My name is Ashish Porwall, and my full medical qualifications, MBBS and MRCPCH from Royal College of Physicians of Paediatrics in UK.

Q. Tell me when you first qualified as a doctor.

A. 1993.

Q. Tell me when you worked at the Children's Hospital.

A. That was September 2009, I started for the first time.

Q. Confirm you are duly registered with the General Medical Council.

A. Yes.

Q. Yes.

- A. My statement: this is my first statement relating to the care and treatment given to Hayley Fullerton during her admission to Birmingham Children's Hospital from 12th October 2009 to 11th November 2009.

I had been employed by Birmingham Children's Hospital NHS Foundation Trust at that time, and I am currently employed as a (inaudible) specialist trainee registrar at Royal Shrewsbury Hospital. I have held this position since September 2011. My duties involve providing supervised medical care to children and babies seen in the hospital as in patients, that is admitted, or in the paediatric outpatients in paediatric assessment unit.

I do not remember the care I provided to Hayley and therefore my statement is based on solely the entries in the medical notes. During Hayley's admission my involvement was I was the paediatric trainee registrar working in cardiology during Hayley's admission in the hospital. I was involved in Hayley's care during her stay in Birmingham Children's Hospital.

I first reviewed Hayley when she was admitted in paediatric intensive care unit after her surgery on 15th October 2009, when I was asked to perform an echocardiogram on her to assess her heart after her surgery. We as a team (cardiology consultants and junior medical team, cardiac surgical consultants and their junior medical team, and intensive care consultants and their junior medical team and nursing team) every morning had bedside handover of all the patients seeking cardiology department input, and hence Hayley was discussed during her stay in the paediatric intensive care unit, along with her management plan. Hence I was involved in those rounds whenever I was present for the ward round.

Hayley was also seen on the ward rounds during her stay in the ward after she was transferred from the intensive care, along with the consultant involved in her care and the rest of the team, which would include me on the days when I was posted in the ward.

The next time when I was directly involved in Hayley's care was on 3rd November 2010, when I did the ward round. I reviewed her and planned to continue her care as before since her medical condition was stable on that day.

The next time I was directly involved in Hayley's care was on night of 9th and early morning of 10th November 2009. I was on call that day and as registrars we do 24 hours on call in cardiology. The day began as a normal on call day, with the morning round in the intensive care unit along with the surgical cardiology and intensive care team, discussing all the patients. Following that, on a Monday we had a team meeting where various present and future cases were audio visually presented and discussed with the surgical team, hence I was in that meeting. After that meeting we had a meeting with the liaison team, and again discussed various patients and made plans. The ward round commenced after that and I was on the ward round with the consultants and was involved in the care plan by them.

Also in between all these times, as I was on call, I could be called or bleeped for an opinion with the ICU, which could require performing echocardiogram on patients, or I could be called for a discussion regarding any patient referral or review other investigations in the department. Part of being on call involved reviewing other patients anywhere in the hospital or in the emergency department or dealing with any queries for the cardiology department.

I do not remember if I was present during the time when Hayley was reviewed by the consultants and decisions were made regarding her care.

Then at 1700 hours at handover where the on call person (which would be me) was briefed regarding all the patients, which I attended. I do not remember what I did during my on call on that day, but as my home is far away from the hospital I stay in the on call room provided by the Trust.

I do not remember about the night or early hours of the morning when Hayley became unwell. I can only say by reviewing the notes what my actions were. Dr Dawson contacted me and updated me regarding Hayley's condition, in that she had increased work of breathing and higher oxygen requirement. Dr Dawson also informed me of the actions she had taken as a result of the capillary blood gas and the plan from the day team. I advised Dr Dawson regarding the plan for Hayley's management, which was to keep her nil by mouth, performing a chest X-ray and commencing her on a drip.

Dr Dawson called me and updated me that the chest X-ray performed was not very different from the one done during the day and reviewed by the consultant. There was no difference to the previous X-ray apart from further slight haziness on the right side of the lung.

Hayley needed more oxygen but the work of breathing, as in her respiratory rate, had remained in the same range as before. She had sternal recession as she has had during her stay on the ward, plus she had her sternum opened during the surgery. Her blood gas was reassuring, hence I asked for physiotherapy input, as decided by the consultant during the day.

I reviewed Hayley, along with the X-ray, capillary blood gas, previous (inaudible) and her observation charts and found that she was more unwell than she was earlier on, with evidence of slight (inaudible), increased oxygen requirements. However, her work of breathing was not much different from before. Her respiratory rate previously was in 40s, which was similar to previous days. She had sternal recession, but she had always had some (inaudible) since she came to the ward, as well as having sternal surgery. Her blood gas did not show any evidence of worsening carbon dioxide clearance or accumulation of acid - in fact her gas (inaudible) was acceptable, and so were the past few gases. Acid in her gas was also not increased and heart rate was between 130 to 140 per minute. Her liver was one centimetre, which again did not suggest a worsening cardiac problem.

I was worried from an infection and lung collapse point of view, and as (inaudible) of infection from the bloods done in the morning were slightly worse than the earlier ones, I decided to repeat bloods and change the antibiotics after discussion with Dr Stümper, and she was already on some antibiotics. I also requested for physiotherapy to be commenced and (inaudible) as I was worried about the lung collapse. I was worried that Hayley was the sickest patient on the ward and I passed on my concerns to the day team at the handover.

Friday 13th October 2009 I had not been involved in the care of Hayley Fullerton. My last involvement with Hayley was on 10th November 2009. I believe the facts stated in the previous statement are true to the best of my knowledge and belief.

THE CORONER: Okay. So with the ward round in Ward 11, is there anyone present at that from ITU?

A. In the ward, no, normally not on Ward 11 ward rounds.

Q. So it would be just the people dealing with her normally.

A. The cardiology team would be there, and that could involve the consultants and junior - other juniors.

Q. When Dr Dawson was contacting you and reporting back to you and asked your advice and so on, was that what you would expect from a senior house officer, or was she more demanding of you than normal or less demanding?

A. I think - I wouldn't say she was any more or less demanding. She was very good on picking up the signs, and I appreciate that, that she contacted me on time.

Q. Sorry, say that again?

A. I was quite happy with her assessment and that she contacted me.

Q. How worried did she sound about Hayley on the night of 9th?

A. Listening to her, she sounded quite worried that Hayley was not well.

Q. Do you know what time you actually reviewed Hayley yourself?

A. I think it was between 4.00 to 5.00 in the morning.

Q. Sorry?

A. It was 4.00 or 5.00 in the morning.

Q. Thank you. How bad was Hayley then?

A. Actually when I - I cannot recall, I can just go by my notes. When I reviewed she - I looked at the previous chart and I could see that her clinical condition has deteriorated. She was in a nasal cannula oxygen which can deliver up to - depending on how much flow you keep, it can deliver up to 27 to 30 per cent oxygen from the nasal cannula. It is just a guess sort of a number, nobody can tell you how much, but this is what studies show. When I reviewed her actually she was in 25 per cent, but that was only probably (inaudible). Looking at the chart she was somewhere between 45 to 48 per cent at that point. Again going back to what the chart said, respiratory distress point of view, there were a number of things that you would look for respiratory distress. She was documented as mild respiratory distress, which I agreed with at that point.

Another thing that was reassuring were that her blood gas, which is one of the criteria that you would start getting worrying about a child when they are not very well, was very reassuring. It was good actually, from a child who would be collapsing in the next 24 hours. Her heart rate and her respiratory rate both hadn't changed in last few days, they had been the same range, between 40 to 50, and that had stayed like that. I did not comment on her sternum recession, which is one of the criterias when people look at how hard people are working for their breathing, because people who have sternal surgery, it's very difficult to comment whether you go by sternal recession or not because sometimes people have significant sternal recession and they grow up to (inaudible) life with that. So I don't think that is a very good criteria to comment on - there are other criterias that you look at: respiratory rate; (inaudible) muscles have been used, how much oxygen they are. Blood gases, again a very reassuring factor.

Q. You reviewed her between 4.00 and 5.00, that is at a time on the morning of 10th November.

A. Yes.

Q. And it is clear that you did not refer her at that time to the paediatric intensive care unit. So why did you not?

A. Again, when I reviewed her she was on increased oxygen, but her work of breathing was not as bad as it had been in last few hours. When I reviewed she had probably settled down, and her oxygen requirement had come down, her respiratory distress from moderate had come down to the mild. In cardiology we normally don't refer to PEWS chart, but the PEWS chart is the same chart where we document all the observations. So looking at the observations: her respiratory rate had stable; her heart rate was about 140/150, which had been the same; blood gas was one big criteria which most of the intensivists and a lot of other doctors refer to, because it shows if there is a worsening lung condition, then you start collecting carbon dioxide. The gas Dr Dawson did was quite reassuring that the carbon dioxide was not getting collected. Other thing that also comes up is accumulating acid, and again her gas did not show any evidence of accumulation of any sort of acid. So it was reassuring to me that actually she has gone in more oxygen, whether it's because of (inaudible) lung collapse which she had on top of the previous lung condition, or has she had some infection? Again, going through the bloods, her (inaudible) markers, which are again one of the markers you would look at when you are worried about infection, had gone slightly up, and she had a temperature of something like 37.4, again

a low grade temperature. Although I cannot recollect, looking at the notes she didn't have any temperature before that. So 37.4 temperature again would make me think whether it's infection going on, hence I decided to go and change the antibiotics.

Q. If you had thought that Hayley needed to be referred to the intensive care unit, would you have had any concerns about doing it yourself, or do you think that you would needed a consultant to authorise it?

A. No, I could have done it myself, I could have called the intensive care team up to review the child.

Q. When you say you could have done, do you feel qualified to do it?

A. There's no qualification as such, but with your training you get that sort of confidence, and you can always call paediatric intensive care unit; I don't think there's any problem contacting them in Birmingham Children's Hospital. They always come straight whenever they are called.

Q. You did actually consider whether or not you should, or not?

A. No, I did not consider at that time. I did not expect her to deteriorate that quickly, because I was quite reassured by her parameters and her blood gas that she is stable, she is definitely not as she was before, she was quite safe. But she was not a patient I would worry about from a respiratory collapse.

Q. Let me rephrase the question, because I am not sure you actually understood what I was asking you.

A. Sorry.

Q. I did not mean did you think that she should go. What I was asking you is: did you consider the possibility that when you were examining her you might have to .....?

A. Yes. Because she had worsened during the night, I did not know how she would go for then the next 24/48 hours. I was slightly worried about her, and I handed over to my colleagues in the morning that I am worried about this child and she is probably one of the sickest child on the ward.

Q. Can you remember who you handed over to?

A. No, I cannot. But it's the whole team normally over there, so you hand over to the team.

Q. I am not sure I heard you right, but I think you said you were worried about Hayley, then you thought that she was the illest, most sick child on the ward.

A. Yes. Compared to other children, she was the sickest of all the children.

THE CORONER: Okay. Now, when the advocates ask you questions talk to me, okay?

A. Yes.

Cross-examined by Mr Weitzman

MR WEITZMAN: Can we have for Dr Porwall, please, 665, which shows your C7, I believe. (Handed) Do you have it, sir? We have already given it to you, it is C7 in your bundle, sir.

THE CORONER: Yes.

MR WEITZMAN: Is it titled: "10th November 2009 Review Ashish Porwall"? Is that what you have in front of you, sir? It looks like this, sir. 665. I have got it as C7.

THE CORONER: The quickest thing if Miss Lucas lends me her copy.

A. Shall I pass it on?

THE CORONER: No, no, you need it. (Copy handed to the Coroner)

MR WEITZMAN: Dr Porwall, is this your note that you made at the review?

A. Yes.

Q. Did you actually go into the cubicle and examine Hayley?

A. Yes, I did.

Q. You are sure about that.

A. Yes.

Q. It is just Mrs Stevenson has no recollection of you. Was she there when you examined Hayley?

A. I don't remember.

(Inaudible female voice)

THE CORONER: Let's just get it straight: you are talking to me, okay?

A. Yes, sir.

Q. The question is: did he go into the cubicle?

MR WEITZMAN: Did you go into the cubicle?

A. Yes, sir, I must have if I have written. I don't - I haven't - yes, I did.

THE CORONER: Yes, you went in the cubicle.

A. Yes.

MR WEITZMAN: Which part of this examination required you to be in the cubicle, can you tell me?

A. This has got a physical examination documented by me, which says: "On examination."

Q. Yes.

A. That was the point that I went in and - that is all from my (inaudible due to coughing).

Q. Was the mother in the cubicle while you were there? Can you remember?

A. I cannot remember.

Q. Prior to this examination you had had two discussions with the SHO Dr Dawson over the phone. I summarise, but she rang you up to ask your advice, and you in effect told her what to do. Is that right?

A. Yes, that's right.

Q. There is some confusion about the chest X-rays. They were worse, were they not? The chest X-ray taken by Dr Dawson was worse than that taken during the day on 9th. Would you agree?

A. Yes, they were, yes.

Q. Did you see the X-rays yourself?

A. Yes.

Q. Was it significantly worse?

A. I cannot remember, but I can only go by my notes.

Q. I cannot find in your note in front of you a reference to the differentiation between the two X-rays.

A. No, I have mentioned about collapse and consolidation on the left base and loss of volume at the right base, but that's not a comparison, that is what I found on the X-ray when I reviewed.

Q. It is just if you cannot remember, in your statement you say it was not very different from the one done on 9th. That is not in your notes, so I am asking you: where do you get that from? Do you understand the question, Dr Porwall?

A. Yes, I do. I do not remember. Probably going through the notes. I can only say that.

Q. So you examine Hayley and she is better from when she has been seen by Dr Dawson.

A. Yes.

Q. You look at the bloods that Dr Dawson took, because you did not yourself take bloods.

A. No.

Q. And as I think you told the Coroner, you were reassured by those bloods.

A. Yes.

Q. You did not think the bloods showed anything outside normal parameters.

A. From a person who has got a significant respiratory problem, no, she did not have parameters that indicate there were serious respiratory problem.

Q. Despite the fact that the X-ray was worse and she had had this event, you considered that because the bloods were acceptable you did not need to consider a referral to PICU, is that right?

A. Yes.

- Q. If the bloods had been raised, particularly if the acid had been raised, you would have referred to PICU, is that right?
- A. Yes.
- Q. But because they were not, you elected to wait until the following morning, flagging up the concerns over the night when you handed over to the day team.
- A. Yes, along with the gas, the parameters when I reviewed were okay, so I thought it is worth waiting till the morning, yes.
- Q. You had a plan which was: nurse on left side especially, full blood count and blusts for CPR to discuss with Dr Stümper.
- A. The first line that says is to nurse left side up -----
- Q. My apologies, I misread your note.
- A. No, no, no, sorry, it is ..... When it says nurse left side up, this is for a patient who has got worsening lung condition on the left side, you would like to keep the left side up so they get the chance to open the lung side, especially when they give physio, that is more helpful as well. Second thing was to repeat a full blood count blood culture and CRP. Full blood count shows you whether the child is anaemic or is there an infection risk and the white cell count, which is a marker of infection, goes up. Along with that a blood culture to see if you can grow an organism and you can compare with the previous organism if there is anything to compare with. And a CRP is an inflammatory marker, which is quite sensitive, showing you if there is an infection or inflammation which is there. That again gives you an idea of where to go from if the blood comes, says there is a high chance of infection going in, then you would change antibiotics which the child has been previously on.
- Q. But as I read the plan, those further results were to be discussed at the handover with Dr Stümper.
- A. Those won't have been ready anyway before the morning ward round or handover, and that's when you would discuss the bloods with the morning -----
- Q. So I am correct. Yes. Could you please look at page 529 and 530. They will be handed to you, so would you wait there, please, doctor.
- A. I have 529, I have got 529 and 530.

MR WEITZMAN: Do you? Does the Coroner?

THE CORONER: Unless you gave them to me earlier, did you? I am sorry, I have got 529, I have not got 530.

MR WEITZMAN: We have got that for you.

THE CORONER: 529 is part of exhibit C20. (Handed)

MR WEITZMAN: Dr Porwall, this is, as I understand it, a note of a meeting between you and Dr Debenham, is that right?

A. Yes.

Q. In February 2010.

A. Yes.

Q. I am not sure if you recall that meeting or not?

A. No.

Q. You have to answer, and answer to the Coroner. He said he did not recall that meeting.

THE CORONER: That is the meeting with who?

A. Dr Phil Debenham, and there was another person in the room as well, a lady, I don't recall who she was. I remember going to the meeting but I do not remember what I said in the meeting.

MR WEITZMAN: I am just going to ask you: if you turn to the second page, 530, a question is addressed to you: "Tell us what hurdles had to be reached in order to go back into PICU." Do you see that, Dr Porwall?

A. Mm-hm.

Q. This is your answer recorded: "Checklist for going to PICU: (1) is not looking well; (2) increased oxygen requirement; (3) increased work at breathing; (4) gas significantly bad; (5) worsening X-ray." While you

cannot recall it, in February 2010 was that your understanding as to the fivefold test for going back to PICU?

A. I do not remember saying this because these are not normally - these are not the criterias you would go by to refer anyone. Because the five mentioned over here, and say if there is a child who has a sixth or seventh criteria which is bad, like has got a very low blood pressure, that does not mean you will not refer to PICU. I do not remember saying these, but it is there in my statement. I don't think these would be the criteria, all the criterias to refer a child to PICU. It has to be - the patient has to be taken in context with how the patient is.

Q. Just looking at Hayley on the night, if we just use these criteria for a second - I accept you are not saying they are the only ones - she was not looking well, was she?

A. No.

Q. She did have an increased oxygen requirement.

A. Yes.

Q. She had increased work at breathing.

A. When I reviewed her, her work of breathing was not much different from what has been documented in the previous few days.

Q. Well, she had sternal recessions, did she not?

A. I would not comment on sternal recession in a patient who has had a cardiac surgery and is also suffering from sternal infection. I would not comment on that, and I do not remember about Hayley .....

Q. If she had had sternal recessions, that would be an example of increased work of breathing, would it not?

A. Again, in a cardiac patient increased work of breathing on sternal recession, I would reconsider how the child had been previously, so I wouldn't say that.

Q. Yes, is the answer.

A. No. No, sternal recession in a child with a cardiac problem who had open heart surgery, with the sternum being opened, and suffering from sternal infection, is not a good criteria.

Q. Worsening X-ray. We have that, do we not?

A. It is again subjectively how worse the X-ray is compared to the previous X-ray. If they are minor changes, small changes in the X-ray, again this should not be a concern and you should treat the patient accordingly. At that point I thought whether it is a collapse or infection, and I acted accordingly for physiotherapy and full blood count culture and antibiotics. So that should not be a criteria just in itself to refer to PICU.

Q. Then you have gas significantly bad, and in this case you told the Coroner on a number of occasions that the gases were not bad, and that assured you that you did not need to consider the ICU referral, yes?

A. Gases were not the biggest parameters when you are reviewing a child's status from respiratory and metabolic point - metabolic is how the heart is functioning. In her gas there was no evidence of respiratory compromise. If there is any evidence of respiratory compromise, then you should - the policy is that you always refer to PICU.

Q. So the policy is that if the gases are not fine, you do send to PICU.

A. There's no such policy, but I'm saying in general from practice, you learn if the gas is not well, then there is something going on and you need to address the issue in the gas.

Q. Just look at the bottom of page 530. You are asked: "She seems to meet many of the criteria you identified earlier for going back into PICU. What weight do you give each of the criteria?" So it is rather like the question I have just asked you. "You have to look and review the patient in context. Her gases were fine. Didn't have enough grounds for CPAP. Sternum recessions were there but did not write it down. Normal." So it would appear, if that answer is correct, that it was the gases you were focusing on. Do you remember giving that answer?

A. I do not remember giving that answer, but again what it says over here I can give an explanation for that. When it says the gases are fine, I'll again emphasise gases are one of the big parameters which reassures any patient, or reassures any doctor whether the child is having any compromise with his or her breathing. Enough ground of CPAP, again CPAP, in a patient who has got worsening heart failure, I don't know how much benefit there would be, because you start CPAP for opening up lungs and giving respiratory support, but at the same time there are other risk factors that you need to continue, like

consider whether you can compromise (inaudible) output, which is one of the biggest things CPAP can do, and also there is a chance of pneumothorax if the child is working really hard, especially a big child, you start them on CPAP they can have added complication of pneumothorax, that is a leak of air into the lungs. So enough grounds of CPAP, I have to be reassured that this child will tolerate CPAP.

Then going back to your question of sternal recession, as I mentioned earlier, I did not write it down because it is not fair to comment on sternal recession of a child who has had open heart surgery with the sternum being opened up, because it's always - it's very difficult to assess whether the sternal recession should reassure you or not. Because a patient can have a very bad sternal recession, they can still be fine. But a patient with no sternal recession, this should not be an issue or one of the points that you would refer to PICU or consider child being well or unwell.

Q. Dr Porwall, you said there are risks in CPAP and we have heard other evidence about that. You also said that sternal recessions were present but you did not know whether they were because of chest problems or the heart surgery.

A. No, sternal recessions, if they are present - it has to be taken in context with the child. If the child has had - I will again reiterate the same thing. If the child has had a sternotomy, with the sternum being opened up and then closed again, if you go by sternal recession it can be very disguising. If the sternal recession is present, you have to take other things in context: whether this child has had sternal recession in the past, from the beginning when the child has come off the operation and has been in the paediatric intensive care unit. And most cardiac patients who have had cardiac open heart surgery, who have had a sternal operation done, they have - it is very difficult to comment on their sternal recession, because they can recess a lot and be fine, or they do not recess a lot but still there can be other parameters which could be compromised and then you have to act on them. It has to be taken in context of the patient.

Q. Dr Porwall, were these not classic questions for someone from PICU to assess?

A. Sorry, can you say that .....?

Q. Would it not have been better to get an opinion from someone from PICU?

A. At the time when I assessed, I was fairly confident that she did not need PICU at that point.

Q. So you made that assessment.

A. Yes.

MR WEITZMAN: Thank you.

THE CORONER: Miss Lucas, how long are you likely to be?

MISS LUCAS: A couple of minutes?

THE CORONER: Yes.

Cross-examined by Miss Lucas

MISS LUCAS: Dr Porwall, I am just going to ask you a few questions. I do not have your note in front of me so I may ----

MR WEITZMAN: Let me give you a copy.

MISS LUCAS: Is that okay? Thank you. I do not think I am particularly going to refer to it, it is just my memory is not that good. Thank you. Where your note - it is page 665 - mentions "on examination", do you not write that unless you actually are looking at - you have looked at a patient and seen them?

A. Of course. You cannot write without examining.

Q. So would it be the case that in your note, if it did not say "on examination" then you would not have seen Hayley, but the very fact that it does means that you, even though you cannot remember the assessment yourself, you would have seen her?

A. Yes.

Q. Thank you. I got a little bit lost in criteria and things then, so can I just ask you, just very quickly, just to try and get a summary of what you said. Is it correct to say that, in your understanding, there was no agreed and accepted criteria for referring a child to PICU?

A. No.

Q. If there is no agreed criteria, does that mean that you have to do a holistic assessment of the child?

A. Yes.

Q. To do that, am I correct in saying that you would consider your examination of the child at the time?

A. Yes.

Q. You would consider the medical records that you had seen.

A. Yes.

Q. Your conversations with Dr Dawson?

A. Yes.

Q. Can you remember whether you spoke to any of the nurses at all?

A. No.

Q. So you would have had the medical records and you would have seen Hayley yourself when you made this decision about whether to refer her to intensive care.

A. Yes.

Q. From what you were saying, am I correct in thinking that you would not just rely on the blood gas?

A. No, not just blood gas, no. Because if there is a child who has got a low blood pressure and has got a good gas, that doesn't mean he doesn't need PICU support, that might just say that his lungs are fine but there are other parameters that the child needs support with, so it's not just blood gas, it's a whole holistic - you have to look at the child and you have to assess the child and then make a decision.

Q. Did you feel that on 10th November 2009 you systematically reviewed Hayley's history of her condition as you saw her?

A. Yes.

Q. And from all of those assessments and the history, you were content that she did not at that time need to go to intensive care.

A. Yes.

Q. Is it correct to say that you have had experience of being in intensive care as a registrar?

A. I have done intensive care as SHO and have, as a part of my training when I did general paediatrics in six months I also looked after patients in intensive care, yes.

Q. Am I right in thinking that if you are in intensive care you are often asked to go to wards and do a review of patients on the ward to decide whether they should come to intensive care?

A. Yes.

Q. So would you have had experience - if you in this situation felt that Hayley should be referred to intensive care, not necessarily admitted but referred, did you feel that that was something you had done yourself previously, that referral?

A. Yes, I would have done.

Q. So did you feel comfortable that you did not need to refer Hayley to intensive care on that occasion?

A. When I reviewed I was convinced that at that point she did not need a paediatric intensive care referral.

MISS LUCAS: Thank you. Thank you, sir.

THE CORONER: Where were you when you had this intensive care experience? Which hospital?

A. I was in University Hospital of North Staff and I was a registrar, and when I was in Southampton I worked as a senior house officer.

Q. How long did you have there?

A. Both were six months or one year. Six months as senior house officer and six months as registrar.

Q. Sorry, how long did you have in intensive care?

A. Again, I worked as a junior doctor and then worked as a registrar, so the junior doctor experience was six months and the registrar was again six months, so almost one year.

Q. Twelve months. How long before November 2009 was that?

A. One of them was immediately six months before I came to cardiology department, and then one was in 2005.

Q. Six months in 2005 and six months in 2009.

A. Yes.

Q. Is that intensive care for adults or children?

A. Children.

THE CORONER: Children. Okay. It is now 3.37, so we will start again at 3.52. Yes. Do sit down, yes.

(The witness withdrew)

MISS LUCAS: Sir, is it possible to ask you now how you would like to play the rest of the afternoon? Do you want to hear anybody in any particular order this afternoon?

THE CORONER: We are going to go back to my batting order, are we?

MR WEITZMAN: I think it was useful to do it in that way, sir, I hope you would agree.

THE CORONER: Frankly, no, I do not agree.

MR WEITZMAN: I apologise.

THE CORONER: I had prepared it the other way round; it would have been a lot easier for me to stick with what I had got, but I am quite happy to .....

MR WEITZMAN: Sir, if it was not helpful, we will revert to whatever you prefer then.

THE CORONER: All right. What I would like is to go back on track and start with Sanjet Bhandal, Sheila Bennett, Jane Titley, unless - if you have got some particular reason for dealing with the physiotherapists, we could deal with the physiotherapists. Any special reason for that?

MISS LUCAS: No, I have not brought them this afternoon, sir, because we did not think we would get to them.

THE CORONER: Good reason for not dealing with them then.

MISS LUCAS: Yes. Thank you.

THE CORONER: If we deal with those three, we are probably doing quite well if we get through them in an hour, are we not?

MR WEITZMAN: I do not suppose we will manage all three in the end, but we will try.

THE CORONER: Okay.

MISS LUCAS: Sir, the only consideration with Jane Titley is that she is coming a long way every day, she is in Shrewsbury. Some of the nurses are closer, but I do not want that to impinge on the evidence if you feel it needs to be heard in a particular order.

THE CORONER: We will take her first if that is what you want.

MR WEITZMAN: I am not objecting to it anyway.

THE CORONER: You do not object?

MR WEITZMAN: I have no objection, whatever .....

THE CORONER: If it makes a difference from her having to come back tomorrow, yes, we will take her.

MISS LUCAS: Okay, thank you.

THE CORONER: Okay.

(After a short while)

THE CORONER: It is now five to four. Jane Titley, please.

Ms Jane TITLEY (sworn)

Examined by The Coroner

THE CORONER: Tell me your full name and your qualifications.

A. Jane Titley, I am a registered children's nurse, BSc.

Q. I expect it is possible to talk more quietly, but it is hard to imagine. Speak up for me, okay? So read through your statement for us.

A. At the time of Hayley's death I was employed by Birmingham Children's Hospital as a staff nurse on Ward 11 and I had held that position since January 2009. From September 2011 to the present date I have been employed as a staff nurse at the Royal Shrewsbury Hospital.

Q. Just stop you a moment. Can people hear all right?

MR WEITZMAN: Only just, sir.

THE CORONER: I am going to read it for you, all right? "At the time of Hayley's death I was employed by Birmingham Children's Hospital as a staff nurse on Ward 11 and had held that position since January 2009. From September 2011 to the present date I have been employed as a staff nurse at the Royal Shrewsbury Hospital.

"On 10th November I was on duty for the night shift, caring for Hayley and two other babies. Prior to that date I had not been involved in Hayley's care. At 20.30 I took handover from Nurse Sanjet Moore,"

that is now Sanjet Bhandal, is that right?

A. It is, yes.

Q. "..... who had looked after Hayley during the day shift. I introduced myself to Hayley's Mum as I hadn't cared for Hayley previously. I asked Mum how she thought Hayley was. Mum said she was better than the previous night, although she was concerned Hayley wasn't being fed. I explained that as Hayley had deteriorated the previous evening the doctors may want her to remain nil by mouth, but told Mum I would contact our doctor, Senior House Officer 3, after the handover. Mum didn't seem happy that she would have to wait for a decision on whether to feed Hayley, but I explained I would definitely contact SHO3 as soon as possible."

When you explained that the doctors may want her to remain nil by mouth did you explain to her why they might want her to be nil by mouth?

A. No, only that she had deteriorated the previous evening. I didn't explain about increased work of breathing.

Q. You did not explain anything about her tummy filling up and making it hard for her to breathe or anything like that.

A. I don't remember that I did, no.

Q. Okay. "21.30 contacted Dr Pam Dawson, Senior House Officer 3, who agreed for me to re-start feeds gradually at 100 ml per kilogram, half intravenous and half enteral via nasogastric tube, as long as Hayley showed no increase in respiratory effort and remained stable. Mum informed." Now, can you remember what you told Paula? Did you tell her just that, or did you say: "We can start feeding her," or what? Can you remember?

A. I don't recall exactly what I told her, no.

Q. Okay. "22.00 hours, observation stable. Intravenous set dose, changed to heart maintenance. Nasogastric tube aspirated and tested and enteral feed set to run. I changed Hayley's bed and made her comfortable with Mum. We discussed putting the oxygen saturation monitor outside the room so Mum wouldn't be disturbed, and Mum said she didn't mind being disturbed and would prefer the monitor to be left inside, which I agreed to even though this is not normal ward practice. Mum and I discussed the use of the bright light as Mum didn't want Hayley disturbed. Mum agreed for me to use the brighter light for observations and checking Hayley's cannula and I agreed to leave it on dim at other times. Mum was anxious about Hayley's cannula as previous access had been difficult. The cannula was

checked hourly whilst in use that night. There was a very small amount of blood on Hayley's wound dressing. I told Mum I would change it if necessary but as there was only a small amount it would be better for the healing process not to keep disturbing the wound. Staff Nurse Moore had told me the wound had been cleaned and redressed during her shift that day."

Okay? Now, are you pretty sure you actually told her the reason for not changing it on this occasion?

A. I did, yes, because I was following ward policy about not leaving - unless a wound needs to be changed, sorry, a dressing needs to be changed we do leave the dressing in place.

Q. Okay. "23.00 hours intravenous primed, cannula checked and feed pump read. No increase in work of breathing.

"24.00 observation stable, intravenous primed and cannula checked, feed pump read. Oral Furosemide and codeine given. New bag of 0.45 per cent saline and 5 per cent dextrose put up.

"01.00 hours, IV primed, cannula checked, feed pump read.

"02.00 hours, IV Fluoxalin and IV Co-amoxiclav given. Cannula working well. Hayley's observations stable. Discuss with Dr Dawson as Hayley had tolerated half maintenance enterally with no increased work of breathing. She was able to discontinue intravenous fluids and go on to feeds at 100 ml per kilogram. Mum aware of plan."

When you discussed that with Dr Dawson can you remember whether you discussed it face to face or on the phone, or what?

A. I think I telephoned her.

Q. Sorry?

A. I think I telephoned her.

Q. You think you .....?

A. Telephoned Dr Dawson.

Q. Okay. "From 03.00 hours to 06.00 hours Hayley's feed pump was read every hour. Observations taken at 04.00 were stable. Just before 06.00 hours Hayley's saturation monitor alarmed. A colleague went into the cubicle to check on Hayley and spoke to Mum. Whilst colleague in with Hayley her saturations resolved to the previous level.

"At 06.00 hours I began my 6.00 observations. As my colleague had already been in to check Hayley I did observations on my other two babies first. One of them was very unsettled so I was a little while setting him back off to sleep. Consequently I was late doing Hayley's observations for 06.00 hours. Hayley appeared settled but she did have a slight increase in work of breathing. I beeped Dr Dawson to come to the ward to review Hayley, which she agreed to do. At 06.55 approximately Hayley was reviewed by Dr Dawson, who agreed that Hayley had a slight increase in respiratory effort and advised to reduce enteral feeds to 50 per cent and recommends 50 per cent IV fluids." Yes?

"I was on the ward checking the fluids when Mum came out of the cubicle and said Hayley had gone blue and was floppy. Dr Dawson was still on the ward, so she did a blood gas and took it to the paediatric intensive care unit immediately. Staff Nurse Karly took - rang PICU to ask for urgent medical assistance. I positioned Hayley and gave 15 litres of oxygen via a non-rebreathe mask, set up the bag valve mask and aspirated Hayley's NG tube. Staff Nurse Took came back into the cubicle. Together we put ECG monitoring on Hayley and were documenting some observations when Dr Neal, PICU doctor, arrived.

"At that time Hayley was pale, floppy and unresponsive. Although she was still breathing unaided, was making poor respiratory effort. Dr Neal began to ventilate Hayley via bag and mask while asking for a brief history of events. I do not recall the exact details of the conversation we had. I was present for the resuscitation but don't remember the exact time and sequence of events and interventions. The full resuscitation team were present and sadly, despite all measures to resuscitate Hayley she died at 08.15. Mum was present throughout.

"Grandparents had been contacted by Sister Jackie Clinton to inform them of Hayley's deterioration and were looked after by Justine Kidd, the cardiac liaison sister, on arrival to the ward. Sister Clinton was with Mum and Hayley. I remained on the ward until about 10.30, and together with

Justine Kidd and Dr Zenke Reinhardt spent some time with Mum, Hayley and her grandparents. Sister Lorraine Phillips kindly agreed that she would take care of Hayley and her family and support them through the period of time before Hayley would go into the rainbow room.

"This statement is prepared from personal recollection, review of the notes and review of summary of care written for the serious untoward investigation report in 2009."

This statement written by you on 2nd March this year. Yes? In your statement you have started your report at 8.30 and you talk about contacting Dr Dawson at 9.30, and then you have observations on the hour right the way through, at 22, 23, 24, 1, 2, 3, 4, 5, 6, yes?

A. No, I didn't, no.

Q. No? Correct me then.

A. I did two hourly observations overnight.

Q. Sorry?

A. I did two hourly observations overnight. The observations that were done hourly were the cannula and the IV (inaudible) set and then the feed pump, and Hayley was .....

Q. Right, thank you. Right, okay, I was using the word too loosely. Yes.

MR WEITZMAN: Sir, this is quite important evidence, and I cannot hear it and I am sure it is not going to be picked up on the tape.

THE CORONER: Yes. Okay, so you are going to have to speak up somehow. Okay?

A. Yes.

Q. Right. Now, I put it to you that there were observations done on the hour, each hour, and you corrected me and said it was not actually observations, it was specific things only.

A. I did observations every two hours. The hourly observations were the cannula observations, because she had fluids going through her line, and then when the fluids were discontinued at three o'clock I did hourly feed pump observations as well as the two hourly documented PEWS observations.

- Q. Okay. The point I was making was that they are recorded actually on the hour, whatever it was you were doing, it is 22, 23, and so on.
- A. Yes.
- Q. Does that mean that you were actually doing it on the hour, or are you merely showing that it was about the hour?
- A. Apart from the six o'clock observations in the morning, I did them at pretty much on the hour. It could have been five to, it could have been five past, because I had other patients so I couldn't guarantee I was there absolutely on the hour, but apart from the six o'clock ones, which I have said that I was late doing, the others were on the hour.
- Q. Pretty well spot on.
- A. Yes, as far as we can be.
- Q. Yes. You specifically say that at six o'clock, because one of your colleagues had already been in to check Hayley soon before, because of the monitor bleeping .....
- A. Yes.
- Q. On that occasion you dealt with Hayley third of your three babies.
- A. I did, yes, sir.
- Q. Can you remember, with the previous ones were you doing her third or first, or can you not remember?
- A. I can't remember. What I would do if I had three babies and I was doing observations at four o'clock is do one at ten to four, perhaps, one at four and one at ten past. One of my other babies was only on four hourly observations, so I wouldn't have had to have done his frequently, and he was on bottle feeds so he didn't need feeding observations. My other baby was on CPAP so I would have been doing his observations hourly, and he was on a feed pump so I would have been doing his hourly, so .....
- Q. Can you remember how many other family members were on the ward with their children that night?  
Can you remember?

- A. I can't, no. My other two patients didn't have family members with them, but I don't know about anybody else's patients that night.
- Q. Looking at page 3 of your statement, you say: "I was late doing Hayley's observations for 06.00 hours. Hayley appeared settled but she did have a slight increase in work of breathing. I bleeped Dr Dawson to come to the ward to review Hayley, which she agreed to do."
- A. Yes.
- Q. The only change is a slight increase in the work of breathing.
- A. Yes, sir, yes.
- Q. Yet you ring Dr Dawson and ask her to come to the ward. Is there a special reason for that or would you have rung any doctor for any of the babies for such a slight change as that?
- A. I rung Dr Dawson because Hayley had a mild increased work of breathing throughout the night, and this change in the observations meant she went from mild to moderate, and bearing in mind her deterioration the previous evening I rung her to review her, because it was a respiratory symptom. Maybe if her heart rate had been slightly different I might not have done, but I did.
- Q. Okay. Dr Dawson was happy to come down and do it.
- A. She was, yes.
- Q. Do a review. So it is really the question that I have already put to Dr Dawson. There are two of you, and you have both seen Hayley, and you both seem to be reasonably relaxed about it, and yet twenty minutes later she has collapsed and does not recover. Any idea why that should be?
- A. I honestly don't know, no, I don't know, sir.
- Q. Has that sort of thing ever happened to you before, a baby collapsing that quickly?
- A. No.
- Q. No. Okay. Looking back on it, there is nothing that you think that you saw at the time but did not give sufficient significance to.
- A. Not that I recall, no.

Q. Because it sounds, up till then, as though it was all going the right way after the difficulties the previous night. You are actually being asked right at the beginning of the night to see if you can get her fed.

A. Yes.

Q. And Dr Dawson agrees that, and you increase the feed. Then she is able to discontinue the fluids altogether at 02.00 hours.

A. Yes, she did, yes.

Q. Then at 6.55, because of the slight increase in work, she is put back on to fifty/fifty.

A. Yes.

Q. But nothing else appears to have been remarkable during the night, is that right?

A. No, there was nothing else noted overnight.

Q. When you have three babies, in particular three babies that particular night, are you spending your whole time going from one to the other? If you have finished the third one is it time to go back to the first one, or do you have breaks in between, or what?

A. It depends on how the babies are. If they are higher dependency, you do spend most of your time going in between one and the other, particularly as Hayley was in isolation so we put aprons on and things to go in there. So, yes, most of the time it's going from one to the other. If you're tied up doing something else a colleague will come and, say, do a feed for you, and you would do the same for them; if you had a free half an hour and they had got two babies that both needed feeding, you would help them out as well.

Q. When you had difficulty with the one baby, had difficulty getting him to go to sleep again - I know it is a long time ago, but can you remember roughly how long it would have taken to get him to sleep?

A. I do remember why. He was a baby on CPAP and he vomited so we had to clear him up, and I think we might have had to change his headband as well. So it did take about half an hour to sort him out. And a colleague who had already been in to Hayley prior to that, she helped me with him, so .....

Q. And that baby was on CPAP.

A. That baby was, yes, he was one of our long term babies.

Q. One of your .....?

A. Long term babies.

Q. Does that mean that he came into the ward on a CPAP or was he put on to CPAP when he came on to the ward, after he came on to the ward?

A. No, we had had him for months, he had been to ITU and he had had his correction and then he had been established on CPAP on ITU and had come back on to the ward already on it, as we do take them once they are established on CPAP, but we don't initiate it on the ward.

Q. What sort of age was he, do you know, can you remember?

A. He would be about six months, I think. He could have been a little bit older.

THE CORONER: Okay. Now, when the advocates ask you questions, remember if they have trouble hearing you, think what I have. Okay? Talk to me, yes?

A. I will.

Cross-examined by Mr Weitzman

MR WEITZMAN: Mrs Titley - have I said your name correctly?

A. You have, yes.

Q. You took over at 8.30 that evening, is that right?

A. That's correct, yes.

Q. You spoke to Pam Dawson at that point, you tell us.

A. It would have been later than that, because it was hospital at night handover, which finished, I think, about 9.00 so it would have been after nine o'clock.

Q. You are quite right, I apologise, you say 9.30 - my mistake, I apologise.

A. I do, yes.

Q. Can you have a look at page 282 or 649, which is the PEWS scores for the last night.

THE CORONER: I have got my copy as part of C3 so it is only one for the witness. (Pause) 282, is that right?

MR WEITZMAN: 282, sir, yes. Mrs Titley, so the entries from 21.00 to 7.40 are yours.

A. Yes, they are, except -----

Q. On 11th.

A. Yeah, except the 7.40 one was done by my colleague who was helping me with Hayley at the time.

Q. Okay. On the right hand side, it says patient specific parameters, 95 to 100 per cent. Can you explain what that entry means.

A. It means to keep their oxygen level above 90 - well, the desired level is 95 to 100 per cent -----

THE CORONER: He knows the answer. You tell me, okay?

A. The desired level for oxygen would be 95 to 100 per cent.

MR WEITZMAN: So you should try and keep it at that level. Would you agree?

A. Yes. Yes.

Q. I do not think it has been filled in on the earlier PEWS charts. Is that because you only put in the patient specific parameters if it is a specific request?

A. We've talked about PEWS charts with cardiac babies at length over the last few days, and it is difficult to get - they do very often have an increased work of breathing, their heart rate can be elevated, and their saturations for some children can be acceptably lower, so that's why very often they're not filled in. I presume the doctors had said that they wanted - that Hayley should have had normal saturations, from seeing this chart. I don't know why the earlier ones weren't -----

Q. I think it was blank in the earlier ones, and we know that by the time this chart was started there were more problems with Hayley.

A. It is filled out on one of the earlier ones.

Q. Which one is that?

A. The one that's 4th of the 11th.

Q. Thank you. The calculation at 9.00, the PEWS have not been calculated by you, have they?

A. No, they haven't, no.

Q. At 9.30 you had the discussion and you agreed to restart the feeds fifty/fifty. Yes?

A. Yes, we did.

Q. Where do you get that information from?

A. The information for what?

Q. That it happened at 9.30, you had this conversation with SHO Dawson.

A. Because at the time I remembered having it.

Q. I see, okay. Because I have got an annotation later in the night at two o'clock. Is that your writing on the PEWS chart here?

A. It is, yes.

Q. It is fairly hard for us to read that. Do you think you could read it out to us, please.

A. Yes, it says SHO contacted query feeds or IV feeds, NG.

Q. Nasogastric?

A. Yes.

Q. So is it the case that at 9.30 you start fifty/fifty?

A. Yes.

Q. And then at 2.00 in the morning a hundred per cent.

A. Yes, that's my recollection.

- Q. And on each occasion did you consult Dr Dawson, or was it at 9.30 and then increase to a hundred per cent if there are no problems?
- A. At 9.30 Dr Dawson agreed for me to start half feeds half fluids. At 2.00 we spoke on the telephone and Dr Dawson agreed for me to give Hayley a hundred per cent milk feed.
- Q. Okay. Now, the Coroner asked you if you had told Mrs Fullerton about the potential problems of replacing IV feeds with nasogastric feeds. Yes?
- A. Yes.
- Q. And you said you did not.
- A. I don't recall that I told her.
- Q. Were you aware of the potential problems?
- A. I was, yes.
- Q. You were. And they are as was described by Dr Dawson in her evidence, that a full stomach can cause respiratory problems. Please answer for the .....
- A. Yes.
- Q. So you needed to monitor her respiratory output. Yes?
- A. Yes.
- Q. If I look at your statement, you say at 23.00 hours, on the second page, no increase in work of breathing.
- A. Yes.
- Q. Where does that come from, because as I understand it, on the odd hours, i.e. 23.00, 1.00, 3.00, you are either looking at the cannula or the pump. Is that right?
- A. It is, but I am in the room looking at Hayley as well.

THE CORONER: Talk to me.

A. Sorry. It is, yes, but I am in the room looking at Hayley at the same time. If we don't document observations we can still look at the baby.

MR WEITZMAN: So you are able to now recall that at 11.00 there was no increase in work of breathing.

A. If there had been I would have discontinued the feeds at the night.

Q. So the entry that we see for 23, no increase in work of breathing, is your assumption because you are going on feeding her.

A. When I was doing - when I was writing this?

Q. Yes. Or is there a record or is it memory?

A. It's assumption.

Q. It's assumption, okay. If we look at the PEWS chart again, please, at midnight, at 24 hours Hayley's oxygen saturation has dropped to 92 per cent.

A. Yes.

Q. And they remain below 95 per cent over the next six hours, because you have got four, because it is either side of a six hour period, is that right?

A. Yes.

Q. I am sorry?

A. Yes.

Q. We also see an increase in her respiratory rate from the mid 40s to the mid to low 50s, do we not?

A. Yes.

Q. But when determining whether or not she had breathing problems for the purpose of the provision of food/fluid, you did not take those scores into account. Is that right?

A. Her PEWS scores were no different to they were at other times.

Q. That was not the question.

A. Can you say the question again?

Q. I can, I am sorry. You were monitoring her respiratory effort, you have told us, yes?

A. Yes.

Q. Or work of breathing.

A. Yes.

Q. Because you were feeding her, and if there was a change in the work of breathing you would either return to IV fluids or reduce the level of nasogastric fluids.

A. Yes.

Q. Which you in fact increased at two o'clock.

A. Yes.

Q. It appears to me that when considering work in breathing, you have only considered respiratory distress. Am I wrong about that, or is it the final PEWS score that you were looking at? (Pause) Can I take you to an example? In your statement, for the entry at 2.00, do you see 2.00?

A. I do, yes.

Q. You see, third line down - sorry, we will start: "Discuss with Dr Dawson as Hayley had tolerated half maintenance enterally with no increased work of breathing. She was able to discontinue IV fluids and go on to a hundred per cent. Mum aware of plan." Yes?

A. Yes.

Q. What I am asking you, Nurse Titley, is: when you say no increased work of breathing, which observation are you relying on?

A. Well, when you look at her work of breathing at midnight, she was crying and upset as well, she was awake and upset. At 2.00 she was awake, and then, you know the 6.00 one her respiratory rate had come down. It had previously been, during the day, 46, 45. You kind of take it into account in her work of breathing. I possibly was looking at her work of breathing rather than her rate.

Q. When you say work of breathing, do you mean respiratory distress?

A. Yes.

Q. Yes. So you were simply focusing on the respiratory distress, is that right?

THE CORONER: Mr Weitzman, I do not think that is fair because -----

A. Yes.

THE CORONER: ..... she said that she did not simply focus on things, she was looking at the baby.

MR WEITZMAN: I do not think - with respect, I am asking her to explain.

THE CORONER: Yes.

MR WEITZMAN: So if it is simply looking at the baby, that is one thing; if it is an observation that she has recorded, that is another. It is not clear to me which it was.

THE CORONER: I am sorry, why can it not be both?

MR WEITZMAN: Is it both?

A. It is. We look at our babies. We can tell - even if the respiratory rate has gone up, she may have had other reasons. She was upset. I gave her codeine at midnight so I'm presuming that I would have assessed that she had had some level of pain at that point, which would increase her respiratory effort. We look at the whole picture and not just take one particular parameter.

Q. If we look at the entry for 21.00, yes?

A. Yes.

Q. You can see that oxygen saturation is 96 per cent.

A. Mm.

Q. Yes?

A. Yes.

Q. It then increases or decreases to 92 per cent, yes?

A. Yes.

Q. Which increases the score from zero to one, does it not?

A. The score at 9.00 -----

Q. For oxygen saturation.

A. Oh, yes, her oxygen saturation.

Q. You did not calculate the PEWS score at 21 hours, did you?

A. No, but it's a five.

Q. It is a five, so there is an increase, is there not?

A. There is, but at six o'clock it was seven, a PEWS of seven. During the day there was several sixes, so it's similar to what she was.

Q. You have discussed feeding with the SHO and you have agreed to change the feeding regime assuming there is no increase in breathing difficulties. You have told the Coroner that it is your overall - tell me if I am getting this wrong - it is your overall assessment of the child and the observations that you are recording that informs your decision on that issue at each of these two hourly observations. Is that fair?

A. Yes.

Q. Yes?

A. Yes, it is, yes.

Q. But if one looks at the observations in isolation, it appears that Hayley was having increased problems with breathing. Is that fair, from nine o'clock, because her respiratory rate has gone up and her oxygen saturation has gone up.

A. Yes.

Q. That is correct, is it not?

A. Yes.

Q. Yes.

A. Yes.

Q. Now, you say that at 24 hours she was upset.

A. That's what I've written down here, yes.

Q. I can see that. How does that affect your overall assessment of her?

A. Her respiratory rate would be elevated if she was crying, and I gave her codeine at midnight so I'm presuming she was upset because of being in pain.

Q. Then you have got, at 2.00, that she is awake.

A. She was, yes.

Q. She was awake at 21 hours as well, was she not?

A. She was, yes.

Q. So how does the fact that she is awake affect her level of respiratory distress?

A. It doesn't. If she's upset it might. I've just written them down. I can just see that she was awake at those times.

Q. At 4.00 there is no indication about her state at all, is there?

A. No. So she would have been asleep.

Q. Sometimes people write "asleep".

A. Yes, they do.

Q. Earlier on. So when you say you made an assessment of her, it is not from the records, is it, it is from your memory at the time, is that what you are telling us?

A. Assessment as to whether to feed her? It would have been from a combination of the both.

Q. But your overall visual assessment that you have identified to the Coroner is not recorded, so that must come from your memory, is that right?

A. Yes.

Q. Again, is it an assumption because you continued to feed her, or can you now remember what the situation was?

A. Can you say that again?

Q. Yes, we asked about no increase in work of breathing at 23.00, yes?

A. Yes.

Q. And you said that was most likely an assumption because you continued -----

A. Yes.

Q. And I am simply asking the same question. This statement obviously mirrors earlier statements, and I think you made a statement in February 2010, so it may be that it was a memory you then had, or it may be an assumption because you continued to feed her.

A. As far as I can recall, she remained settled overnight. She did have an increased work of breathing at times, which did come down at six o'clock. Her heart rate was pretty much consistent with the previous day, as was her respiratory distress. From what I remember from the PEWS chart, that's how I made my decisions.

Q. But do you agree that on these PEWS charts between midnight and 4.00 we do see increased difficulties in breathing in the respiratory rate and the oxygen saturations?

A. Yes.

Q. Yes. Was it advisable in those circumstances to continue with the feeds?

A. (Pause) Possibly not, no.

Q. Possibly not.

A. She didn't, she didn't look like she was working any harder though.

Q. At 6.00 she does look like she's working harder because you have put in a further level of respiratory distress. Yes?

A. Yes.

Q. I think, to be fair to you, at 6.00 did you not - then you tried to get in touch with Dawson.

A. It wasn't - it was after 6.00, this is the one that I said was late, and then I -----

Q. You did, you are quite right.

A. .... did bleep Dr -----

Q. Sorry, I talked over you.

A. I bleeped Dr Dawson and she came to review Hayley.

Q. Can we just work out the timings? Roughly when was it after 6.00?

A. About half past six.

Q. About half past six.

A. That I reviewed Hayley.

Q. So the observation is half past six.

A. It is.

Q. By you.

A. Yes.

Q. You bleep Dawson, and she is available at 6.55.

A. That's when she reviewed, yes.

Q. That is when she reviewed.

A. She wasn't on the ward at the time.

Q. Now, was Mrs Stevenson concerned about Hayley at that time as well? Did she ask you to get SHO Dawson?

A. No, I had just done the observations and I said that Hayley was working a little bit harder, I think, from what I recall earlier as I turned the feed off, and then I don't remember having Mrs Stevenson saying anything to me.

Q. It is certainly not the case that you cannot remember that she did not.

A. I can't remember having a conversation, other than saying - I know she was awake and she said Hayley was working harder, when I went in.

Q. Right, so she did say Hayley was working harder to you.

A. I think she agreed with me that she was working harder.

Q. Right, so then you bleep Dr Dawson and she sees her at 6.55.

A. Yes.

Q. Are you sure Mrs Stevenson did not ask you to do that?

A. No.

Q. Then there is a review, and it is agreed that there is an increase in respiratory effort, yes?

A. Yes.

Q. Dr Dawson reduces from 100 per cent to 50 per cent, yes?

A. Yes, that's right.

Q. The change at half past six, although it is six o'clock, is only one in the PEWS scores, is it not?

A. It is, yes.

Q. The same as between 9.00 and midnight.

A. Yes.

- Q. Yes. Then Mrs Stevenson comes running out and says everything is going wrong with Hayley, Dr Dawson is summoned and you have described what happened thereafter.
- A. I have, yes.
- Q. If you just look at the PEWS chart again, you have taken the temperature at 9.00 and at 6.00, and it is 36.3 and 36.2.
- A. Mm.
- Q. Is that about right for a baby like Hayley?
- A. It's a little bit, maybe a little bit cool but when they're in head box they get quite damp.
- Q. I see.
- A. Because of the moisture, so we do change them, and it's not hypothermic or anything.
- Q. Hayley was in isolation because of the risk of swine 'flu.
- A. Yes.
- Q. Were you wearing an apron as you went in and out?
- A. Yes.
- Q. You were. One of the reasons, as I understood it, that perhaps swine 'flu had been considered was a raised temperature. When the temperature came down again, was that something that informed anyone's thinking?
- A. I don't remember discussing the temperature with anyone.
- Q. So you were in effect required to leave her in isolation until you got the negative result.
- A. That was the hospital policy at the time, yes.
- Q. I think the negative result came back the following day .....
- A. It did.
- Q. .... in the afternoon.

A. It did, yes.

MR WEITZMAN: Thank you, sir. Thank you, Mrs Titley.

THE CORONER: Miss Lucas.

Cross-examined by Miss Lucas

MISS LUCAS: Thank you, sir. Mrs Titley, can we look at the PEWS chart again, please. When you talk about work of breathing, by talking about work of breathing do you only mean the oxygen saturations? Is that work of breathing, or are the oxygen saturations the amount of oxygen that is getting into the bloodstream?

A. No, the work of breathing is the recession, subcostal, intercostal, tracheal -----

THE CORONER: You will have to say it louder.

A. .... type that the doctors have discussed earlier.

THE CORONER: Speak up. Say it again.

MISS LUCAS: Can you say that again?

A. The work of breathing is the subcostal and intercostal recession, tracheal type, head bobbing, those visible symptoms. I think oxygen requirement is not a visible sort of thing.

Q. When you do your observations do you have to take into account, when you are considering the child overall, just the observations, or do you consider other things as well?

A. We consider other things as well.

Q. So if we were to look at the PEWS entry at 24.00 on 11th, so midnight, we have a slightly increased respiratory rate and heart rate, have a slightly lowered saturation rate, but you have written underneath: "Upset."

A. Yes.

- Q. So have you written that in there because you think that should be taken into account when you were looking at the observations overall?
- A. Yes.
- Q. Is that because you think it may account for some potential variation?
- A. Yes, if there's a reading which is lower than sort of the norm for the child, and if there's a reason for it, then we document it at the bottom, if the child is upset or - if they're moving, you don't get a good trace, so then you just have a look five minutes later when they were settled, and see that the saturations were okay.
- Q. So would it be true to say that by looking purely at the PEWS charts, that does not give you an overall impression of what was happening with Hayley at the time?
- A. Sorry, can you say that ....?
- Q. Sorry, yes. If we look purely at the paper PEWS chart we have in front of us here, is it true to say that that does not give us the overall view of what was happening with Hayley at the time?
- A. Yes.
- Q. So as well as the PEWS charts, the observations within them and the overall score, you may have heard earlier that when we were discussing this with the doctors earlier, is it correct to say that they give you part of the view but you have to take into account how the child looks, and also as well the history of the child and the concerns, if any, of the family and your handover, the information you have got from your colleagues?
- A. Yes.
- Q. On the night/early morning of 11th November, we can see that Hayley's saturations are slightly lower than 95 per cent.
- A. Yes.
- Q. In your experience of children with cardiac problems, is 92 to 93 per cent something that you would call a doctor about?

A. No. No, for the vast majority of cardiac babies, the cyanotic babies are healthy at saturations far below that, our hyperplasts have saturations of 75 to 80, in ventricular hearts, or much lower, you would be concerned about a small (inaudible) newborn with saturations of 100 per cent.

Q. Mrs Titley, can I refer you to your statement, it was made for the SUI, which I understand you have seen, that my learned friend referred to. I have it as pages 436 to 438 of the bundle. I do not think Mr Cotton has seen it yet.

THE CORONER: Tell me again?

MISS LUCAS: 436 to 438. I do not think you have seen it, sir, so I am asking for a copy. (Handed)

THE CORONER: Thank you. C24.

MISS LUCAS: Mrs Titley, this was as a result of a discussion you had had for the serious untoward incident investigation, is that correct?

A. It is, yes.

Q. Was this a document that you had actually had before today? Had you seen this prior to today? Some people had not, but had you seen this prior to today?

A. Yes. Yes, I wrote this. Yes, I wrote this and this is what I based my statement on for today, roughly.

THE CORONER: You actually prepared this yourself.

A. I did, yes.

MISS LUCAS: In your statement that you have read out today, you mention on page 4 of your statement that this was prepared for the serious untoward incident investigation board in December 2009. Can you give me any more idea of when this statement for the investigation was actually written by you?

A. I would have written it before December 2009.

Q. Before December 2009, so .....

A. Just after Hayley's arrest, when I was -----

THE CORONER: Talk to me because she knows the answer.

A. Sorry.

THE CORONER: You tell me.

A. I was asked to prepare a summary of care for the night, possibly two weeks after Hayley died, and this is it, this is what I prepared.

MISS LUCAS: So even though in answers to questions raised by my learned friend regarding your statement you said that certain assumptions had been made, when you made this initial statement did you have a better memory of what had been going on with Hayley's care when you cared for her?

A. Yes.

Q. Even though you have not recorded on the PEWS charts some of the information that is in this SUI statement, would it be correct to say that some of this statement could have been from your memory?

A. Yes.

Q. Does that mean you are likely to make less assumptions about things if you can directly remember what happened?

A. Yes.

Q. So when my learned friend mentioned that as some of the entries in the PEWS charts did not directly correlate with some of the times you have got on your statement that you sent to the Coroner, and so you had made some assumptions about why certain activities had taken place, when this original statement was made is it likely that you would have had a - did you feel that you had a better memory at that time of what was actually happening with Hayley?

A. Yes, I did.

Q. Looking through this statement - I have not gone and compared it exactly, but you said that you made your new statement based on this.

A. Mm, I did. Yes, I did.

MISS LUCAS: Thank you. No further questions.

THE CORONER: Okay. Thank you very much.

(The witness withdrew)

THE CORONER: Just talk to the advocates: do you think there is any chance of getting through Sanjet Bhandal's evidence in twenty minutes? Yes or no?

MR WEITZMAN: It is a fair chance.

THE CORONER: Fair chance.

MISS LUCAS: I agree. I do not have very much for her at all.

THE CORONER: Okay. Sanjet Bhandal, then, please.

Mrs Sanjet BHANDAL (sworn)

Examined by The Coroner

THE CORONER: Tell me your full name.

A. Sanjet (Inaudible) Bhandal.

Q. Tell us your maiden name so that when people are thinking about the records they know who we are talking about.

A. I was Sanjet (inaudible) Moore at the time.

Q. It is probably going to be easier if I read your statement and you check it, yes?

A. Okay.

Q. I am deliberately going to miss out the first two paragraphs. The advocates can go back over that if they want. You say:

"I Sanjet Bhandal care of Birmingham Children's Hospital," this is your first statement. "I do not remember the exact care I provided to Hayley as the event happened a few years ago. For this reason the specifics and accuracy of this statement cannot be based solely on recollection but is rather more reliant on medical notes. However, where possible the statement does take into account recollection of the event." Yes?

A. Yes, that's correct.

Q. That sounds like a lawyer wrote that for you. Is that right?

A. A lawyer did not write that for me, no, but yes -----

Q. Sorry?

A. A lawyer did not write that for me, no.

Q. Okay. "My care of Hayley began on 10th November. I looked after her by: (a) recording any changes to Hayley's observations, by documenting on a paediatric early warning system chart; (b) observations were taken at 10.00 am, 12.00 am, 14.00 hours, 16.00 hours and 19.00 hours.

"Hayley remained nursed in head box oxygen, ranging from 30 to 40 per cent. Hayley's saturations had been between 95 and 97, with the exception of one reading which was recorded at 94. A recording of 94 was not seen as abnormal and did not warrant any concerns. Hayley did show signs of mild respiratory distress which were also pointed out during the handover process by the staff nurse Hayley Streatham. The notes show that Hayley had been seen by the physiotherapist regarding this on the day while in my care. Her respiratory rate ranged from 36 to 46 beats per minutes, heart rate documented from 112 to 141 beats per minute. Hayley's blood pressure mainly ranged between 97 systolic and 62 diastolic to 108 systolic, 68. One blood pressure reading was 126/99. Hayley remained apyrexial during the day. Capillary refill time was three seconds." Apyrexial means she had got a normal temperature, does it?

A. Yes, that's correct, yes.

Q. "Hayley remained on 100 ml per kilogram of maintenance fluid. I gave medication which was prescribed to Hayley at times documented on the drug chart. I redressed Hayley's sternotomy wound site as advised by the cardiac surgical registrar.

"With regards to Hayley's wound, my observations are as follows: (a) it appeared partially necrotic, that is dead tissue, with a black colour. I can recall this was noted previously on the notes too. I recorded this on the wound chart notes. No further actions were passed on by the cardiac surgical registrar with regards to this observation. The surrounding skin was red and her wound site had moderated exudates, that is a fluid with a high content of protein and cellular debris that has escaped from blood vessels and has been deposited in tissues or on tissue surfaces, usually as a result of inflammation. I recorded this on the wound chart notes. No odour was noted from Hayley's wound site. No swab was taken of the wound while in my care and I recall the cardiac surgical registrar did not request this either. Furthermore, I can recall a swab was taken previously before Hayley was in my care. Hayley had already been started on Fluoxalin for wound healing. The dressing which I applied was a Mepilex border which was in line of practice at the time. The next assessment of Hayley's wound was required on Thursday 12th November 2009. However, it was instructed that if her dressing was soiled it should then be redressed. I do not recall having to redress the wound site due to soiling.

"Nasopharyngeal aspirate was taken as requested for investigation to establish whether or not Hayley had swine 'flu. I recall the nurse in charge, Sheila Bennett, requested me to nurse Hayley as an isolated patient just for precaution until the results were received.

"Whilst caring for Hayley I can recall that I updated Hayley's Mum and family members with regards to the care I was giving. Prior to 10th November I cannot recall having been involved in the care of Hayley. My last involvement with Hayley was on 10th November 2009 when handing over care. Care was handed over as per the normal nursing processes and guidelines."

Yes? I should think it is fairly obvious that nearly all of that had been prepared by a lawyer and checked by you. Is that right?

A. Not by a lawyer, no.

Q. Sorry?

A. Not by a lawyer.

Q. Who was it prepared by? Or is this you talking?

A. What do you mean, sorry? The whole statement?

Q. Just take this bit: "The surrounding skin was red and her wound site has moderate exudates, a fluid with a high content of protein and cellular debris that has escaped from blood vessels and has been deposited in tissues or on tissue surfaces, usually as a result of inflammation."

A. Yes, I got ----

Q. Did you sit down and write that?

A. No. What I did, the ones that's actually in the brackets, I gave this, my statement to Alison Standen, who just advised me to just describe what that is because it sounds alarming. So what I did was get the - I looked in my nursing dictionary and just described it, so when you were reading it, that you understood what that meant.

Q. Right, so basically the statement is your words.

A. Yes, that's right.

Q. But the explanations, which no doubt are designed for me to understand ----

A. That's medical, yes.

Q. .... were put in on advice by the hospital.

A. Yes.

Q. Is that right?

A. Yes.

Q. Right, okay. I know it is November 2009 we are talking about, but can you remember how worried people were at that time about swine 'flu? Was it a big thing, or not?

A. It was a very big thing. I remember it being quite highlighted in the media, and within the ward it was something that we were concerned about and we needed to show that we were very serious about it and we were taking proper action against swine 'flu if it did ever come on to our ward.

Q. Were there many children being put in isolation at or about that time, or was Hayley the only one?

A. We still do now isolate patients, and it's not due to swine 'flu. Sometimes it might be because they have vomiting or diarrhoea, or they might have something like bronchiolitis, which is airborne, so in order to protect the other patients on the ward we isolate for that reason. Sometimes we do positive barrier nursing when a child's immune system is very low, and we need to protect them from us, because we might harbour something that might affect them. So there's two reasons for isolation.

Q. Can you remember: did you have any deaths at the Children's Hospital from swine 'flu at about that time?

A. I can't remember. I can't remember that, sorry.

THE CORONER: Okay. The advocates are going to ask you questions, but talk to me, yes?

A. Okay.

Cross-examined by Mr Weitzman

MR WEITZMAN: Mrs Bhandal, there is also a statement I think you made nearer the time, 10th November - it cannot have been 10th November 2009, but you made it nearer the time - which is at page 622. I think it may be more in your own words, if I can put it that way.

A. I've got it, yes.

Q. Have you got it?

A. Yes, I have.

Q. You have had a chance to look at that, have you not?

A. Yes, I have.

- Q. Two things you highlight there: is one that Hayley's grandfather was very concerned about her wound and said he had mentioned it to others previously.
- A. Yes, that's correct.
- Q. I am going to ask you to speak up a bit, particularly -----
- A. Yes, sorry. Yes, that's correct, sir.
- Q. And secondly that her mother was very concerned about the care that Hayley had been receiving.
- A. Yes, that's correct, sir.
- Q. Although not from you.
- A. Yes, that's -----
- Q. She was very happy with what you were doing.
- A. Yes, that's correct, from what I can recall.
- Q. She was concerned because of Hayley's condition.
- A. Yes, that's correct, sir.
- Q. Her concerns were entirely appropriate and reasonable, were they not?
- A. Yes, I believe so, sir.
- Q. I think did you speak to the nurse in charge, raising the concerns?
- A. I am not sure if I told Sheila Bennett, who was the nurse in charge, but I remember going to Jackie Clinton, who was our ward manager.
- Q. But throughout this Mrs Stevenson's point was she wanted care for Hayley, that is what her concern was.
- A. Yes, that's very correct, yes.
- Q. How many children were you nursing on this day?

- A. I can't remember. I know I was making CPAP bands and I know that I looked after someone on CPAP but I couldn't remember if I had another additional patient, but I have a feeling - I can't - I just don't know. I don't know if it was - I know it wouldn't be four, but I can't remember if it was three or two.
- Q. Was there also a clinical support worker - I may have used the wrong phrase - called Simone helping with Hayley on that day?
- A. No, that's incorrect. Simone was actually a student nurse.
- Q. Simone was a student nurse.
- A. That's correct.
- Q. And she was helping.
- A. Yes, she was helping me.
- Q. I am going to ask -----
- A. While learning.
- Q. .... you to look at the PEWS scores for the day, please. I am going to get you the originals. (Handed)
- A. Thank you.
- Q. Do you have that?
- A. Yes, I do.
- Q. If you just look at the entry for 10.00, which is while you were on duty, yes?
- A. Yes, that's correct.
- Q. You see that the oxygen saturations are entered at 86 per cent.
- A. Yes, that's correct.
- Q. Who has filled that out, because it is distinct from the other handwriting?
- A. Yes, that is correct.

Q. Was it Simone who filled that out?

A. Yes, that's correct, sir.

Q. Rather than you.

A. Yes, that's correct, sir.

Q. If they were 86, which is what it clearly says, does it not?

A. Yes, it does say 86.

Q. Then it is in the wrong row, is it not?

A. Yes, you're absolutely right, that's in the wrong row.

Q. It should be in the top row for oxygen saturations.

A. Yes, that's absolutely correct.

Q. Which would have increased the PEWS score by four.

A. Yes, that's right.

Q. Making it ten.

A. Yes, that's absolutely right, yes.

Q. But because it was entered in the wrong row, that was not apparent.

A. Yes, that's absolutely right.

Q. We can see, I suspect, a more experienced nurse later on, if we look at - in fact it is Mrs Titley - someone has put at 24.00 hours 92 in the wrong row but crossed it out and corrected the error.

A. Yes, that's right.

Q. Were you aware during the day of 10th that that error had been made?

A. No, because I would have crossed it out.

Q. And corrected it.

A. I would have explained to Simone that she's put it in the wrong place and just sort of go through the PEWS with her, but - yes, I would have corrected it.

Q. We can see that Simone also did a temperature reading at that day.

A. Yes, she did, yes.

Q. If you had seen it and corrected it and it was 86 and the PEWS had been ten, you would have elevated - you would have called for medical attention.

A. If I felt that 86 was correct and a true reading, then I would definitely call and ask for further assistance. Something like 86 for Hayley, that's very alarming and you would obviously see it. From a nursing perspective, you would know if someone is going to 86, knowing Hayley.

Q. The family recollect there being a certain amount of head bobbing. Do you recall that, on 10th?

A. No. No head bobbing whatsoever.

MR WEITZMAN: Thank you very much.

THE CORONER: Miss Lucas.

Cross-examined by Miss Lucas

MISS LUCAS: Thank you, sir. Mrs Bhandal, I only have one question. The reference to student nurse Simone.

With the student nurses, they work with you, is that correct?

A. Yes, yes, I am responsible for what they do, they're under my care.

Q. Can you recollect whether Nurse Simone came and told you about an 86 per cent saturations on 10th?

A. I can't recall a hundred per cent that she actually came up to me, but I know that I went into that cubicle a lot, I know I spent a lot of time with Hayley's parents and I know that I would know if she was 86.

THE CORONER: Say that again.

A. I - we know, I know in my ability that I would be able to determine if her sats were 86, and I remember constantly looking at her monitor because I knew parents - sorry, parent and grandparents - were really

concerned. And when they show concern it makes me show concern, and I take it very seriously, and I know that I would constantly go in, and I remember going in there quite a lot, just to make sure they're okay. (Pause) May I say something else as well?

THE CORONER: Yes.

A. We don't just rely on the PEWS chart. We take a lot of knowledge by experience. I've worked on Ward 11 since 2006. Before that I was a student on Ward 11, I did my management placement of 15 weeks, and I think prior that I did another two weeks. I have been around the hospital as a student, and you get to see quite a lot, and I've never seen the level of care anywhere as good as Ward 11. And I know that that experience counts for a lot, and I know that ..... that I wouldn't just sit on that. That is one reading, and if you look before and after it's stabilised. And it happens - children wriggle, they cry, and it makes the saturations go all over the place. Sometimes - when you're running your heart rate's going faster and - I'm not very good at explaining but ..... All I can say is that sometimes the probe does not pick up everything. We send parents home with children without monitors, and they can pick up on it as well.

MISS LUCAS: Thank you.

THE CORONER: Okay, take a seat, if you would.

(The witness withdrew)

THE CORONER: Okay, so it is ten past five and we will stop there. Let me just check so far as the witnesses are concerned. Obviously Jane Titley need not come back, there would be no point in taking her earlier if we were going to make her come back, tomorrow anyway. I do not need Sanjet Bhandal to come back, or Jackie Clinton, but you are very welcome to if you want to, okay? I repeat what I keep saying to all of you: I would have thought that most of you would actually want to hear what is being said.

When I have heard all the evidence tomorrow, what I will do is what I do in every inquest, which is to say: is there anyone present who has not given evidence who wants to do so; is there anybody who has already given evidence who wants to come back to the witness box to explain something they have not already covered? Okay?

So I guess you want to talk to me?

MR WEITZMAN: I was just standing out of politeness, sir.

THE CORONER: Right, okay.

MISS LUCAS: Sir, can I just ask: Dr Porwall, because he has difficulty tomorrow, he is in Shrewsbury.

THE CORONER: No, you do not have to come back.

MISS LUCAS: Thank you, sir.

THE CORONER: So perhaps it will help if we just look at what we have got tomorrow. We have Sheila Bennett and then Louisa Snook - is it? - and Laura Jordan, the two physiotherapists, Deborah Jones, the tissue viability nurse, Dr Neal and Mr Brawn. Do we know what Mr Brawn's workload is tomorrow?

MISS LUCAS: He can come tomorrow. He will be coming from the morning, he will be coming from first thing tomorrow.

THE CORONER: Has he got surgery booked for the afternoon, do you know?

MISS LUCAS: I understand he has cleared the day. Yes, he has cleared the day to come along, so he does not have anything booked for tomorrow.

THE CORONER: Right.

MISS LUCAS: Sir, can I ask: Dr Neal, who is an intensivist, would you be happy for him to come in the afternoon? Intensive care is more difficult to cover.

THE CORONER: Yes.

MISS LUCAS: Thank you.

THE CORONER: Yes. Remind me tomorrow that I have agreed to that.

MR WEITZMAN: Of course, yes.

THE CORONER: Okay, so 5.15, I shall sit at 10.00 tomorrow.

MISS LUCAS: Thank you. Sir, can I just raise one thing with you when the witnesses have left. The thing you referred to earlier.

THE CORONER: I cannot hear you.

MISS LUCAS: Sorry, can I just raise one thing with you, that you raised earlier.

THE CORONER: Yes. Let's just wait for people to move out and I can hear what you are saying and then you can raise whatever you need. (Pause) Yes.

MISS LUCAS: Sir, I have asked the Trust to let me know what the present position is on their incident reporting and how they do the statements. I have asked them to get back to me tomorrow so that I can give you some information on it tomorrow.

THE CORONER: Okay.

MISS LUCAS: My understanding is that Dr De Weiko, who you suggested could give evidence about changes at the Trust can amplify that, but I thought you would want to see something tomorrow, so they are doing that for you.

THE CORONER: Yes, but we have said that that evidence was going to be heard - we will hear from two experts, are we not?

MISS LUCAS: Yes, but certainly you were concerned earlier so I have asked them to put something together so that if you want to see it tomorrow you can.

THE CORONER: Right, okay. How are you getting on with identifying your expert?

MISS LUCAS: We are having problems at the moment. Our PICU consultant who was doing all the investigation, contacting people, has gone down with pneumonia, so we have now got somebody else to take over. But at the moment they are having difficulties with the short timescale. It may be - we are trying to get somebody for tomorrow. If we cannot, then I will update you, but they are actively looking - they have contacted about three people who are not able to do it.

THE CORONER: Okay, we will talk about it tomorrow, but bear in mind if you would that if I leave those days booked, it causes more trouble for other families.

MISS LUCAS: Of course.

THE CORONER: Right, see where we go.

MISS LUCAS: Yes, thank you. (Pause) I have got an update from the Trust, I am just checking it now, if I can use the machinery, and I can give you ..... Yes, it is the same as I said, sir, the list that they had put together of people to ask who they knew, who the Trust knew of, none of them can do it in the timescales, so they are looking elsewhere.

THE CORONER: Okay.

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**IN HM CORONER'S COURT**50 Newton Street  
Birmingham  
B4 6NEThursday, 3rd May 2012

Before:

**MR AIDEN COTTON (THE CORONER)****INQUEST TOUCHING THE DEATH OF****HAYLEY ELIZABETH FULLERTON**

MR ADAM WEITZMAN (Counsel) (instructed by Irwin Mitchell Solicitors, Imperial House, 31 Temple Street, Birmingham, B2 5DB) appeared on behalf of Hayley Elizabeth Fullerton.

MISS TRACEY LUCAS (Solicitor from Capsticks Solicitors, 35 Newhall Street, Birmingham, B3 3PU) appeared on behalf of Birmingham Children's Hospital.

**PROCEEDINGS - DAY 5**

Transcription by  
**John Larking Verbatim Reporters**  
Suite 91, Temple Chambers, 3-7 Temple Avenue, London EC4Y 0HP  
Tel: 020 7404 7464 Fax: 020 7404 7443  
[www.johnlarking.co.uk](http://www.johnlarking.co.uk)

Thursday, 3rd May 2012

THE CORONER: Good morning to you all. It is now ten o'clock. This is the fourth day of the hearing of the inquest up the death of Hayley Elizabeth Fullerton. When we have completed the evidence today we shall be adjourning. We will probably reconvene on Wednesday 12 September for a further three days. That is in accordance with the order obtained from the High Court. At that time I shall be hearing the evidence of the two experts. Will both advocates please make sure they speak to my staff during the course of the day. What I need you to do is to arrange with them a date for a pre-

hearing review. I think we need to set it about four weeks ahead. The purpose will be to make quiet sure that by then we do know who the experts are, we are certain that they can keep to the timescale, and that we do know that we have left enough days in September for the hearing.

Mr Weitzman, as far as you are concerned, it is a long way to travel to do something which I anticipate will be a formality. If we are so far advanced you do not feel you have to attend, do not feel you have to attend just out of courtesy to the court.

MR WEITZMAN: There has been some discussion about issues surrounding legal professional privilege.

THE CORONER: Sorry?

MR WEITZMAN: There has been some discussion about issues surrounding legal professional privilege.

THE CORONER: Yes.

MR WEITZMAN: If you want that argued out, I would suggest that that hearing would be the appropriate time to do it.

THE CORONER: Good, yes.

MR WEITZMAN: In which case I would need to attend.

THE CORONER: You will definitely need to be there, yes, and I would want to have it in writing beforehand as well.

MR WEITZMAN: Yes, but I do not know whether that meets your approval or not, sir?

THE CORONER: Yes, that is fine, and if rule 40 is still a problem -- if it is -- we will need to discuss that at that stage as well -- that is if it is still a problem. Yes.

MS LUCAS: Sir, it has been noted by those behind me that it does not look like the machine is going up and down.

THE CORONER: It is going up and down because people are not speaking continuously. Let me get someone who understands the machine in.

The other thing I wanted to mention, Mr Weitzman, is that I shall be going in to look at the ward, simply so that I have it clearly in my mind. Obviously I am not going to do it while I am coughing and spluttering, but I shall do it when I have recovered. If you would like to arrange to do it with your learned friend to do it prior to that, I have no doubt that can be arranged. All I am suggesting is a simple walk round so everyone knows precisely what Ward 12 is and where the cubicle is and the staff room is and so on. Yes?

MS LUCAS: Ward 11, sir.

THE CORONER: Sorry?

MS LUCAS: Sorry, you said Ward 12. Do you want Ward 11 and 12?

THE CORONER: 11 and 12, yes.

MS LUCAS: Thank you.

THE CORONER: I will just explain to the witnesses who are here today, but who have not been here before, when you give your evidence you will be giving it from the witness stand up here, either on oath or affirmation, whichever you prefer - it makes no difference in law. I shall be asking the questions first, and obviously you answer to me. When the two advocates ask you questions, it is important you realise that you are not talking to them, you are not arguing with them, you are not discussing with them, you are answering their questions by giving evidence to me. Okay? I have already said we are going to have to adjourn until September. It is important that you actually watch me so that if it is obvious I am not keeping up with you, you slow down. Okay? I have to make notes and I have to keep up. Let us start, please, with Sheila Bennett.

Sheila Bennett (Sworn)

Examined by the Coroner:

THE CORONER: Give me, please, your full name and your qualifications?

A. Sheila Mary Bennett, Registered General Nurse and Registered Sick Children's Nurse.

THE CORONER: What I want you to do, please, is to read through the report that you have prepared.

A. This is my first statement relating to the care and treatment given to Hayley Fullerton during her admission to Birmingham Children's Hospital in 2009. I have been employed by Birmingham Children's Hospital since 1993 and I am currently employed as a Junior Sister. I have held this position since 2001. My duties are, in liaison with the ward manager, to be responsible for the management and delivery of the clinical care on the ward. I remember the care I provided to Hayley and therefore my statement is based on recollection.

During Hayley's admission my involvement was nurse in charge of the shift, not caring for Hayley directly. I remember going to Hayley because I could hear the intravenous pump alarm. I checked the canula site and it was intact. The intravenous line was kinked under the bandage, so I re-positioned the line and the infusion continued.

At this time I notice Hayley had nasal prongs fixed to her face with tape. They were not in use as the oxygen delivery was given by the head box. I decided to remove the nasal prongs to increase Hayley's air entry. I wanted to do this with as little disturbance to Hayley as possible and avoiding the naso-gastric tube. So I cut the prongs off.

I remember discussing my concerns about Hayley with the doctor and it was decided to test for Swine Flu. Hayley was then put into isolation.

This was my only direct involvement with Hayley, and this was on 10 November 2009.

Q. Okay, so you cut the nasal prongs. How much of a problem do you think they were causing?

A. Firstly, nasal prongs sit inside the nostril, like that, so they are taking up some of the air space in the nostrils. Hayley also had a naso-gastric tube in one nostril, so it was blocking her air entry to some degree. So by removing them I was increasing the air entry.

Q. And do you know why that had not been done earlier?

A. I believe some nurses leave nasal prongs oxygen on a child when they go into head box because they hope that they may improve and then they can come out of head box and they don't have to retake the nasal prongs, which is irritating for a child to keep having things attached to their face.

Q. And is there a policy about that at the Children's Hospital or issued by the Nursing Midwifery Council or somebody like that?

A. No policy.

Q. So some think it is more important to have as great a flow as possible; others think that it is better to avoid the problem with putting them back afterwards?

A. Yes.

Q. Yes? Now, you say you discussed your concerns about Hayley with the doctor and it was decided to test for Swine Flue, and Hayley was then put into isolation. Have you been here for the earlier parts of the evidence?

A. Yes.

Q. Have you heard Paula say and her father say that they believe that she was put into isolation simply because you wanted to keep the family quiet? Is that true or not?

A. That's absolutely not true.

Q. Back in November 2009, how real a problem -- how real an affair -- was Swine Flu?

A. It was something new that we hadn't seen before. There was a lot of things about Swine Flue in the press. One child had already died at the Birmingham Children's Hospital at that time with Swine Flu -- not on our ward -- and it was a very big fear that there could be an epidemic.

Q. And you also heard that both of them say that in their view the standard of care, which they said was poor beforehand, got worse because people did not come to them. Is that correct or not?

A. That's not correct.

Q. You heard the Specialist Registrar yesterday say that children get exactly the same care, whether they are in isolation or not. Is that true or not?

A. That is true.

Q. And just explain to us the lay-out of the ward and the cubicle in which Hayley was?

A. Hayley was in cubicle 1, which is the first cubicle as you walk onto the ward, and then there are cubicles going down, numbered 1 to 6. The cubicle Hayley was in was a double cubicle, although Hayley was in there on her own. Before she

was in isolation, she was in there on her own, and then obviously afterwards we wouldn't have put another baby in there, and then going off from the corridor there's two four-bedded rooms. One of those is our HDU -- one of those four bedded bays. However, HDU care can be given at any time to any baby on the ward. It's not geographical space. It is a level of care.

Q. The cubicle in which Hayley was, was that used on a regular basis before and on a regular basis afterwards?

A. It's always in use. We have more or less a 99% capacity.

Q. Tell me about the alarm bell system within the cubicle.

A. There's an emergency bell, which is a bright red button. If it is pulled, a light flashes outside the cubicle and it's a very unmistakable alarm. People run to that alarm. They drop what they're doing and run to that alarm.

Q. Okay. Now, the advocates are going to ask you questions. Remember to answer to me.

Questioned by Mr Weitzman:

MR WEITZMAN: Before I start, can Nurse Bennett please have 521 and 522, a copy of the last day's Pugh's Karen -- should be PEWS score, and it would be helpful if it were the original again, I suspect, and also, please, an exhibit we have already seen, and the Coroner has already seen, it is 651.

THE CORONER: I have just gone through the list again, Mr Weitzman, so I can tick them off when I get them.

MR WEITZMAN: Yes. 521 and 522, which is a new exhibit, sir, we have the Pugh's score from the final day of Hayley's life -- the Pugh's Chart, which you have seen a number of times.

THE CORONER: Yes.

MR WEITZMAN: And the pagination in the top corner for that is 282.

THE CORONER: 282.

MR WEITZMAN: And the other document, sir, you have already seen. It is number 651 and it is the Swine Flu referral document.

THE CORONER: Thank you.

MR WEITZMAN: Nurse Bennett, can I start by asking when you came on shift that day?

A. Which day? The 10th?

Q. Yes, please

A. I was on an early shift. I came on at half past seven.

Q. Half past seven, so you were not there over the evening when Hayley had serious respiratory problems?

A. I finished work at about three o'clock in the afternoon.

THE CORONER: Miss Bennett.

A. I am sorry.

THE CORONER: Tell me again.

A. I came on at half past seven in the morning and I finished at three o'clock in the afternoon.

MR WEITZMAN: So when you comment about what had happened earlier in the evening in your statement, that is by reference to the notes?

A. Which comments? Which comments exactly?

Q. I am talking about the change from nasal prongs to head box, which happened earlier in the evening before you came on duty?

A. That happened on the 9th, on the late shift.

Q. Well, it happened in the early hours of the 10th, did it not?

A. When I removed the nasal prongs from Hayley?

Q. You removed them on the 10th, but she moved from nasal prongs to the head box --

A. I removed the nasal prongs from Hayley on the 9th.

Q. The Coroner asked you to answer the question. Would you listen to the question and answer it, please? The nasal prongs changed to head box at 2am on the morning of the 10th. Is that correct?

A. I wasn't there in the night, but I remember distinctly on the late shift on the 9th I removed the nasal prongs from Hayley.

Q. Can we look at the Pugh's scores please then?

THE CORONER: Mr Weitzman, let me get it clear. You are putting to her that she removed them at what time? 3am on the 9th?

MR WEITZMAN: No, no. I am saying that on the morning of the 10th at 2am she moved from using nasal prongs to the head box, and we can see that in the Pugh's Chart. If we look at the top, we see the 8th is the first column, then we move into the 9th -- yes? And then the 10th is written in -- we see the dividing line, one, two, three, four, five, six, seven columns in. Do you have that, Nurse Bennett?

A. I do, yes.

THE CORONER: I have not got it. Tell me which page we are on?

MR WEITZMAN: 282, sir.

THE CORONER: 282.

MR WEITZMAN: 282 pagination at the top. I have it as your exhibit C3, sir. It is a large sheet. It is not an A4 sheet, sir.

THE CORONER: Right. 282. You are showing us what?

MR WEITZMAN: We are looking at the top of the document under the entry 10 November 2009, and we are looking at two o'clock in the morning, which is the first entry for that day, sir, and if we run our finger down, we see at two o'clock she has got nasal plugs, which is the delivery section for oxygen, and then we have head box at four o'clock -- or maybe eight o'clock. It is not clear what time is being entered. What I am suggesting to the witness is that the nasal plugs change to the head box at or about 2am on the 10th, but she is disagreeing and said that she removed the nasal plugs on the 9th.

A. My memory is I removed them on the 9th.

Q. That cannot be right then, can it?

A. It is a long time ago. Perhaps I removed them on the 10th. I do distinctly remember removing them, and I remember distinctly Hayley's mother saying to me, "Thank you", because they were irritating her.

Q. If we are talking about the 10th, rather than the 9th, does that alter your idea about what time you were on duty?

A. No.

Q. Okay. If the Pugh's Chart is right, the nasal plugs were replaced by head box as the source by which oxygen was delivered at or about 2am, were they not?

A. According to this chart. According to my memory, that isn't the case.

Q. I am going to read you a note. This is a note at 2.10 on the 10th by Senior House Officer Dawson: "Called because of respiratory distress. Sternal recession. Grunting intermittently." Then she deals with the oxygen. It was supplied by nasal, and then she told us yesterday 5 litres facial, and the trigger to turning from nasal provision to head box was Hayley's increased need for oxygen which followed during that event on the morning of the 10th. Would you agree?

A. That isn't my memory.

Q. Why did she move from nasal plugs to head box then?

A. Because she needed more oxygen. We only give 1 litre of oxygen by nasal prongs because it's uncomfortable for a child to have more than 1 litre, and she needed more.

Q. Right. So if you are correct and it was the 9th, these entries for nasal plugs throughout the 9th, into the early hours of the 10th are wrong on the chart, are they?

A. I can only say what I remember.

Q. What time in the day did you remove the nasal plugs?

A. It would have been in the afternoon of the late shift on the 9th. It's hard to know the exact time. It would have been between when I came on duty at half past one and when I went in to report at eight o'clock.

Q. If it is in the late afternoon and she changed from nasal plugs to head box because of an increased requirement of oxygen at two in the morning, she was left both with nasal plugs and a naso-gastric tube for something in the region of twelve hours. Is that fair?

A. It's possible.

Q. And if she is left for twelve hours and she has got a head box because nasal prongs could not provide enough oxygen, and the redundant nasal plugs restrict the flow of oxygen to Hayley, that is something of concern, is it not?

A. As I said before, some nurses prefer to leave them on in case they come out of the head box and they don't have to then replace the nasal prongs. I personally don't do that. I prefer to remove them when the child goes into head box.

Q. Nurse Bennett, this is a little girl who has been very seriously ill. She has had respiratory distress. She needs what oxygen she can get, and yet the flow is blocked by the redundant nasal plugs. Are you saying that it is a sensible clinical judgment to leave them there because otherwise when -- we do not know when that would have been -- they may have to be re-taped?

A. The airflow isn't blocked. If the airflow was blocked, obviously the child would stop breathing. The air entry is restricted.

Q. Do you agree she was a child who needed as much air entry as she could get, hence she was in a head box?

A. All children in a head box need as much airflow entry as they can get.

Q. So you do agree with me?

A. It's common sense.

Q. And were the nasal plugs restricting, as you have told us, the air entry?

A. I believe that nasal prongs, when they're not in use, should be removed from a child who is in a head box. I personally do remove them.

Q. So to come back to my question, to leave her for something in the region of twelve hours with a restrictive flow because of the redundant nasal prongs was not a sound clinical judgment, was it?

A. It wouldn't be my clinical judgment. It's not something I would personally do.

Q. Can I ask you about the Swine Flu now, please?

THE CORONER: Mr Weitzman, I just want to stay on this. We are in a situation where, as I understand it, you are putting on behalf of the family that this witness removed the nasal prongs --

MR WEITZMAN: She did.

THE CORONER: -- at 2am --

MR WEITZMAN: No, I have not put that to her.

THE CORONER: Well, I have misunderstood you.

MR WEITZMAN: I have accepted her evidence that she removed them in the late afternoon, I think you said, madam?

THE CORONER: So you are accepting that she did not do it at 2am on the 10th?

MR WEITZMAN: Absolutely.

THE CORONER: You are accepting that?

MR WEITZMAN: I accept that entirely. The point I am making is that they were left from 2am on the 10th till late afternoon on the 10th when this nurse quite properly removed them.

THE CORONER: Okay. So did I mishear? Did you not put it to her at one stage that she removed them at two o'clock on the 10th?

MR WEITZMAN: You did mishear. I did not put that to her. I said the nasal plugs were replaced by the head box at two o'clock on the 10th.

THE CORONER: Right.

MR WEITZMAN: Which I illustrated by showing her the Pugh's Chart, which clearly shows that, as, I think, she accepted.

THE CORONER: You are happy to accept what she is saying?

MR WEITZMAN: That she removed them in the afternoon, yes.

THE CORONER: In the afternoon of the 9th.

MR WEITZMAN: No, it cannot be the 9th. I think she is mistaken about that, because the nasal plugs were not replaced by the head box until the morning of the 10th. So I put to her that she has got the wrong day, but I accept the time and the day she gives.

THE CORONER: But what I am trying to find out is what you are actually saying -- I am trying to find out what actually happened. It seems to me that you are not actually in agreement with this witness?

MR WEITZMAN: I think we are in agreement, and I will summarise and then she can tell me --

THE CORONER: Hold on, hold on. Let me ask the witness. Tell me when, to your best recollection, you removed those nasal prongs?

A. My memory is I removed them on the afternoon of the 9th.

THE CORONER: And you say that you were on duty on the 9th from when to when?

A. From half past one till half past eight in the evening.

THE CORONER: 1.30pm to 8.30 --

A. 8.30pm.

THE CORONER: 8.30pm. That was on the 9th. And on the 10th?

A. On the 10th I was on duty from 7.30 until three o'clock.

THE CORONER: 7.30am?

A. Yes.

THE CORONER: To?

A. Three o'clock in the afternoon.

THE CORONER: Two o'clock?

A. Three o'clock.

THE CORONER: Mr Weitzman, are you accepting that, that she was on duty on the 9th from about 1.30 until 8.30 -- during the day that is -- and on the 10th from 7.30 am to 3pm, or is that challenged?

MR WEITZMAN: I am not challenging when she was on shift. What I am challenging is the day on which the nasal plugs were removed.

THE CORONER: Okay.

MR WEITZMAN: And the basis of the challenge is that the Pugh's Chart show they were still in place until 2am on the morning of the 10th.

THE CORONER: Right.

A. I am afraid I can't comment on that.

MR WEITZMAN: Do you agree that the Pugh's Chart shows that they were in place until 2 on the morning of the 10th?

A. That is what the Pugh's Chart is saying.

THE CORONER: Okay, let us move on.

MR WEITZMAN: Swine Flue. Did you refer Hayley for Swine Flu on the same day or a different day that you removed the nasal plugs?

A. I distinctly remember on the morning of the 10th on the ward round talking to the Registrar about my concerns for Hayley. I'd had some days off over the weekend and prior to the weekend I'd seen Hayley sitting in a high chair and playing and eating some breakfast, and then when I came back on the late shift on the Monday I noticed this deterioration in Hayley. I had already heard about it obviously on the Sunday and I was very concerned. Several things had been instigated already.

Q. I am so sorry, could you speak up a tiny bit, please?

A. Several things had been instigated already, such as the head box and the antibiotics, and on the morning of the 19th I remember I think I said it first -- I can't be quite sure -- "Do you think it could be Swine Flu?" and the Registrar said, "Yes, we must test for it. Get an MPA". At the time none of us really knew what the symptoms of Swine Flu were. Hayley didn't have classical signs of flu, but then we'd never seen Swine **Flue** before, and not everybody has the same, it follows, classical symptoms anyway, and at this point she was lethargic. She had an increased need for oxygen and she was on IV fluids. So the possibility was there, and also if you don't know a reason for a deterioration, you eliminate things. It clear the picture if you can eliminate things.

Q. You suggested the possibility of Swine Flu to the Registrar?

A. I think it was me who suggested it first, but I couldn't be a hundred per cent sure.

Q. And was the Registrar --

A. Dr Reinhardt.

Q. Reinhardt, then you. I would like you to look at a document with "651" in the bottom right-hand corner. Do you have that? It is neither of those. You will be handed it. (Handed) I make it your exhibit C17, sir. There is some handwritten writing on the back, is there not?

A. Yes.

Q. Is that your writing, Nurse Bennett?

A. No.

Q. Do you know who signed that? It looks as if someone has "pp'd" it to me, but I may be wrong.

A. I don't recognise the signature.

Q. It says: "snuffly, respiratory distress, pyrexial". Hayley was definitely suffering respiratory distress. Was she snuffly to your recollection? I do not see that in any of the notes anywhere.

A. No to my recollection, no.

Q. Thank you. The effect of this, because you had taken the swab, was that Hayley had to go into isolation?

A. Yes, it is standard hospital policy.

Q. And is it standard hospital policy that if someone is in isolation they should not be transferred from one ward to another ward in the hospital, unless there is severe clinical need?

A. No, that's not true.

Q. What is the policy on that?

A. There isn't a policy about transferring patients. If there is a clinical need to transfer a patient to another department, regardless of what they may be infected with, they still go. Infected patients go to X-ray, they go to MRI scan, and other departments in the hospital if they need to go.

Q. I am just reading from the policy that the Trust has provided, and I will read the relevant bullet point: "Patients who are symptomatic must not be moved within the hospital whilst symptomatic, unless it is essential for their clinical or infection-control management". Does that sound right to you?

A. Yes, that sounds correct. That is what I've just said.

Q. I hope it was what I said to you. Now, if Hayley had need a transfer to PICU, do you consider the isolation and the policy surrounding it would have provided an impediment?

A. Absolutely not.

Q. If you would look at 521 and 522, please, Nurse Bennett -- have you had a chance to look at this recently?

A. I've seen it yesterday.

Q. Do you see it says: "Defining her cold embalmed(?)"?

A. Yes.

Q. I just want to read from the third sentence, third line: "This swab was taken because HF [Hayley Fullerton] was noticed not to be improving but no cause was identified. There were no signs of flu, but the swab was taken in order to rule out the possibility of an infection", and that is what you have told us today, is it not?

A. Yes.

Q. There was no improvement in Hayley's condition and so you considered Swine Flu and went to have a swab taken, after discussion with the Registrar, I should add?

A. That is correct.

Q. And the document I asked you to look at in relation to the Swine Flue said 11.10. Was that about the time to your recollection?

A. It was after the ward round, so probably yes, about that time.

Q. So after 11am?

A. Yes.

Q. And the response in fact did not come until after her death on the 11th, did it?

A. No.

Q. Is that a normal period for the results to come?

A. That's a normal period.

Q. Can I ask you to look at page 522? The second line you say: "Hayley Fullerton never fitted the criteria for a high dependency patient based on her Pugh's score". Do you see that, Nurse Bennett?

A. I do.

Q. Now, is that something you recollect saying?

A. I vaguely recollect speaking to somebody from our Trust some weeks or maybe months after Hayley's death. I spoke to him and this is what he's written. I didn't write it. I sort of dictated it.

Q. We understand the circumstances, but is it correct?

A. Yes, that is correct.

Q. So in determining whether should go to PICU it was the Pugh's scores that you were looking at?

A. Pugh's score are a guideline, not a holy grail. We look at the complete picture of the child. We use our clinical judgment. We did manage to work without Pugh's scores before 2008.

Q. Well, Nurse Bennett, it was the Birmingham Children's Hospital who implemented them, was it not?

A. I am unaware of that.

Q. On the same page, please, 522, four lines down: "Following an observation at 6am on the Wednesday morning, this nurse noted she was breathing harder. There was no recorded increase in the respiratory rate, but the nurse phone the SHO regardless". And again if we could look at the original Pugh's score, please, Nurse Bennett, if we look at six o'clock on the 11th, you are quite right, there is no increase in respiratory rate, but respiratory distress moves from mild to moderate. Is that right?

A. That's right.

Q. And if we look at the key next to it, we see "moderate" includes "head bobbing, sub-costal recession, inspiratory or expiratory noises in the tracheal tree", do they not?

A. Yes.

Q. So, at least according to this standard, head bobbing is sign of moderate rather than severe respiratory distress?

A. Yes.

Q. The family were concerned about Hayley's respiratory distress and their evidence is they noticed head bobbing and brought that to staff's attention. Do you wish to comment upon that from your observations of Hayley?

A. I wasn't at work on the morning of the 11th. As I said, I left work at three o'clock on the 10th. The times when I did see Hayley, she was not at any time head bobbing. When I went in to see her when the pump alarm was going off, she was asleep and although she did have mild respiratory distress, as in she was breathing fast, the majority of our cardiac patients look like that. Her condition at that time didn't alarm me. I was concerned for Hayley, but I wasn't alarmed at that time.

Q. On the 10th, when you checked her for Swine Flu because her condition wasn't improving, you were concerned but not alarmed? Is that your position?

A. I was concerned.

Q. Have you any explanation of why at 7 the following morning there was this sudden collapse?

A. I haven't got an explanation for Hayley's sudden collapse, but I can tell you, sir, that in seventeen years of working on Ward 11 I have seen babies that have sudden and unpredictable cardiac arrest. Even last year, during the ward round,

while the doctor was having a routine examination of the child, while the cot is surrounded by doctors, the child had a sudden and unexpected cardiac arrest. Sadly, that child also died. The Pugh's score for that child was stable.

Q. Mrs Stevenson's recollection is that the swab for the Swine Flu was taken between 5.30 and 6pm on the 10th. Could that be right?

A. I believe it was taken earlier than that.

Q. Are you sure about that?

A. I didn't take the test myself. I told the staff nurse who was looking after Hayley to test for Swine Flu, to take the MPA, which is a test for respiratory diseases, and to obviously write "Swine Flu" on the microbiology form. I expected that nurse to explain to mum why we were taking the test.

Q. Who was that nurse, please?

A. That was Sanjet Moore. I had absolutely no idea that Hayley's mum would be so upset about being put in isolation.

THE CORONER: Sorry, say that again?

A. I had no idea that Hayley's mum would be so upset about Hayley being put in isolation. If I'd have known how she felt, I would have got and spoken to them myself. Hayley's mother never came and spoke to me directly at all.

MR WEITZMAN: Thank you, Nurse Bennett.

THE CORONER: Yes?

Questioned by Ms Lucas:

MS LUCAS: Thank you, sir. Nurse Bennett, can I just ask you a few questions about nasal prongs. You call them "nasal prongs" and my learned friend called them "nasal plugs". Did they take up the whole of the space in the nasal cavity?

A. No, not the whole of the space. They are quite fine, slim, hollow tubes.

Q. If a child had nasal prongs and a naso-gastric tube and it was felt that they were obstructing the airway, would you expect the child's saturations to get better or worse?

A. They would get worse if there was obstruction of the airway.

Q. Can you please have a look at the Pugh's Chart you have been given, which has page 282 on the top, sir?

A. It doesn't have a number on the top.

Q. No, you have the original. That is fine. It is the Coroner who has the one with the number on the top. It says 282 on the top, sir.

THE CORONER: 282, yes.

MS LUCAS: If we could have a look at the chart, Miss Bennett, for two o'clock on the morning of 10 November, if we go down and have a look at --

A. Two o'clock in the morning?

Q. Yes, 0200, we have a respiratory rate and a heart rate recorded, and we do have a low saturation there. Can you see that? 91%.

A. 93.

Q. At two o'clock in the morning on the 10th?

A. I am sorry, I've got the 11th. Two o'clock in the morning?

Q. Yes.

A. Yes, 91, I'm sorry.

Q. And we have "nasal prongs" there, and we have "a moderate respiratory distress"?

A. Yes.

Q. And underneath we do have a note that the saturations have reduced at that time?

A. Yes.

Q. And were you here for the evidence of Dr Dawson yesterday?

A. I was, yes.

Q. Did you hear Dr Dawson say that she was asked to review Hayley at that time -- to come and see her on the ward?

A. Yes.

Q. So after we had had an increased Pugh's score at that time, the doctor was called?

A. Yes.

Q. And the next observation -- the next column along, which looks to me like it says 3am; does that look like 3am to you?

A. Yes, it does.

Q. We have an oxygen saturation of 95%?

A. Yes.

Q. And in the next column, an oxygen saturation of 98%?

A. Yes.

Q. And the next column of 97%?

A. Yes.

Q. We spoke yesterday about the observation at 10am, and it was accepted by the witnesses yesterday that that observation of 86 was an error.

A. I remember that.

Q. So, overall, if nasal prongs were stopping Hayley from getting the oxygen she needed, would you have expected the oxygen saturations to look like they did on that Pugh's Chart?

A. No, I wouldn't have expected them to look like that.

Q. Can I ask you about children who need high dependency care on the ward? I know this is a busy ward because you have children on that ward who need lots of care. But if a child needed high dependency care and you were busy, would that stop you providing high dependency care to a child?

A. No, it wouldn't.

Q. If your nurses were all busy, do you have options to get nurses from elsewhere to assist you, if necessary?

A. Yes, we do.

Q. On that ward, Ward 11, in 2009, would it be the case that you would have children who maybe at some point did not need high dependency care, that then could move in and out of a requirement for high dependency care?

A. That is correct. It is something that is dynamic. It is not fixed in stone. As patients' conditions can change, we can move them into high dependency care, or they can stay in the same place and have high dependency care by the fact they will just have one nurse looking after two babies. Sometimes we can provide just one nurse looking after a very high-dependent child, and then have a very low-dependent child as their second patient.

Q. Can I just ask you about the Swine Flu? In response to a comment made by my learned friend a little earlier, he said -- and you agreed -- that one of the reasons for considering Swine Flu was that Hayley was not improving. Is it the case that Hayley was not improving, but Hayley was actually deteriorating from your experience of Hayley, seeing her again after a weekend away?

A. She had deteriorated from when I'd seen her previously before my days off. As I said, she was in a high chair eating her breakfast and playing. At that time she had nasal prongs with a small amount of oxygen. So when I came back to work on the Monday, she was a child who was in head box oxygen, on intravenous fluids.

Q. And just one last thing. We heard grandma's statement read out by the Coroner at the beginning of the week, and grandma has mentioned that she came out to the nurses' station to speak to you on the morning of 11 November after Hayley had died and she felt that -- I will summarise it -- that you did not offer her sufficient words of sympathy. Were you on duty on the morning of 11 November?

A. No, I was not.

MR WEITZMAN: Sorry, can I interrupt for a moment?

THE CORONER: Yes.

MR WEITZMAN: The family obviously have a number of complaints about what happened after Hayley's death. I hope, appropriately, I have avoided dealing with that because you have to consider the causes of the death.

THE CORONER: Yes.

MR WEITZMAN: And I think the same should apply. I do not want to get into allegations about what did or did not happen after the death.

MS LUCAS: Sir, I raised this on the first day.

THE CORONER: I think when we read out this statement I did suggest that it was not a very good idea.

MR WEITZMAN: Sir, I am corrected. You are quite right. I withdraw my objection.

THE CORONER: Yes.

MS LUCAS: Thank you. I have no further questions.

THE CORONER: I think all she is saying is that the grandmother said she spoke to her, but she must be wrong because she was not there. That is all.

MS LUCAS: Yes, sir.

THE CORONER: That is all you are saying, is it not?

A. Yes.

THE CORONER: I just want to make sure that I understood the last point but one that you made. You were asked if Hayley was deteriorating, and I think what you said was that when you went off work before the weekend she only required a limited amount of oxygen. When you came back on Monday the 9th she was in a head box and therefore she had obviously deteriorated, and that is why you were concerned for her?

A. Yes.

THE CORONER: Is that what you said?

A. Yes.

THE CORONER: Okay. Take a seat if you would. Louisa Snook, please. Take the oath or affirm, which ever you prefer.

Louisa Snook (Sworn)

Questioned by the Coroner:

THE CORONER: Tell me, please, your full name and your qualifications?

A. Louisa Snook, paediatric physiotherapist.

Q. Now, I am going to suggest you should read through your statement and then I will ask you questions. Okay?

A. This is my statement relating to the care and treatment given to Hayley Fullerton during her admission to Birmingham Children's Hospital on 12 October 2009 to 11 November 2009.

I have been employed by Birmingham Children's Hospital NHS Foundation Trust since January 2009 and am currently employed as a senior physiotherapist. I have held this position since January 2009. I am a rotational physiotherapist and at the time of Hayley's admission I was working as a respiratory physiotherapist on PICU and the cardiac wards.

I remember the care I provided to Hayley Fullerton and therefore my statement is based on both recollection and the medical notes.

During Hayley's admission my involvement was as Hayley's physiotherapist during her stay on PICU after her surgery and then on Ward 11 and Ward 12. I treated Hayley in the morning and the afternoon of 10 November 2009.

On my arrival to work at 8.30am on 10 November the physiotherapist who was on call overnight reported that she was contacted about Hayley whilst on her way to work at 7.30am. The nursing staff had requested for Hayley to be reviewed by the physiotherapist that morning. I therefore went straight to the ward to review Hayley. The nursing staff reported that Hayley had an increased oxygen requirement and new chest X-ray changes. They reported that she had been coughing and that the cough was non-productive. Hayley's mother was present, and Hayley's mother reported that Hayley's work at breathing had increased over the last two days.

On examination Hayley was lying in a cot on her left side. She was receiving 40% oxygen via a head box. Her oxygen saturations were 98%, which is normal. Her temperature was 37.5 degrees centigrade, which is slightly raised. She had subcostal recession, indicating an increased work of breathing.

Hayley's new chest X-ray changes showed evidence of left lower lobe consolidation and right upper lobe consolidation. On listening to her chest with a stethoscope, Hayley had decreased breath sounds in the left lower area of her lungs. There were normal breath sounds throughout the right. I could not hear any added sounds to indicate secretion retention, but listening was difficult because Hayley was crying.

In view of the chest X-ray findings and increased oxygen requirement I decided to perform percussion as my physiotherapy treatment. This is a manual physiotherapy technique that is used to improve the clearance of secretions from the airways. I performed this with Hayley in alternate side line to encourage secretion clearance from both sides of the lungs. This technique had previously worked well with Hayley. I then performed a gentle pressure to the trachea to stimulate a cough, and I performed suction with a catheter down her nose. Hayley elicited a strong cough with this and cleared a moderate amount of sticky secretions.

Hayley settled after treatment. On listening to her chest, the left base remained quieter than the right, but there were no added sounds. Her oxygen saturations were 98% in 40% oxygen.

No further physiotherapy treatment was indicated at this time as there was no evidence of secretions. I had planned to review Hayley again in the afternoon. I documented my findings in the medical notes and the physiotherapy notes.

I suggested in my plan that continuous positive airway pressure or CPAP could be a treatment option and planned to discuss this with a senior colleague. Intermittent CPAP is a physiotherapy treatment modality whereby a patient receives positive pressure to their lungs which can help to reduce work at breathing and potentially improve the air entry to areas of the airways that are not well inflated.

At 1600 hours I reviewed the patient with Advanced Physiotherapist, Laura Jordan. Hayley had just had her sternal room(?) dressing changed and had been given codeine for this.

On assessment, Hayley was requiring 35% oxygen and her saturations were 97%. Her oxygen requirement had reduced slightly since the morning, indicating some improvement in her respiratory status.

On listening to Hayley's chest there were audible breath sounds throughout both lungs, with improved breath sounds in the left lower region compared with the findings in the morning. There were no added sounds. Her work at breathing had not changed. I performed percussion again in view of Hayley's chest X-ray changes and oxygen requirement. Hayley had

several strong, productive coughs during the treatment. Suction was not indicated, as Hayley could clear her own secretions through independent coughing. After treatment there were no added sounds when listening to her chest. Hayley was more settled than prior to the treatment. CPAP was therefore not indicated as Hayley's chest sounded clearer. The air entry to the lower part of her lungs had improved and she was requiring less oxygen. We planned to review Hayley the following day.

Prior to 15 October 2009 I had not been involved in the care of Hayley Fullerton and my last involvement with Hayley was on 10 November 2009."

THE CORONER: Okay. So let us go back over some of that in a little more detail. You were working in as a respiratory physiotherapist on the Intensive Care Unit in cardiac wards?

A. At the time, yes.

Q. So how specialised is a respiratory physiotherapist?

A. On a daily basis we only treat patients with respiratory problems in intensive care who are ventilated or who are on non-ventilation and who are self-ventilating, and then any patient that would require ongoing physiotherapy -- a cardiac patient that would involve ongoing physiotherapy on a ward, we would go to that ward to provide that also.

Q. And is it greatly different dealing with babies than adults?

A. Yes.

Q. Yes? And how long have you been doing this?

A. At the time I'd been working with children since January 2009.

Q. So quite recent?

A. Yes.

Q. And is that why you were taking advice or asking for involvement from someone more senior?

A. Yes. Well, when I saw Hayley in the morning she had increased oxygen requirement from previously and she had changes on her chest X-ray. With percussion pressure and suction I cleared some secretions, but not a great deal, and, clinically, she was still in 40% oxygen afterwards and her work at breathing was still high. I therefore wanted to get an

opinion from somebody more senior to ensure that there as nothing else that I should have done that could have benefited Hayley any further.

Q. And you had actually worked with Hayley on the paediatric Intensive Care Unit?

A. Yes.

Q. Can you give me an indication of how often you would have worked with Hayley?

A. On a daily basis.

Q. So is what all the babies have after this type of surgery?

A. No. If I recall, Hayley took some time to come off the ventilator and had a chest X-ray change for a while. She had, I think it was, a right upper lobe problem. So we were performing physiotherapy to see if physiotherapy could help to improve that.

Q. We heard she actually had two failed extubations and went on to CPAP after the third?

A. Yes.

Q. Is that fairly common for babies to have failed extubations?

A. I'm afraid I don't feel I can answer that.

Q. And when talk about the "percussion method" -- I think I know what you mean, but just explain it?

A. Using a cupped hand to provide a manual technique to a child's chest wall in order to remove secretions that are potentially stuck around the small airways or causing blockages to prevent areas of the lung from being well-inflated, moving them into the larger airways so that then when the child coughs or suction is performed, they can be cleared.

Q. And we heard from previous witnesses that it had been suggested the night before that there should be a physio and the consultant thought he had made it clear -- although he accepts that he did not make it clear in writing and he did not do it himself -- that he wanted it straightaway. What are the arrangements for out-of-hours physiotherapy?

A. A physiotherapist is in the hospital until 10pm in the evening and can be contacted by anybody via a bleep. After that time there is a physiotherapist on call overnight at home, contactable via a mobile. They need to be 30 minutes away from the hospital, and then a doctor or senior nurse calls them.

Q. So somebody ought to be able to arrange it earlier?

A. Yes, we are available -- it's a 24 hours a day service.

Q. So you get to work and you see Hayley. Was Hayley your first patient that morning and was there a reason why she was the first patient that morning?

A. Because the on-call therapist was called out to her at 7.30, was already on her way to work. When I arrived to work at the same time as the on-call therapist, she told me about the call-out. Because I knew Hayley from previously, we felt it was appropriate for me to go and see her because if you have a picture of a child from seeing them previously, then it's helpful when you are assessing them.

Q. Okay. And on that first session at 8.30, although you managed to get things loose, you had to actually suction it out?

A. Hayley didn't cough at all during treatment and I was concerned that with her chest X-ray changes she may have some secretions on her lungs that she wasn't clearing and she didn't cough. So I performed a tracheal pressure to clear any secretions that we had loosened during our pressure. When I saw her in the afternoon she coughed well.

Q. So does that show an improvement, the fact that she is coughing well, or is that just coincidental that she happened to be coughing well?

A. I think it would perhaps indicate that she is maybe a little more alert perhaps.

Q. And roughly how long would you have worked on her at the 8.30 -- the morning session?

A. I would say approximately 30 minutes, including assessment, talking to the nurses, discussing it with mum, seeing Hayley.

Q. And is that about the norm?

A. Yes.

Q. And was that long enough?

A. Yes.

Q. You went back at four o'clock, 1600 hours, and how was she then?

A. I have not documented it in my statement, because it wasn't in my notes, but I believe that she was more settled and that she had been asleep -- is my memory of her.

Q. Now, just tell us very briefly what CPAP consists of. I know it is putting air into the lungs under pressure, but how do you actually arrange it?

A. As a physiotherapist we sometimes use CPAP as an adjunct to other physiotherapy treatment modality. So in a child that has an increased work at breathing we may use it to support that child during the physiotherapy treatment. It's a tight mask which fits around the child's face. It's attached to the oxygen and it delivers a constant stream of pressure to help to support the child's breathing during the physiotherapy treatment. It wouldn't be something that would support the child long-term, it would just be a very short thing that we would use during our treatment sessions.

Q. I think in Paula's statement she said that when Hayley had that she hated it and kept trying to pull it off.

A. Yes.

Q. Is that a fairly common reaction for a baby?

A. Yes, it's not nice to have something on your face.

Q. When the air is forced in, does the baby feel that? I suppose it must feel it.

A. Yes.

Q. Is it unpleasant for the baby, or is it merely having the mask stuck there?

A. The mask is probably the most unpleasant thing, but when the air is in the lungs, because it is supporting the child, that shouldn't cause distress, but the mask is uncomfortable -- it could potentially be uncomfortable, not for everybody.

Q. And if you had thought that Hayley needed it -- if you had thought -- would you have had to have her transferred to the Intensive Care Unit to do it, or could you have done it on the ward, or would you have got someone else into the ward to do it?

A. This is something that could have been done on the ward during our physiotherapy treatments. However, it is normal practice that we would discuss this with the doctors because if the child is in need of CPAP and has moderate severe respiratory distress and is very unwell, there is a possibility that they may require that CPAP longer term after our physiotherapy treatment. So, commonly, we would discuss that with the doctor first. But I decided, after discussing with Laura Jordan, that it was not indicated. So we didn't.

Q. Discussion what?

A. Laura Jordan, my senior physiotherapist.

Q. And then when you came back at four o'clock in the afternoon and she was able to cough and get rid of her own secretions after your physiotherapy, did you consider again whether CPAP should be used?

A. Yes. That was one of the reasons I asked Laura to come with me, to see whether she thought it would be beneficial. Because Hayley's oxygen requirement had reduced slightly at that point, and she was more settled, we felt that it wasn't indicated. Normally we use CPAP for children who are in moderate to severe respiratory distress or have a higher oxygen requirement -- so perhaps 60% oxygen.

Q. And how long would you have spent in the afternoon session?

A. About the same as the morning.

Q. Do you remember whether Paula was there, or the grandparents?

A. I do believe that Paula was there both times.

Q. Sorry?

A. I do believe that Paula was there on both occasions, if I remember rightly.

Q. Anyone else?

A. I cannot remember.

Q. Can you remember whether she was in isolation at that time?

A. Yes, she was.

Q. Did that make any difference to the care that you were giving?

A. No.

Q. Before you started at the Children's Hospital in, you said, January 2009 -- so ten months earlier -- had you worked with babies before that?

A. Yes, as a junior physiotherapist I worked at Birmingham Children's Hospital on a rotation for four months. I believe that was 2007.

Q. So how many years' experience had you had at that time of working with babies?

A. When are you asking? In 2007?

Q. No, sorry, Hayley died on 11 November 2009.

A. So eleven months during that time, and then four months prior to that.

Q. Right. Okay. The advocates will ask you questions, but talk to me, if you would. Okay? Mr Weitzman?

Questioned by Mr Weitzman:

MR WEITZMAN: Can Miss Snook have pages 677F and G?

A. In here?

Q. No, I am sorry, they will be given to you. (Pause) Sir, do you have the bundle which we originally prepared?

THE CORONER: No, you took it away.

MR WEITZMAN: Can I pass that to the Coroner, and that to the Physio? (Handed)

THE CORONER: Thank you very much. This is exhibit 28.

MR WEITZMAN: Miss Snook, are these your notes?

A. Yes.

Q. Thank you very much. You say: "On-call physio contacted ATN to see Hayley due to new chest X-ray changes and increased oxygen requirement".

A. Yes.

Q. And then you say: "Mum at bedside. Very anxious and upset that Hayley has been struggling with breathing the last two days."

A. Yes.

Q. And the last two days would obviously be the two previous days, not including this one. Is that right?

A. Yes, I believe that's what mum told me when I arrived.

Q. And she was very concerned about Hayley's lungs and her ability to breathe?

A. Yes.

Q. And I think you had seen her on PICU and she had always been reasonably composed?

A. Mum?

Q. Yes.

A. Yes.

Q. She was much more distressed at this time?

A. Yes.

Q. And she felt she had been raising this with the doctors and they were not concerned?

A. That was what she reported to me and that was what I wrote in the medical notes.

Q. You have recorded what the doctors say, and then I think is that your examination under "Ann"?

A. My analysis is under "A". Where are you, I am sorry?

Q. No, I am very grateful. Just above the last entry: "Did cough on suction".

A. Yes, and settled after treatment.

Q. So what you are in effect doing, as I understand it, is loosening the secretions in the lungs so that they can be removed to improve the child's ability to breathe? Is that right?

A. Yes.

Q. And either you loosen them -- well, you loosen them by the tapping and then if the child can't cough them out, you suction them?

A. Yes.

Q. And you draw, as I understood it, but you will correct me if I am wrong, a distinction between CPAP for physiotherapy purposes and CPAP for more general/PICU purposes?

A. Yes.

Q. Is that correct?

A. Yes.

Q. And CPAP for physiotherapy purposes is to have some air in to open up part of the bronchial tree to allow a secretion which you cannot otherwise get to, to be removed. Is that fair?

A. Yes. Yes, but we would also use it -- we would not just use it in that instance alone. We would use it if that was the case and if the child was in respiratory distress and if they had an oxygen requirement. If there was a child that simply had secretion retention, we would not routinely use CPAP.

Q. But it is a short blast, and the physios are doing it?

A. Yes.

Q. How long would you commonly use CPAP for a physiotherapy purpose?

A. Approximately twenty minutes.

Q. Whereas if you have ongoing support, CPAP in PICU, that is quite distinct?

A. Yes, yes.

Q. So when you are talking about CPAP in your notes, self-evidently it is for a physiotherapy purpose?

A. Yes.

Q. And because at this point Hayley was in a head box receiving significant oxygen, her saturations were high, and you judged her respiratory distress to be subcostal, is that right?

A. Yes.

Q. Which is moderate, is that right?

A. I felt it was mild.

Q. When you saw her in the afternoon, you felt that there was some improvement -- well, you said she was able to cough because she was more alert, were your exact words.

A. I cannot remember that she was able to cough in the afternoon.

Q. Okay, and I think your notes record that mum felt Hayley was better?

A. Yes.

Q. But that was a relative term --

A. Yes.

Q. -- better to how she had been that morning.

A. Better than she had been when I saw her in the morning.

Q. Which was not very well?

A. Yes.

Q. And mum still remained anxious and concerned about Hayley's condition?

A. Yes.

Q. And her concerns from the morning about being listened to had not been alleviated, or is that something you do not know about?

A. I have not documented anything about that in my notes, I don't think, and I cannot recall that.

Q. She still had increased work with breathing, we see from your notes.

A. Yes.

Q. What do you mean by that?

A. She was in some respiratory distress.

Q. And then you identify what you did, and you said you would review "mane" -- tomorrow.

A. Tomorrow.

Q. So I understand it, the purpose of the physiotherapy is to clear what is in the lungs, is that right?

A. If there are secretions to clear.

Q. If there are secretions to clear.

A. Yes.

Q. It does not stop the accumulation of the secretions or any ongoing problems?

A. No.

Q. Thank you.

THE CORONER: Miss Lucas?

MS LUCAS: I have no questions.

THE CORONER: Thank you very much. Take a seat, if you would. Laura Jordan, please.

Laura Jordan (Sworn)

Questioned by the Coroner:

THE CORONER: Your full name, please?

A. Laura Jordan.

Q. Would you like to read your statement for us and then we will go back over it, as we heard from the last witness.

A. This is my first statement relating to the care and treatment given to Hayley Fullerton during her admission to Birmingham Children's Hospital from 12 October 2009 to 11 November 2009.

I have been employed by Birmingham Children's Hospital since August 2005. I was the Advanced Physiotherapist on PICU from October 2009 until November 2011. I am currently employed as a Bank Physiotherapist. I have held this position since 7 November 2011. My duties currently provide providing out-of-hours physio-therapy to children.

I remember only some of the care I provided to Hayley Fullerton and therefore my statement is based on both recollection and the physiotherapy notes written by Louisa Snook, Senior Physiotherapist.

During Hayley Fullerton's admission my involvement was as follows. I was asked by Louisa Snook, Senior Physiotherapist, to review Hayley with her on 10 November 2009. Louisa reported she had seen Hayley in the morning and wanted my opinion on further physiotherapy treatment. Louisa reviewed Hayley at her bed space on Ward 11 with her mother and me present. It was reported by Hayley's mum she was better that afternoon and less productive -- she had less secretions. The humidified oxygen requirement had gone down from 40% to 35%.

Physiotherapy consisting of position changes, percussions, atrial pressure, and suction had been carried out in the morning. This was noted to have been effective, and there was a clinical improvement in Hayley's respiratory status. As there was still an oxygen requirement and reported chest X-ray changes to the right upper lobe and left lower lobe, physiotherapy was carried out again.

Following the position changes on percussions, auscultation of the child's chest air entry was reported to be improved on the left side, with no audible secretions. As Hayley had coughed during treatment, suction atrial pressure was not indicated.

Looking at Hayley's current clinical picture assessment, prior and during physiotherapy, it was decided by me and Louisa that no further physiotherapy was needed at that time. Louisa and I did discuss whether intermittent continuous positive airway pressure (CPAP), a physiotherapy treatment modality whereby the patient receives positive pressure to the lungs which can help reduce work of breathing and potentially improve the air entry to areas of the airways that are not well inflated, was indicated but, as the oxygen requirement had improved, Hayley's work of breathing was reported to be better than the morning and the current physiotherapy treatment was being effective. CPAP was not indicated at that time. After asking if Louisa was happy to write up the notes, which she reported she was, I left the ward to continue my role on PICU.

Prior to 10 November 2009 I do not recall any other involvement in the care of Hayley Fullerton. My last involvement with Hayley Fullerton was on 10 November 2009.

THE CORONER: When did you first qualify?

A. 2001.

Q. And how much of that period have you worked with children?

A. I did about two years prior to coming to the Children's Hospital as a Junior and then a Senior Physiotherapist, and then I've worked with children from 2005. So I think it's approximately about six years.

Q. You heard the last witness say that, although the on-call physiotherapist had been called out, although she got to work at the same time as the on-call physiotherapist came, between them they decided it made more sense that Louisa should do the physio-therapy because she had prior dealings.

A. Yes.

Q. Does that make sense from a physiotherapy point of view?

A. Yes, it does.

Q. Is continuity very important or just something that is slightly better?

A. I think while we can achieve it, continuity is something that we'd strive to achieve, but there are instances, obviously overnight, where a physiotherapist could review a patient and therefore they would assess that child based on what they would see in front of them, response from the family, the nursing staff and the medical team. So at any one point, although it's good to have continuity, we would assess a child in the same way.

Q. And how unusual is it for somebody in Louisa's position to come to you and say, "Can you come back in the afternoon for my second session and let me have your views"? Is that common or uncommon?

A. It's quite common. It's something we always ensure that physiotherapists, if they've got a concern or a problem, they would actually ask us for advice or help and therefore we do that on a routine basis.

Q. It does not mean that Hayley is necessarily particularly ill or Louisa was feeling particularly inexperienced, it was just a fairly thing to do?

A. No, I think Hayley's mum had reported concerns about Hayley and Louisa was very responsive to listening to those concerns, and I think she did have physiotherapy treatment and she wanted to ensure that she provided the best possible care for Hayley, and in doing that, to be sure that there was nothing that she was missing, she came to me to say, "This is what I've done, this is what I think", just to check she was doing everything right. I think that's because she wanted to do the best care for Hayley as possible.

Q. And when you are called in on something like that, to see a baby that you have not dealt with personally yourself before, how much background do you get?

A. I listened to what Louisa said, I listened to what her concerns are. I was aware that she was on the unit before. I can't recall whether I saw her or I didn't. I might have done a double session with Louisa in the past, but I can't recall that. I would look at the notes and just listen to the child and make my own assessment as well at that time with Louisa.

Q. And how long do you think that afternoon session lasted?

A. About thirty minutes.

Q. And is about thirty minutes about standard for a child like this?

A. Yes. I think before that time as well Louisa would have discussed a little bit about it beforehand. So actually with the child was about thirty minutes, but in order for her to say, "Actually can you come and see this child with me?" -- we probably had a conversation beforehand, but I can't remember.

Q. And a physiotherapist in your position, if you see a baby and you are concerned and think they need escalation of treatment and need to go on to the Intensive Care Unit, for instance, can you do anything about it, or do you merely have to make a written note or what?

A. No. If I felt that, looking at Hayley, she needed PICU care, then I would be able to escalate that care and inform people on ITU, and I have done that in the past with children.

Q. That -- I am not being rude -- but that is the theory of it.

A. Yes.

Q. What I want to know is: are you capable of actually saying?

A. Yes. In the past I've seen a child on a ward and I've noted that they've been, I've had concerns, and I myself in the past have gone and spoken to a PICU consultant and said, "There is this child on this ward. I am concerned about them. They might not need PICU yet, but please come and review them", and that's the policy that we have, that we can openly go, and if I felt things weren't being done appropriately, or I felt that there was a need, then I would do that.

Q. You would, and you have in the past?

A. I have done that in the past.

Q. And how do intensivists look at physiotherapists? Do they see you as part of the team, or do they see you as a --

A. We're part of the team. We're all there to provide the best care we can for a child.

Questioned by Mr Weitzman:

MR WEITZMAN: You have heard Miss Snook give evidence about Mr Stevenson's presentation both in the morning and the afternoon. You may only make comment on the afternoon when you were there. You do not disagree with what Miss Snook said, do you?

A. No, I don't disagree with what she said.

Q. Just coming back to the last point, you say on occasions you have raised issues about children with the PICU team.

Can you remember when that was?

A. Probably 2011 or 10. I can't remember. It was after the event.

Q. After the event?

A. Yes.

Q. Thank you.

THE CORONER: Miss Lucas?

MS LUCAS: Thank you, sir.

Questioned by Ms Lucas:

MS LUCAS: Miss Jordan, you have just said to my learned friend that you have raised concerns with PICU since. Did you feel that in 2009 you would have any concerns in raising issues with the paediatric intensive care team?

A. No.

Q. Thank you.

THE CORONER: Thank you very much indeed. Take a seat if you would. That takes us to 11.30. We will start again at 11.45.

(Short break)

THE CORONER: It is now 11.44, so the court is in session again. We will start, please, with Deborah Jones.

Deborah Jones (Sworn)

Questioned by the Coroner:

THE CORONER: Tell us, please, your full name?

A. Deborah Jones.

Q. And tell me your qualification?

A. RGL, RCN(?).

Q. What I want you to do is read through your statement, if you would, and then we will ask you questions. You have a copy?

A. Yes, thank you.

Q. Good.

A. This is my first statement relating to the care and treatment given to Hayley Fullerton during her admission to Birmingham Children's Hospital on 12 October 2009.

I have been employed by Birmingham Children's Hospital NHS Foundation Trust since 2000 and I'm currently employed as a clinical nurse specialist for plastic surgery, laser and tissue viability. I've held this position since March 2004. My duties involve highly specialised nursing skills, knowledge and expertise in the care and management of children with plastic surgery, laser and tissue viability within hospital, ensuring clinical practices, evidence based for these services and to follow Trust guidelines policies for health and safety and clinical equivalence.

I am responsible for the management of the tissue viability team. I have been asked to review the team's involvement with Hayley's care. During Hayley's admission the team's only involvement was telephone advice for a sore bottom on 13

October 2009. The telephone call was made to Tissue Viability Nurse Lisa Abbott, specialist nurse for plastic surgery, laser and tissue viability regarding a sore bottom. A Sudocrem was being applied to Hayley's bottom and PICU were concerned that this was not in accordance with Trust guidelines.

Normal practice within the team would involve the tissue viability nurse taking a brief history of what was wrong with the patient and to give advice on good skin care to nappy areas to the PICU staff. This would include the washing the skin in a PH balanced soap substitute, frequent change of gel core nappy as soon as possible after soiling, applying a barrier sparingly, exposing the skin, where possible, to let the skin dry; use of a bigger nappy, if necessary, to allow airflow on skin. All treatments must be prescribed on the child's treatment sheet.

The Trust guidelines on sore bottoms were explained to Hayley's family by the PICU staff. However, Hayley's family preferred to use Sudocrem. As long as this is clearly written in the child's notes, this is what the family preferred, this could be used. This would then be dispensed from pharmacy and would be used on the child's skin during the child's stay.

It is stated in Hayley's medical notes that no visit from the Tissue Viability Team as family requested Sudocrem to be used on the child's skin. On reviewing the medical notes, I understand this to mean that as the family wanted to use Sudocrem a visit from the team was not required.

The team did not receive a referral in relation to Hayley's wound. The following entries were made in relation to Hayley's sore bottom: 24th of the 10th, nappy area still sore; bottom being exposed to air by nursing staff; parents request that Sudocrem still be used. 29th, PICU nurses were aware that Sudocrem not hospital policy. 30th, tissue viability contacted at 1930 hours several times but not available. Doctor contacted who assessed skin. 2nd of the 11th, a message was left on 8117. This is my extension number and the message from the nursing staff request review of Hayley's bottom. Had a message from the nursing staff been received, the team would have made arrangements to assess Hayley. There is no record of a message from the nursing staff, or any record of any patient contact from the team with Hayley. The usual hours of work are between 8 and 4 and 5 Monday to Friday and prior to and following the telephone call on 13 October, the team was not involved in the care of Hayley Fullerton.

THE CORONER: It may be that I do not understand it very clearly, but just look at that last page: "(iv) 2.11.09 message left on 8117. this is my extension number and the message from the nursing staff request review of Hayley's bottom. 12. Had a message from the nursing staff been received, the team would have made an arrangement to assess Hayley. There is no record of a message --"

A. None at all, sir. None at all. On my answering there was no message at all.

Q. About what?

A. Hayley's bottom.

Q. I will go through it again. It says: "2 November '09 the message was from the nursing staff and request a review of Hayley's --"

A. That was written in the medical notes. When I reviewed the medical notes, that was what the nursing staff had written in the notes. They had contacted 8117, which was my extension number.

Q. Right. So the nursing notes say that they contacted you, but you did not actually receive it?

A. Not at all, sir.

Q. Right, and it was about Hayley's bottom?

A. That's what they wrote in the notes, sir, yes.

Q. Right. Now, as I understand it, there were two problems. One was the nappy rash -- the sore bottom -- and one was the surgical wound up here?

A. That's right, sir.

Q. Yes?

A. That's right, sir.

Q. And the family's perception -- whether it was right or wrong -- the family's perception was that they were being told: "Because you are insisting on using Sudocrem on the bottom, we are not going to come and look at the wound up here".

A. Not at all, sir. Not at all, sir. If the family want to use Sudocrem, that's fine. It's their child and it's their wishes. That's fine. It can be used in accordance with nappy care with the Trust policy. But we would never ever refuse not to see a patient's wound for cardiac.

Q. Okay. So if families want to use something else --

A. That's absolutely --

Q. -- they are perfectly entitled to do it?

A. Absolutely, sir. Absolutely.

Q. And there is no way that you would refuse to come and see a totally different wound merely because they are using --

A. Not at all, sir. We have got a very good relationship with the cardiac and PICU nursing staff and also the medical team, and we would have gone any time to see that child -- anywhere.

Q. Have you been able to go through the notes relating to the wound -- the chest wound?

A. I've read the notes, sir, yes. But there's been no involvement from my team at all.

Q. I know there has been no involvement. We heard from the pathologist that he felt it played no part at all in Hayley's death. But, reading the notes, does it surprise you that you were not asked to go and look at the chest wound?

A. Yes, it probably would be, yes, sir.

Q. Yes, it does surprise you?

A. Yes, yes.

Q. So what would you have expected to happen?

A. That me and my team would have been contacted via a bleep system, sir, and we would have reviewed the child's sternum wound on the ward.

Q. So what would you have done?

A. What would I have done?

Q. Yes.

A. Obviously taken a full history of what was going on with the child and assessed the child's skin properly, and done a capillary refill to see if there was any blood supply to the child's chest, taken a photograph and measured it, and put an aqua dressing on

Q. Okay. We know there was a dressing on. Are you saying it was the wrong dressing?

A. I don't know, sir, because I never saw the child's wound.

Q. Say that again?

A. I never saw the child's wound.

Q. I know you never saw Hayley's wound, but you looked at the notes. Are you able to tell from the notes?

A. No, sir, I'm not.

Q. And we have heard that the family felt that the dressing was not being changed often enough, but the doctors said that the dressing is usually intended to be on for two days, unless it becomes soiled and needs to be changed, and it is best to leave it unless it needs changing.

A. That is absolutely right.

Q. Does that make sense or no?

A. Absolutely.

Q. Just explain to us why it is better not to keep changing a dressing?

A. The more often you take the dressing down, the more it will introduce infection. The wound also cools down and it delays wound healing.

Q. And how does one tell whether the dressing is sufficiently soiled or stained to require changing?

A. If there was any etched(?) out, which is any wound fluid on the dressing. But most of the dressings today will absorb quite a lot of fluid. So that's why they're left on for two days.

Q. Most of the dressings can take quite a lot of fluid, I think you are saying?

A. They can, sir, which is why -- they are highly designed to take a lot of etched(?) out of the wound, which is bodily fluid, and they prevent infection from getting in because they can be left on.

Q. And are they ever left on for longer than two days?

A. They can be, sir, yes, they can. The dressings that we can use can stay on for seven days in certain circumstances.

Q. And is there any policy in the hospital which says that nursing staff should call you in? You said that, looking at the notes, you were surprised that you were not called in.

A. There is a Trust policy or guidance if there are concerns about the wound, sir.

Q. And how are nurses supposed to decide whether to call you in or not?

A. If they're doing a dressing, every 48 hours, and there's a deterioration in the wound size, they can contact me or my team to come and review the wound either on my answering machine or on a bleep.

Q. Is that their clinical judgment?

A. Absolutely, sir, yes.

Q. Yes?

A. Absolutely.

Q. We have heard that twice Hayley's wound was opened by the surgical team. Would you expect the surgical team to call you in?

A. I would expect the surgical team -- it's a cardiac wound, sir, the sternum route through the sternum. So if there was a problem with the sternum wound, it's very close to the heart. So I would expect the medical team to deal with that, unless there was a problem and they wanted out advice.

Q. So you would expect the surgical team to be able to cope with that?

A. Yes.

Q. Is that what you are saying?

A. Yes, sir, but we would offer advice and support them if they needed us.

Q. And you said something about it being close to the heart. Why does that make a difference so far as you are concerned?

A. Because with previous experience the surgical incision is through the sternum, which is very close to the heart, sir, and that's why we'd always rely on a specialist medical team for wounds.

Q. Let me summarise it, and then tell me if I have not got it right. We are talking about two completely different things: one, the nappy rash, and one, the surgical wound. As far as the nappy rash is concerned, if the family want to use Sudocrem, that is fine?

A. Absolutely.

Q. The hospital do not sulk about it. If they want to use it, they can use it?

A. Not at all, sir.

Q. Yes?

A. That is absolutely fine.

Q. As a matter of fact, nobody ever asked you to review the chest wound?

A. No, sir.

Q. If they had asked you to review the chest wound, there was no way in which you would have refused to do so for any reason?

A. None at all, sir.

Q. Is that right?

A. Absolutely.

Q. Because the babies on this ward have had heart surgery, you would expect the surgical medical team to deal with the wound, but you would support them if they asked?

A. Absolutely, sir.

Q. Is that right?

A. Absolutely.

Q. But, according to the records, nobody ever asked. They were content to deal with it themselves?

A. Absolutely.

Q. Yes?

A. That's from what I can read from the medical notes, sir.

Q. And to leave dressings on for two days is normal nowadays?

A. It is, sir.

Q. The dressings are designed to be able to take a certain amount of fluid and it is now thought better not to keep changing dressings?

A. Absolutely.

Q. That presumably has changed from twenty years ago, has it?

A. It has a little bit, sir, yes.

Q. And will no doubt change again in another ten years.

A. It probably will.

Q. Right. But at the moment the idea is to leave them on?

A. Absolutely.

Q. And let the wound be so long as you can?

A. Absolutely.

Q. Okay. Yes, Mr Weitzman?

Questioned by Mr Weitzman:

MR WEITZMAN: When the wound is being treated by the cardiac surgeons it is not an either/or, is it? They can treat it and you can treat it at the same time?

A. Absolutely.

Q. And that kind of team working is something we have had described to us.

A. Pardon, sorry?

Q. That kind of team collaborative working is something we have had described to us.

A. Yes. We've got a good working relationship with the cardiac and PICU team.

Q. Hayley's wound had to be aspirated by cardiac surgeons both on 5 November -- and you have told us you have seen these notes -- and then again on the 10th, and the description of the 10th is: "infected lower end of wound. Purple with crotchet skin with a small opening at the bottom. Fectient(?)" -- that is the kind of wound you would have been involved in, is it not?

A. It is, sir, yes.

Q. And it surprises you, given there were concerns about this wound, that you were not contacted?

A. We weren't contacted in that instance, sir, no.

Q. And it surprises you that you were not because you would have expected to have an input into the healing of that wound?

A. It would, but I was never involved with the wound at any point, or my team were involved with Hayley's wound throughout her stay.

Q. I accept that, but the question I am asking you, Mrs Jones, is this. Given the nature of the wound, which you are familiar with because you have read the notes, the fact that you were not contacted is surprising because you would have expected to have been involved?

A. If there was lots of puss in the wound, sir, I wouldn't have been involved, because that would have been a cardiac medical team involvement to sort that out, because I don't know how far that would go down to the heart.

Q. But you have just told us that you work together.

A. We do work together, but if, from what the Coroner was saying, you have to open the wound up, then I wouldn't have been involved in that, sir, because that may be a surgical procedure.

Q. I accept that that is a surgical procedure, but there are other elements to wound healing, are there not?

A. There's lots of elements to wound healing.

Q. For example, narcotic skin -- that kind of aspect of it is your involvement, is it not?

A. It's part of, but it's not my sole responsibility.

Q. No, I accept that, but what I am coming back to is the same question. Given what you know about this wound, it is surprising to you that you were not at any point called in to have a look at it?

A. It was, but, as I say, I can't comment on anything because I've never been involved, sir.

Q. Can I pass you a document and the Coroner a document, please?

THE CORONER: This is C29.

MR WEITZMAN: C29. This is a note made on the PICU ward on 23 October 2009 by Lisa Poole. Yes?

A. Yes.

Q. And if we look down it to the bottom part -- nine lines from the bottom: "Bottom very sore. Mum and nan still insist on Sudocrem being used. Spoke with Lisa, tissue viability nurse, who said it wasn't worth her visiting if family were unlikely to change minds. Agree with mum and Lisa if still no better by Monday to rethink the hospital's policy?" Is there a Lisa in the Tissue Viability -- or was there a Lisa in the Tissue Viability Team in 2009?

A. There was. She was my nurse, but she's on maternity leave at the moment.

Q. You do not mention this note in your statement.

A. Because I'm having to just read the notes because I've never had any role in it myself with the child.

Q. I accept that, but in your statement you summarised the notes under the paragraphs of Roman numerals, had you not?

A. Right.

Q. Yes?

A. Yes.

Q. And you do not mention this note?

A. Because it was just written in the notes and I've not had any dealings with Lisa with this at all -- because she has her own case load and so do I.

Q. Mrs Jones, these are Hayley's notes from PICU. Yes?

A. Yes.

Q. And, as I understand it, you have just told the Coroner that (iv) is an extract from Hayley's notes from PICU?

A. That's right, sir.

Q. Right. So you have summarised in the paragraphs at the top of the second page of your statement (i) to (iv) the entries in Hayley's notes which refer to tissue viability, have you not -- when you went through the notes, Mrs Jones?

A. When I went through the notes.

Q. Is that right?

A. I've just summarised it, yes. Yes, I have.

Q. Why is this note not in the summary?

A. Pardon?

Q. Why is this not in the summary?

A. I don't know, sir. This is just what was written in the notes from the nurses on the ward. I have got no idea that this is what my nurse has said, and I'm sure she would not have said this anyway.

Q. Mrs Jones, I think you are missing the question. In your statement, as I understand it -- you tell me if I have misunderstood this -- when you prepared your statement you went through the notes -- Hayley's notes -- yes?

A. I did.

Q. And you took out any extracts relating to tissue viability?

A. I did.

Q. And they are what we see at (i) to (iv) on the second page of your statement?

A. That's right.

Q. Why was this reference to tissue viability not included?

A. I don't know. I really don't know.

Q. Okay. You say Lisa would not have said this?

A. She wouldn't have said this -- because I've worked with her for a long time. I've worked with her for seven years.

Q. But it does give the impression, does it not, that Tissue Viability were not willing to come and see the family while Sudocrem was being used?

A. This is not true, sir. We would always see the family. We would always see a wound.

Q. I am sorry, Mrs Jones, that is not the question. The question is: do you agree that it gives that impression?

A. It probably does.

Q. And because you say Lisa would not have said that -- and I understand you are in a difficult position because she is on maternity leave -- there is somewhere a miscommunication, is it not?

A. Probably.

Q. Either she has said it, or what she said was misunderstood?

A. Probably.

Q. But, either way, the wrong impression was given to the family?

A. I would think so.

Q. And yet you can offer no explanation as to why you were not called in to deal with the wound?

A. Not at all.

Q. Thank you.

THE CORONER: Can I just be clear, Mr Weitzman, you are not suggesting that this is referring to the wound, are you?

MR WEITZMAN: No, no.

THE CORONER: You accept that this refers to the sore bottom?

MR WEITZMAN: It clearly refers to the sore bottom, sir.

THE CORONER: Yes.

MR WEITZMAN: You raised with the witness the family's perception, and this would appear to be its source.

THE CORONER: Yes.

MS LUCAS: I have no questions, sir.

THE CORONER: Thank you. Anything you want to add?

A. Nothing at all, sir.

THE CORONER: Good. Take a seat if you would. Dr Neal, please.

Dr Richard Arthur Neal (Sworn)

Questioned by the Coroner:

THE CORONER: Dr Neal, tell us, please, your full name and full qualifications?

A. My name is Dr Richard Arthur Neal. I'm qualified with the General Medical Council. I'm a doctor qualified in Cambridge 2001, and have Bachelor of Medicine and Bachelor of Surgery Degrees. I gained completion to my paediatric training and I'm currently a consultant in the Paediatric Department and Paediatric Intensive Care at Birmingham Children's Hospital.

THE CORONER: I am going to ask you to read through your statement. Before you start -- Paula, you know what is in it. Do you want to stay throughout it?

PAULA STEVENSON: Yes, yes.

THE CORONER: Okay.

A. I am Dr Richard Arthur Neal. This is my first statement relating to the care and treatment given to Hayley Fullerton during her admission to Birmingham Children's Hospital on 12 October 2009 to 11 November 2009. I qualified from Cambridge University in December 2001 and hold full registration with the GMC. I am a member of the Royal College of Paediatrics and Child Health and attained my certificate of completion of training and entry onto the Specialist Registrar for Consultant Paediatrics and Paediatric Intensive Care Medicine in September 2011. I have been employed by Birmingham

Children's Hospital NHS Foundation Trust since 1 September 2008. I held the position of Paediatric Intensive Care Specialist Registrar from 1 September 2008 until 30 September 2011. My duties involved the assessment and management of children referred to the Paediatric Intensive Care Unit. I am currently employed as a Paediatric Intensive Care Consultant at the Birmingham Children's Hospital since 1 October 2011.

I remember aspects of the care I provided to Hayley Fullerton and therefore my statement is based both on recollection of events and the medical notes.

During Hayley Fullerton's admission to Birmingham Children's Hospital my involvement was: Hayley Fullerton had been admitted to the Birmingham Children's hospital on 12 October 2009. She had been cared for on Ward 12. She had a cardiac diagnosis of pulmonary atresia and ventricular septal defect and had previously undergone surgery for a modified Blalock-Taussig shunt at another hospital.

Hayley Fullerton underwent open heart surgery, pulmonary artery reconstruction and closure of the ventricular septal defect and formation of a right ventricular pulmonary artery conduit on 14 October 2009. She was admitted to the Paediatric Intensive Care Unit following the surgery.

During Hayley's admission on the Paediatric Intensive Care, her care was provided by a wide team of medical, nursing and allied health professional staff. During this time I was working as a Paediatric Intensive Care Specialist Registrar. This meant on certain allocated shifts, usually either 8.30 till 21.30 hours, or 2030 to 0930 hours, I was responsible for ensuring Hayley had a full assessment, physical examination, notes and chart reviews and assessments of medical supports and appropriate medical prescriptions or interventions provided. This care was provided under the supervision of the Duty Paediatric Intensive Care Consultant, Paediatric Cardiology Team and Paediatric Cardiac Surgical Team.

On the day of Hayley's admission I was involved in supporting another registrar in the prescription of a blood transfusion and modifying the dose of an adrenaline infusion being administered in keeping with routine post-operative care of children returning from cardiac surgery.

Hayley Fullerton had her chest wound closed whilst in the Intensive Care Unit on 16 October. I was not involved in this event.

I made a full PICU assessment and examination of Hayley Fullerton during the day shift on 17 October 2009. She was at that time receiving invasive ventilatory support, cardiac support with adrenaline 0.08 mics per kilo per minute and milrinone 0.5 mics per kilo per minute, pain relief medication of morphine at 10 mics per kilo per hour, and a blood-thinning medication, heparin, at 20 units per kilogram per hour. She was stable, but had signs of generalised fluid oedema and was therefore receiving furosemide to encourage her to pass increased volumes of urine.

Hayley Fullerton had been noted to have a cooler right arm at ten o'clock on 17 October 2009 by Dr Geoff Martin below the level of a recent arterial line placement in the right brachial artery. Initially the radial artery pulse on the right was not able to be felt and a dopplar ultrasound was unable to detect the radial pulse signal. However, the brachial and ulna signals were detectable.

A heparin infusion was initiated in order to treat a possible blood clot blocking the artery. On my assessment later on during 17 October 2009 I was able to feel this pulse and therefore heparin was discontinued later that day at 15.30.

The subsequent examinations of the right arm and pulses, including a doppler ultrasound assessment on 19 October 2009 by Fiona Reynolds revealed satisfactory signals and perfusion. This potential arterial injury was not significant in terms of her care and progressive recovery from the cardiac surgery.

I made a full PICU assessment and examination of Hayley Fullerton during the day shift on 18 October 2009. She was at that time receiving less ventilator support but remained intubated. She was no longer receiving adrenaline or heparin infusions. She continued to receive milrinone at 0.5 mics per kilo per minute and morphine at 10 mics per kilo per hour. She had developed signs of abdominal distension. However, the abdomen was soft and the suspicion of a gaseous distension was confirmed on an abdominal X-ray.

Hayley Fullerton was extubated on 19 October 2009 at 0012 hours on to non-invasive, continuous positive airway pressure (CPAP) support. Non-invasive support is provided to patients who may have initial difficulties breathing comfortably on their own. In Hayley's case it was felt that providing CPAP would reduce the risk of needing re-intubation for invasive ventilatory support. Despite the CPAP, however, she did develop respiratory distress and was re-intubated at 03.30 the same day. A chest X-ray demonstrated right upper lobe consolidation. She received vancomycin and meropenem antibiotics. I was not involved in this event.

I made a full assessment and examination of Hayley Fullerton on the night of the 19th into the 20th October 2009. At this time she was still receiving invasive ventilator support. She continued to receive milrinone 0.5 mics per kilo per minute and morphine 10 mics per kilo per hour infusions. She had developed a derangement of her liver function tests, the cause for which was unclear. On 19 October 2009, at 07.11, her results were a bilirubin of 33, an ALT of 1260, an AST of 2,161 and a PT of 20 seconds. She was receiving dexamethasone medication to reduce airway oedema and improve chances of successful extubation.

Hayley Fullerton was extubated once again on 20 October 2009 at 1530 hours on to non-invasive CPAP support. I was not involved in that event.

Hayley Fullerton again developed respiratory distress on 21 October 2009, just before 0330 hours. She had arterial desaturation demonstrated on pulse oximetry to between 80 to 90 per cent, despite increasing the supplemental oxygen delivery. She had a poor colour and increased work of breathing. I re-intubated Hayley Fullerton on 21 October 2009 at 0330 hours. I prescribed ketamine and rocuronium medications for the intubation. The intubation was uneventful with a grade one laryngoscopy, which is a complete blot -- it's visible.

A nasal-endotracheal tube was placed 4½ millimetres diameter, 14cm at the nose. Hayley Fullerton stabilised and showed improved blood gases after intubation. A chest X-ray again showed right upper lobe collapse consolidation. A diaphragm ultrasound was requested which showed normal diaphragmatic movement when taking a spontaneous breath. This was an important investigation to determine any specific treatable diaphragmatic cause for her failure to tolerate weaning time off the invasive ventilator support.

Hayley Fullerton was again extubated on 23 October 2009 at 0830 hours. On this occasion she was supported with non-invasive bi-level positive airway pressure (BIPAP) support. This level of support is given to assist with breathing in patients who may not have good muscular strength. I was not involved with that event.

Hayley Fullerton was weaned onto CPAP non-invasive support. She had a staphylococcus sternal wound infection and this was being treated with intravenous flucloxacillin.

Hayley Fullerton was tolerant of time off CPAP over the 29th to 30th October 2009 and was then able to remain off CPAP entirely. She had shown improvement in her liver function test results. On 26 October 2009 her bilirubin was 20, ALT

273, AST 50 and PT 13 seconds. She was discharged to Ward 12 from Paediatric Intensive Care on 31 October 2009. I was not involved at the time of discharge.

I had no contact with Hayley Fullerton after this time until I was on duty on a Paediatric Intensive Care Unit on the night on the 10th into 11th November 2009. I was informed by the on-duty Paediatric Specialist Trainee of a blood gas for Hayley Fullerton promptly after its processing on 11 November 2009 at 0741 hours. The gas recorded hydrogen ions of 75, a CO<sub>2</sub> of 11.4, an oxygen of 6.5, a base excess of minus 1.8, a haemoglobin of 9.6, a saturation of 67.7, a sodium level of 132, a potassium of 4.3, calcium of 1.2, chloride of 93, a glucose of 12.6 and a lactate of 5.9.

This blood gas suggested that Hayley's breathing was ineffective in removing the waste CO<sub>2</sub>. This was leading to a build-up of CO<sub>2</sub> in the blood and subsequently of acid hydrogen ions within the bloodstream. In addition, the raised lactate level, which is normally less than 2 on the blood gas, suggested her body tissues were receiving an inadequate amount of oxygen. This can occur if the blood is not being adequately filled with oxygen -- in effect, a lung problem -- or if the blood is not being adequately pumped to the tissues -- in effect, a heart problem.

In light of this blood gas and my concerns that Hayley Fullerton was rapidly developing both breathing and heart problems, I immediately went with this doctor to the cardiology ward to assess Hayley Fullerton.

On my arrival to the cardiology ward, Ward 12, Hayley Fullerton was in a side room. She was receiving high-flow oxygen, 15 litres per minute oxygen by face mask -- the most oxygen that can be delivered in this way. She had severe respiratory distress with severe recession. She was pale and had a mottled skin. She was staring and showed minimal spontaneous movements. She had a heart rate of 130 beats per minute and saturations of 85%. My impression was that Hayley Fullerton was peri-arrest. In essence, she was at high risk of imminently having a respiratory and cardiac arrest. A crash call was placed, requesting the attendance of the resuscitation team. This would bring help and the assistance of additional doctors and nurses. I was responsible for leading the resuscitation until the point at which my PICU consultant, Dr Adrian Plunkett, attended the event.

Hayley Fullerton was placed with her head and neck in the neutral mid-line position. An oropharyngeal airway -- a Guedel airway -- was attempted to be placed. However, she did not tolerate this manoeuvre and was making gagging movements. I provided Hayley with 100% oxygen by an Ayre's T-Piece and face mask. CPAP and ventilation breaths were administered due to progressive inadequacy in her own respiratory effort. She failed to maintain her oxygen saturations and persistent de-saturations into the low 80s on the pulse oximeter. She had poor perfusion and an

unrecordable blood pressure. She was given 10mls per kilogram of sodium chloride, 0.9% solution, through an intravenous cannula in her right hand.

The resuscitation team were in attendance. Doctors and nurses from the cardiology department were also present during the resuscitation. At 0750 hours preparations were made for emergency intubation of Hayley Fullerton. Three lead ECG monitoring, pulse oximetry and non-invasive blood pressure monitoring were in place. At 0753 hours Hayley Fullerton was given ketamine, 1mg per kilogram, and rocuronium, 1mg per kilogram, intravenously. This was given through the small cannula in her right hand. This was the only form of access available at the time. A dose of atropine, 100 micrograms, was also prepared in anticipation of bradycardia developing, and subsequently this dose was given as the heart rate dropped to 80 beats per minute.

A grade 1 view was obtained on laryngoscopy. A size 4.5mm endotracheal tube was attempted to be placed through the cords, but this was unsuccessful. A request was made for a 4mm diameter endotracheal tube. A size 2.5 diameter endotracheal tube was given to me in error. So I passed this tube and provided some ventilation breaths whilst the 4mm diameter endotracheal tube was made available. Within a few seconds this tube was available and the tubes exchanged uneventfully, again with a good view of the cords at laryngoscopy.

The oral endotracheal tube was placed at 10cm length. Chest movement was confirmed bilaterally. Although the 2.5mm endotracheal tube was too small to be able to ventilate well, it was still possible to provide some oxygen into the trachea. I did not feel that the time interval until the 4mm endotracheal tube was successfully sited impacted on the resuscitation.

At 0756 Hayley Fullerton became progressively de-saturated and the pulse oximeter then showed no trace. The heart rate dropped to 40 beats per minute and CPR was commenced. The cardiac arrest was managed as per advanced paediatric life-support recommendations. The resuscitation team obtained two intraosseous lines, one on each tibia. The intraosseous lines were placed during resuscitation to enable fluid and concentrated medications, especially adrenaline and sodium bicarbonates, to be given safely and this route of administration is more effective than through a peripheral intravenous cannula.

Hayley Fullerton received during resuscitation the following medication: five adrenaline one in 10,000 solution (five doses), 10mics per kilogram intraosseous every four minutes; two sodium bicarbonate, 8.4%, 5 ml intraosseous; one calcium fluoride ball, 10%, 0.68 mimimols(?) intraosseous; and sodium chloride 0.9% solution fluid boluses totalling 30 mls per kilogram.

After approximately five minutes of resuscitating Hayley Fullerton, Dr Adrian Plunkett, Consultant Paediatric Intensivist, attended the patient. Hayley was already intubated and in cardiac arrest when he arrived. Together we confirmed the endotracheal tube placement and bilateral chest movement. It was noted that Hayley Fullerton was difficult to bag ventilate, which meant she had poor lung compliance. The absence of a pulse was confirmed. Apart from these confirmations, uninterrupted CPR was performed. An echocardiogram was performed by a senior member of the cardiology team, which showed no heart movement -- cardiac standstill. A pericardial effusion was not seen. Dr Adrian Plunkett obtained a femoral venous line and a blood gas analysis was taken on 11 November 2009 at 0813, which showed hydrogen ions 172, CO2 21.7, oxygen 2.6, base excess minus 12.3, haemoglobin 8.9, oxygen saturation 12.6, sodium 134, potassium 4, calcium 1.1, chloride 99, glucose 15, and lactate 3.5.

This blood gas was important in revealing the severe level of acid accumulation. It was also important in that the potassium and blood sugar levels were acceptable and not a cause for Hayley's collapse. From the information available, no reversible causes of cardiorespiratory arrest were identified.

Hayley Fullerton's mother was in attendance throughout the resuscitation and was informed that Hayley was unable to recover from this event.

The resuscitation team were in agreement to stop active resuscitation. The duration of CPR was 19 minutes.

Hayley Fullerton was certified dead by me on 11 November 2011 (sic) at 0815 hours.

Prior to 14 October 2009 I had not been involved in the care of Hayley Fullerton. My last involvement with Hayley fullerton was on 11 November 2009.

I have, however, seen Hayley's mother at the sixth World Congress in Paediatric Critical Care, which was held from the 13th to 17 March 2011 at Sydney Convention and Exhibition Centre in Australia. I have not seen Hayley's mother since March 16th 2011.

THE CORONER: Thank you very much. There were references earlier on to someone called "Dr Rich" -- that is you?

A. That's me.

Q. Just to be clear. Right. This is the first day you have been present in court?

A. I was here briefly yesterday during Anne Dawson's --

Q. But you did not hear the evidence of your consultant, Dr Plunkett?

A. I did not, no.

Q. Dr Plunkett was telling the court that he was surprised that, throughout resuscitation, no response was found. First, do you agree that no response was found, or was there a response before he arrived?

A. I agree that no response was found.

Q. And does that seem to you to be unusual? Do you normally expect to get some response, even if it was not much or did not last long?

A. Absolutely. The initial measures of resuscitation in terms of positioning the airway, making sure that the mouth itself is open and providing oxygen with a pressure -- CPAP pressure -- and then added breaths through the bag is usually enough to generate good oxygen saturations, even in children who are developing quite severe lung problems. You are able to generate saturations of 90/95%, and that situation did not arise with Hayley. Despite my efforts to provide the opening of the airway, and pressure to support that with a mask, her oxygen saturations continued to decline, and that was one of the pressing factors that led towards the resuscitation and intubation on the ward.

Q. And it seems clear from all the evidence this court has heard that you were there very quickly?

A. As quickly as I could be.

Q. Dr Plunkett said that he had no way of proving it and had nothing to back it up, but he felt that the thickness of the ventricle might have played a part. Is that something you have discussed or thought about yourself?

A. The implication that both the respiratory status was compromised and the cardiac status was compromised was evident on the blood gas prior to -- well, immediately prior to the resuscitation, and the interaction between the lung and the right side of the heart is very deeply entwined, and I would be suspicious from her condition that actually it was both the lungs and the heart that were giving way.

Q. You think both?

A. Yes. Any additional collapse or consolidation within a lung would increase the work that the right side of the heart had to provide, and there was evidence that her heart, as you say, was thickened and therefore was showing signs that it had strain towards that.

Q. So does that mean that you are agreeing with him, or partly agreeing with him or what?

A. I didn't hear the details of his statement, but I agree that both the heart and the lungs were both playing a significant part in her failure to respond.

Q. We also heard -- Paula said that while the resuscitation was going on, the adrenaline was actually squirting out. Is that something that happens commonly, or is that a mistake that happened then or what?

A. Sir, there are two forms of the access -- intravenous and intraosseous -- that are being used during our resuscitation, and the intraosseous requires a higher pressure when you place the syringe into the hub of the intraosseous needle, and with the higher pressure, if you have a connection that is slightly loose in that you are putting it in and it is not completely occluding, there is the possibility that some fluid can spray back. The volume of the adrenaline is so small, and the type of syringe so small, that it is unlikely to be -- although I can't recall specifically -- it is unlikely to be the adrenaline that sprays, and more likely the sodium chloride because it's a higher volume. At any point in the resuscitation, if there was a question of whether a drug was given, it would have been repeated. I am afraid I can't recall exactly which medicines or fluids were spraying.

Q. In your view, did it play any part in Hayley's death?

A. No. My feeling at the time, standing at her bedside, immediately in front of where those drugs were being given, is that drugs were being administered adequately.

Q. You refer to the fact that the first tube that you attempted to place was 4.5 and you asked for a 4, to be given a 2.5.

A. That's correct.

Q. How big a mistake is that?

A. When you're preparing for intubation, you have a trolley with a sequence of tubes ranging from size 2, every half a millimetre up until around a 7½. So there is a significant number of different tubes to pick. Before you start you lay out the tubes that you want, but in a pressured situation you take other people in the team to do that for you, and in the events that happened there it's less than ideal that that happened, but it was rapidly corrected and the right tube was passed to me. So I don't think it played a significant role.

Q. Do you say that played no part?

A. I believe it played no part in her outcome.

Q. Okay. Remember that I have no medical qualifications at all. What I want you to do is to explain to the court, in the simplest possible terms, what the complex Fallot's tetralogy actually means?

A. I appreciate you giving me the opportunity to describe this lesion. So the Fallot's tetralogy is a combination of heart defects where there is a narrowing to the outflow of the right side of the heart -- pulmonary stenosis; proximal to that, the ventricle that is driving blood through that pulmonary artery is thickened; alongside the chamber -- the right ventricle and the left ventricle, between those chambers there is a septum -- a wall -- and there is a hole between those walls which means that blood can cross between the two ventricles; and the aorta -- the main blood vessel that usually collects blood from the left ventricle and diverts it straight to the body, in the tetralogy of Fallot, the aorta overrides the wall. So it takes blood from both the right and the left ventricle.

Q. Just tell me that again.

A. Yes, sir. So it is a pulmonary stenosis --

Q. That means a narrowing --

A. A narrowing of the pulmonary artery.

Q. Yes.

A. A right ventricular hypertrophy -- a thickening of the right ventricle.

Q. Yes.

A. A ventricular septal defect -- a connection between the right and the left ventricles -- and an overriding aorta -- so an origin of the large blood vessel collecting blood from both the right and the left ventricle. Those four components make the tetralogy of Fallot.

Q. And if that had not been corrected, Hayley would have died?

A. There are a number of children who have a variety of lesions.

Q. Slow down. With Hayley, if nobody had done anything at all from the moment of her birth --

A. Hayley had a very severe form of tetralogy of Fallot, where the pulmonary artery was almost completely absent. I would have to review the cardiac diagnosis, but it was so narrow that without an operation she would have died, and the first operation she had was the Blalock-Taussig shunt, which provided blood from the systemic circulation directly to the lungs through a shunt, and that operation was a life-saving procedure within the first weeks of her life, and subsequently she would have outgrown that shunt and she needed further operations. So, yes, without corrective surgery she would have died.

Q. Okay. So now very briefly through the operation. Mr Brawn is going to do it all this afternoon, but just very briefly in simple terms.

A. Sir, there are a number of approaches to children with tetralogy Fallot. One operation is to balloon and open up the pulmonary artery, but that was not appropriate for Hayley. So the series of operations would include the early neonatal operation to provide blood flow through the Blalock-Taussig shunt, and then a later operation where you can create a direct conduit from the right ventricle so that, instead of the right ventricle pumping blood through the pulmonary artery, the pump pumps blood through the conduit, which takes blood directly to the lungs. By doing the operation that Hayley had, the hole between the two ventricles is closed, so there is no longer a connection between the right ventricle and the left ventricle. The right ventricle is therefore allowed to pump entirely to the lungs through the RV to PA conduit, and the left ventricle is allowed to pump entirely to the body through the aorta. So, in effect, she creates a circulation which is almost normal in the way the blood path streams. It is, however, an operation that is limited by the size of the conduit that is placed, and in the future Hayley would have required further operations to replace that conduit. But it is for Mr Brawn to decide as and when that operation would have been necessary.

Q. Okay.

Questioned by Mr Weitzman:

MR WEITZMAN: Dr Neal, I am going to make a fool of myself. Hayley had both pulmonary atresia and a defect in the septum, and that makes the -- those are the two elements that go towards the label you have described? Yes?

A. The Fallot's tetralogy involves four components: pulmonary stenosis, which can become atresia -- there is a spectrum; the right ventricular hypertrophy; the ventricular septal defect; and the overriding aorta.

Q. With Hayley, you have talked about right ventricle hypertrophy. "Atresia" means that the ventricle has to pump harder to get the blood out through what would otherwise a tricuspid valve. Is that right?

A. That's incorrect. The right ventricle would normally pump through the pulmonary artery. The tricuspid valve is a valve that connects the right atrium to the right ventricle. The heart would normally pump through the pulmonary artery.

However, in an atresia -- "atresia" means absent connection -- so it did not develop properly. So the right ventricle, therefore, has no way out to eject its blood. It therefore ejects its blood through and joins the left ventricle ejection through the aorta -- the one sole remaining outflow from the heart. In the early neonatal life, that aorta is linked to the blood to the lungs through what is called a patent ductus arteriosus, and it is that will be kept open with medicines in the early phase of neonatal life, and that ductus will be replaced by a conduit at a stage operation, which is what Hayley had.

THE CORONER: When you talk about the "atrium", that is the chamber that collects the blood?

A. That's correct, sir. The two upper chambers are the collecting chambers. They both have valves that separate them from the ventricles -- the pumping chambers: on the right side, that is the tricuspid valve; and on the left side, that is the mitral valve.

THE CORONER: So we have the right ventricle pumping the blood up into the lungs to get the oxygen?

A. Absolutely.

THE CORONER: But Hayley simply had not got that?

A. Absolutely.

THE CORONER: And so you had to actually create one -- not you, but the hospital -- had to create one and put it all into place?

A. That's correct.

MR WEITZMAN: The right ventricle has to work harder -- it may have misaligned the mechanism, but it has to work harder and therefore the muscle wall builds up? Is that right?

A. The muscle thickening will be increased because of the work of the ventricle to eject blood through the pulmonary artery -- or whatever takes its place. The right ventricle will increase in size. In situations where there is good outflow through the aorta -- through the ventricular septal defect -- the right ventricle does not have to increase in size. The right ventricle can remain at a reasonably normal level. It's only when -- because the resistance is no longer there because the atresia is .... Sorry, if the resistance to the outflow of the right ventricle is not increased, the right ventricle does not thicken. If the right ventricle is able to decompress into the left ventricle and eject through the aorta, it does not necessarily increase dramatically. It will be of greater size than a normal right ventricle because it will be subjected to pressures which are driving circulation to the whole body, as opposed to just driving circulation to the lungs. So our

natural right ventricle is actually a lot thinner than our left ventricle. Our right ventricle only has to pump blood around 2 to 3 centimetres before it gets to the lungs, whereas our aorta and our left ventricle takes blood the entire size of the baby.

Q. So in Hayley's case -- and you may not be able to answer -- in Hayley's case the right ventricle had become larger because it had to work harder and so the muscle bulk was greater?

A. I would have to defer that to the cardiologists in terms of their assessments, but I can refer now to the notes if you would like me to.

Q. If you tell me which note you are looking for, we may be able to help.

A. That's all right. (Pause) Hayley had so many cardiac assessments in terms of echo-cardiograms that finding one that looks in detail at the size and thickening of the right ventricle would be difficult. They are all targeted echo-cardiograms, looking specifically for the problems that arise post-operatively. There should be a communication document from the Irish Hospital to the Birmingham Children's Hospital. (Pause)

Q. What I can give you is the review by the Birmingham Children's hospital and also the Irish Hospital. Would that help you?

A. Yes, that would be helpful. Actually I have a letter in front of me here from Paul Miller. Let me see .....

Q. To Frank Casey?

A. Let me see .... I think it may be best to defer that question to Mr Brawn.

Q. I am just going to ask you theoretically that question then. Assuming the right ventricle has had to work hard and has a bigger muscle bulk, it will need more blood to supply it to work, particularly if the heart rate goes up?

A. Sir, the things that improve blood flow to the heart, certainly if the muscle wall is increased, then that will obviously need more blood flow. In terms of its predisposition to strain and stress -- well, in theory an increased bulk will require an increased blood flow, but the rest of the left ventricle and other components of the heart will also be in demand, and there is no easy way of saying how much the right ventricle compared to the left would receive, and there's no evidence of inadequacy of that blood flow in my experience of Hayley.

Q. You were asked by the Coroner about the relationship between the heart and lung and the collapse. We know Hayley had lung problems, and if she has got lung problems and there is consolidation and collapse, so the oxygen is not passing through the lungs to oxygenate the blood, the body is starved of oxygen. Yes?

A. So the body being starved of oxygen would be indicated by the pulse oximeter reading low. In that situation that would suggest that the oxygen delivery to the body was less than normal. The body's response to that would be marked by, for example, the systems themselves showing that they were impaired. So if I was being starved of oxygen I would become light-headed. So my ability to interact -- I would become faint. If my muscles were becoming starved of oxygen, I would have aches and pains within my muscles. If I did blood tests on myself during that time, then my blood tests might show an increase in acid or an increase in lactate. And in the blood test prior to her collapse, the lactate was elevated, as was the acid, which, in my opinion, suggested that there was some compromise of either oxygen into the blood, or delivery of that oxygen to that part of the body. If the oxygen level on its own is taken as the indicator, then that isn't accurate because actually there are thousands of children in the country who live with congenital heart disease, who have oxygen levels of 75%, and they are completely adequately perfused with that. Their tissues are not impaired. It's about putting into context what the body needs and how well it's being delivered and what other mechanisms it's developed to compensate for those situations.

Q. Just bear with me, Dr Neal. What I am suggesting -- I think you are agreeing -- is that the PH in the blood and the raised lactose show that enough oxygen is not getting into the blood?

A. Sir, as I say, the hydrogen ion increase and the lactate increase is a marker of impaired oxygen availability to those tissues.

Q. And if that is happening, does the heart rate go up to try to move the blood round faster to try and get the oxygen to the parts of the bodies which are missing it?

A. Sir, the oxygen delivery to the body is a composite of how much oxygen is in the blood and how much output the heart is creating. The output the heart creates depends on the volume of the heart pumping and the rate at which it pumps every minute. In the situation where the body is becoming starved of oxygen, the heart rate tends to increase. Unfortunately, having an increased heart rate does not necessarily help the heart because the heart requires filling in order to pump effectively, and the faster the heart pumps, the less time it has to fill, and so even though the rate goes up, the actual overall output of the heart may not go up or may actually fall. So although it seems that heart rate increase would be a sensible reaction, it sometimes isn't in the child's best interests for that heart rate to increase to that degree.

Q. And if the heart rate increases, then the muscles of the heart are working harder?

A. That's correct.

Q. And so they have a greater demand for oxygenated blood?

A. As heart rate increases, demand of that by the muscle increases.

Q. And if you have got a large right ventricle because it has had to develop to work harder because of the congenital defects, you can see that a drop in oxygen leading to a greater heart rate, leading to a greater demand which cannot then be supplied because the lungs are not working, may well trigger the collapse of the right ventricle which we see in Hayley?

A. There are a number of steps to that comment, and on every individual level it makes sense, but the continuity of those contexts seems a step too far almost about the ventricle collapsing, but certainly if the oxygen levels were low and the heart rate increased, that would compromise Hayley further.

Q. If the right ventricle, as opposed to the left, needs more blood, and the blood supply -- the oxygenated blood supply -- is reducing, is it likely to be in the right part of the heart that you will see the problems?

A. Could you repeat that question?

Q. Yes. If you have got two ventricles and the right ventricle has a greater demand for a blood supply because of the increased muscle bulk, and it is not getting there, is it likely then that that is the part of the heart that is going to collapse?

A. Sir, the blood supply to the right ventricle -- if I get this right, if you are asking: if you are going to compromise the heart, because the right heart is bigger anyway, the right heart will be more severely affected.

Q. Yes, because it needs more blood?

A. I don't have any evidence to suggest that that would be the case.

Q. Okay.

A. It makes common sense, but it does not necessarily get borne out into reason medically.

Q. I am not going to push you any further. You are very kind to admit it makes common sense. Can we move on, please? The BPAP that you gave Hayley on the ward -- when she was in PICU -- the BPAP, as I understand it, that increases the pressure in the lungs, and I think you say in paragraph 4.10 of your statement: "The level of support is given to assist with breathing for patients who may not have good muscular strength". So the first question, which muscles are you referring to, Dr Neal?

A. Sir, the BIPAP support composes of two aspects. It composes of CPAP, which is a constant pressure at all times, which is designed to maintain some level of inflation of the lung -- a bit like a balloon. If you let a balloon completely deflate, it's harder to re-inflate the next time than if you leave the balloon partially inflated and then re-inflate the last little

bit. So the CPAP is designed to keep the lung -- the balloon -- partially open, just to make the next breath easier to achieve. The BIPAP is about helping that next breath deliver the best amount of volume. So if you imagine that your lungs are having to work both the diaphragmatic muscles, the intercostal muscles, and sometimes some of the upper neck muscles, all assist in increasing the movement of air into the lungs. The BIPAP helps all of those muscles. Getting an estimation of how well those muscles work, you can look at the other muscles in the patient's body and see whether they are generally weak or not. Now, Hayley was exposed to a big operation which many children take some days to recover from. She took longer than average in terms of needing the non-invasive support on a number of occasions and in light of that it made sense to give her as much support as was possible to try and get her off the ventilator for the third time, and giving her both the splinting pressure -- the CPAP pressure -- and the positive inspiratory pressure -- the BIPAP support -- made very much sense at the time and did seem to improve her ability to cope.

Q. It certainly worked -- you were then able to wean her, were you not?

A. Yes.

Q. And so -- again, it may be common sense and you may not be able to go further, but the problem at least at that time was that her muscles needed extra support -- her lung muscles in a generic sense?

A. That's correct. She needed more support, and she received it.

Q. And if she was exhausted, if her energy levels were low, those muscles in the future may not be able to cope again and she would need similar support?

A. Sir, you would expect children who have needed intensive care, who have then been able to slowly come off that level of support, that their muscles would have returned to a reasonable level of function. The time scale for that for some children is quite long. For others, you can make an estimation over a few days that they have recovered and, given that her illness was a couple of weeks, you would hope that a couple of weeks would be a reasonable frame for her to recover. But again that's not something -- I've not got neurological measures or muscular measures of her strength. It is only based on observations at the time that she was able to come from BIPAP support down to CPAP support and cope with that and actually be able to come down in the level of oxygen she needed that suggested that her own muscle strength was adequate to cope at that stage. For a child who has had the problems that Hayley had had, it is also possible that her muscles were still less than completely strong -- not quite back to full recovery -- but I haven't got any evidence to back that up. But, given that some of the nurses have commented that she was sitting in a chair eating breakfast and things two or three days before the beginning of the decline, she clearly had made some significant improvement in her overall

body strength. Being able to cope with the next respiratory illness was something -- it wasn't clear how she would deal with that.

Q. That is the point, is it not? She developed the respiratory illness and it was not clear whether she would cope with that, despite some improvement before? You would agree?

A. I would agree that it was possible that she would find it hard to cope with a respiratory infection.

Q. When you were called, her blood gases were H+75 and by the time of her death that had gone up by 100 approximately?

A. To 172.

Q. 98 -- and that is in quite a short period of time -- 7.41 to, I think, 8.13. So you have a very sudden rise in the acidity of the blood. Is that right?

A. A lot happened in that 30 minutes, absolutely. It is a short time period if you were taking blood gases on a patient on the ward and you were monitoring chronic respiratory problems, or even mild or acute respiratory problems, but given the events took place and the significant increase in acidosis -- in the acid levels -- it was by no means a surprise that at the end of twenty minutes of continuous cardiac massage and respiratory support that she had still got a significant acidosis that had actually worsened, because we hadn't seen a clinical response to our measures. If I had been able to keep the acid level the same or less, I would have expected to be able to save her.

Q. There is no criticism --

A. No, I am simply explaining that time is not the important thing. What is important is what happened in between.

Q. Blood gases can drop very quickly if a problem develops? Yes?

A. That's correct.

Q. And so they are not always the best measure of whether a problem is developing or not?

A. Sir, blood gases, as a number of other people have said, are an additional tool to give you a guide as to what is happening, and you continue to use that information in the context of your history, examination, investigations, and you put it into the context of what you know about the patient, and yes, they are not the only thing that guides you, but they are certainly helpful in giving you an estimation of the body's ability to cope with that situation, at which point the blood gas was done.

Q. But if you were to rely on the blood gas reading as the trigger for a potential problem, that would be wrong, would it not?

A. It would be inappropriate to simply use the blood gas as the only trigger in the situation, but both medical and nursing and allied professionals are all trained to significant degrees to utilise everything available to them in terms of history examination and other investigations in making an assessment. We see patients every day in all different specialties and at the end of every single consultation we ever make -- whether that is a patient in an outpatient or an inpatient environment, you have to make to make an assessment and you use various tools to do that and at the end of that assessment you have to create a plan and that plan will, you would hope, be sensible. Sometimes the plan needs modifying fairly quickly after you have made it for the first time and what you have to put into place is the right amount of awareness of people around a patient, the right amount of monitoring around the patient, and a plan to do repeat tests at a sensible interval to guide you as to whether the trend of your estimation is correct or incorrect.

Q. At paragraph 4.14 you refer to "severe recessions" that you witnessed when you went into the room? What were the signs that made you conclude they were severe recessions?

A. Sir, having seen lots of children in respiratory distress, the signs that it's almost a shelter appearance of the child that tells you they are distressed. It can be a supra-sternal recession -- the top of their chest seems to suck in. Their trachea itself can be sucking into the chest. In the spaces between the rib bones, the cartilages, the skin can be sucked into that area, and beneath the rib cage itself, you can get recession at that point, and the accumulation of all of those respiratory effort muscles trying to work hard is that the head can bob as well. So the whole body can move in patients that are really trying to struggle to work hard and move as much air as they can. In Hayley's case specifically --

Q. That is what I am asking.

A. It was the geschtalt that was there that it was severe.

Q. It was the?

A. The overall appearance of all of those things. I mean, I wouldn't want to write down every single one because I was busy trying to do other things.

Q. I accept that.

A. But in terms of her appearance, I remember her gasping in the bed, and that was her whole body was responding in that way. So it would have been -- if you wanted to document, I'm sure they would all have been there -- and sternal

recession as well is a component of that, where the breast bone -- I'm trying to remember whether even her top was done up in a babygrow, or whether it was open, but I can't. But I would have thought if we'd looked at her, her sternum itself would have been recessing.

Q. If you are getting sternal recessions in a child who has had cardiac surgery, there may be a sternal operative wound?

A. That's correct.

Q. Does that make the sternal recessions an irrelevant sign?

A. A clinical sign needs to be put into the context of the patient. If you've got a sternal recession and you've never had a sternal recession before, then it's important. If you've got sternal recession because actually your sternum is starting to develop a natural deviation in that manner, then sternum recession means much less. So in Hayley's case, she had a significant history of recession on the Intensive Care Unit when she failed her extubations. I remember seeing her recessing significantly at that point. I didn't see her on the ward in the interim, but when I saw her in the context of her severe recession, the sternal recession to me would have been a marker that went in with the whole picture. In isolation one sign is not a table to guide you as to how useful it is. It needs to be put into that context, and for Hayley I get the feeling that her sternum wasn't always recessing. It was an intermittent thing. So I would put it into the equation as a sign of distress for her. But how much work is she really doing to make that sternum recess could still be mild or moderate. It may not necessarily be severe, if she has got a predisposed weakness in that area. So I would argue that putting sternal recession in the equation is important, but knowing what level of importance to put in it when someone has had an operation in that area is difficult.

Q. You should not ignore it.

A. You should not ignore any of your clinical signs. You should try and work out the importance of them.

Q. In paragraph 4.15 you say: "She was placed with head and neck in the neutral mid-line. An oropharyngeal airway was attempted to be placed and she was gagging a bit at that". Can you just explain that procedure, please?

A. Sir, an oropharyngeal airway -- and the manufacturer was Guedel, so it's a trade name -- but the oropharyngeal airway is a piece of plastic and it's a piece of plastic that is approximately the length of the lower jaw and it's a curved piece of plastic with a tubular centre to it, and if you are worried that the patient is losing their ability to pull their tongue out of the way, then you can place this plastic tube over the top of the tongue and it allows air to go from the outside -- or if you are bagging, from your positive pressure -- to pass over the tongue into the area just above where the windpipe is. Unfortunately, if I tried to do it to yourself or myself, we would gag, because we have got reflexes within our pharynx

muscles that would force us to eject that piece of plastic from our mouth and our throat. For someone who is dwindling in their level of consciousness, it's important to try because it may give you additional aid in opening those lungs up by being able to deliver better pressure. But if it's not tolerated, it's dangerous to leave it in place because it can agitate the child, it could cause trauma and it could cause vomiting. So it was tried, but it didn't work.

Q. So you get the gag reaction, which is a perfectly normal reaction, and you think, "Right, this is not working", you take it out and then you use the tube? Does the tube pass through the throat into the trachea, or through the nose?

A. Sir, in a controlled situation where you want to have a tube put in place that is going to last for some time, you normally place an oral tracheal tube, which goes through the mouth, through the vocal cords into the trachea, and then you replace it by putting a tube down the nose and directly swap those tubes over, so that the one in the nose can be tied more securely and reduces the chance of the child pulling it out. It's also a tube that is less irritant to the child, and less mobile in the mouth. You can imagine a tongue pushing a tube side to side. So during a controlled situation, yes, you swap from an oral tube to a nasal tube, and hence in the intensive care the majority of her tubes will have been nasal tubes -- certainly the one I place was a nasal tube. But in a situation where you are resuscitating, then you use the oral tube and you keep it as an oral tube because you don't want to have any time, if possible, without a breath, and changing the tubes adds complication to a situation where you have got something that is secure, delivering the oxygen you require, and you would choose to keep that, rather than change to a nasal tube in that situation. Changing to a nasal tube can also add danger in that when you pass something through your nose it can bleed, and if you end up with blood in the back of your throat, that can obscure your view and it may end up that you aren't able to intubate.

THE CORONER: I am going to stop you there. It is nearly five past one. We will start again at five past two. Thank you very much.

(Luncheon adjournment)

THE CORONER: It is now five past two. Mr Weitzman?

MR WEITZMAN: Dr Neal, you have explained to us about the Guedel airway. So then you then had to intubate and you used a 4.5mm tube. Why was that? Why that size?

A. Sir, the 4.5mm endotracheal tube is the tube that had previously been an adequate size for Hayley on the Intensive Care Unit and, having intubated her myself before, I was aware of that. So I thought that would be the best option for initial tube choice. Unfortunately, sometimes tubes don't always fit in airways that they previously did and it's not really

very clear why to me that tube itself didn't then go and fit smoothly, but I didn't really have any will or desire to keep trying with a tube that wasn't easily passing -- so hence as to the change of tube.

Q. I think you refer to a 4.5mm tube in your paragraph 4.9, do you not?

A. That's correct.

Q. So then you tried to use a 4, but it was not available because you were handed 2.5?

A. That's correct, yes.

Q. And it is a matter of seconds in changing a 2.5 for the 4?

A. That's correct, yes.

Q. And can I ask you, do you remove the 2.5 or put one over the other?

A. You remove the 2.5 at the immediate opportunity prior to putting in the 4.

Q. And Hayley has some breath, but for a smaller diameter while the 2.5 was in?

A. That's right, so I was actively giving oxygen through that tube, and then at the immediate point that that next tube is available, I took that first tube out and placed the second one in its place.

Q. So the only detriment, in effect, is the few seconds where she is denied 2mm diameter?

A. 1.5, yes.

Q. You are quite right. You have identified the drugs you provided -- the ketamine and the rocuronium. Those are administered before you put the tubes in?

A. That's correct. Ketamine is a sedative agent and, given that Hayley had shown response to the Guedel airway with gagging, she would have likely shown the same response to me putting a laryngoscope in her mouth, which is a metal object designed to pull the tongue out of the way and give you access to the vocal cords. To not give her sedation in a situation where she had some level of consciousness would have been unpleasant and so sedation with ketamine at a dose I documented at 1mg per kilogram is the routine, even in an emergency situation, to give that dose and the rocuronium is a muscle relaxant which prevents any muscular spasm or contraction against your attempts to place an endotracheal tube.

Q. And those were given intravenously?

A. That's correct. They were given through the hand -- the cannula that was in place prior to the arrest.

Q. And thereafter you used two intraosseous to the tibia -- to either tibia -- for the adrenaline and the sodium bicarbonate?

A. That's correct, sir. The inner component of a bone is very useful in this. If you inject a drug or a fluid into it, it very rapidly goes from within the bone into the bloodstream towards the heart, whereas the blood vessels in the hand, where the lower blood flow is, that takes some time to generate its way back to the heart. So we place two intraosseous needles -- one on either side -- and in my resuscitation practice that is the best way to get fluid through one and drugs through the other and so you have the most rapid, speedy way to give the medications you need.

Q. So one is giving drugs and the other is giving fluid?

A. They are both available for both, but it is very useful to have more than one point of access in case something dislodges, or you are not happy with the quality of the first. But you place the first, and clearly sequentially then place the second, and in the time that you have got the first, you use it for what you need it for, which is usually -- priority number one is usually adrenaline. Subsequently the fluid volume and sodium bicarbonate or calcium as was also given would be used through those routes, and having two of those is very useful. I'm sure it would have been non-essential, but it is certainly very helpful to know that you have got a back-up or that someone could be doing something simultaneously. So fluid can be given through one and drugs through the other at the same time.

Q. In Hayley's case did both remain in situ?

A. Over the course of the resuscitation she had both. I couldn't tell you at what point they came out.

Q. And Mrs Stevenson clearly remembers spray and you do not dispute that that may have happened, but enough fluid and/or drugs were being passed through to Hayley for the purposes necessary?

A. That was my estimation, yes.

Q. And although you got the tube in, correctly positioned, there was very little movement in either lung, although there were bilateral signs? is that right?

A. That's correct. So when you place a tube there are various things that confirm the placement of the tube. The direct visualisation of the tube going through the vocal cords is clearly the one thing that the practitioner sees as the most evident, but there are other things that confirm that, which is that you hear air into both lungs and you see chest movement on both sides of the chest. There are certain situations where that's not as reassuring as others, and one is where the

lungs are both very, very stiff and poor air movement is evident. In that situation you double-check with someone with you and make sure that you have sort of re-confirmed the situation, which was what was taking place in that scenario.

Q. But there was no doubt that the tube was properly placed?

A. I have no doubt that the tube was properly placed.

Q. And the reality is that you were not getting much signs of air on either side, despite manually pumping it, because the lungs by that point were collapsed, stiff, consolidated? You would best able to explain it to us.

A. That's my estimation. The process of trying to inflate the lungs prior to intubation was to use the mass and pressure at that point through the nose and the mouth with the sealer of the mask, and at that situation I wasn't able to get the chest to move easily either. So it felt stiff at that point, and with that standard approach -- as I explained, you would normally see the saturation rise in response to that, even in someone with relatively severe pneumonia, you would still see some improvement in their oxygen levels, whereas in Hayley's case the saturations continued to drop, and that warned me -- raised my awareness -- that her lungs were of difficult, stiff nature, and, unfortunately, even passing the breathing tube itself, I wasn't able to regain good air entry and oxygenation of those lungs.

Q. So the mask does not do it, the tube does not do it. At what point did Hayley have cardiac arrest?

A. Sir, cardiac arrest in a young infant is a little bit grey, unfortunately. The process of cardiac collapse usually goes through a situation of bradycardia developing. You go through de-saturation to bradycardia to arrest. In response to -- well, alongside her resuscitation she continued to show gradual bradycardia. So prior to -- well, immediately on my arrival her heart rates, I believe, are documented around 130. During the time of the intubation it dropped to 80, and shortly after that, within a couple of minutes, her heart rate was 40. The management of a bradycardia in a patient who is severely compromised by that is to begin chest compressions. But once you begin chest compressions you would only stop if you saw return of signs of life, or a good pulse became apparent, and so there were interval checks looking for those responses, but the process of bradycardia never recovered, and in fact she went from having a slow heart beat, when we checked, to having no heart beat when we checked. So her heart rate deterioration continued. So you could say that the cardiac arrest occurred at the point at which we started CPR, but the progression to arrest and asisterly(?) happened over the course of a few minutes during that time.

Q. In questions asked from the Coroner earlier on you, as it were, confirmed Dr Plunkett's evidence that you would have expected some response from the heart, and that response would have been to the cardiac efforts on the chest? Is that right?

A. No, sir. The majority of responses we see in young infants or children who have got heart problems or breathing problems leading to their arrest is that when you supplement oxygen and you supplement chest compressions, you start by seeing the heart rate return from a slow heart rate, or an absent heart rate, to a present heart rate, and so actually you start to see the heart rate return as one of the first indicators that your resuscitation is becoming successful. We never saw that improvement in her heart rate.

Q. And that resuscitation is first the mask and then the intubation. But you have told us that even with the mask there was no movement of the chest, and then with the intubation there was no movement of the chest?

A. Sir, the movement of the chest prior to intubation, Hayley was making some effort on her own. But the effort she was putting in was moving minimal amounts of air and when I tried to supplement that with oxygen and pressure, I was unable to give significant amount of movement either. So, in much the same way that she was breathing against very stiff lungs and collapsing her recession areas, I wasn't able to overcome that difficulty either and when I placed the tube I was still unable to overcome that difficulty.

Q. If you were able to overcome that difficulty so air wasn't expanded into the lungs allowing oxygenation, is it any surprise that you did not get a return of heart rate?

A. No. By finding that we couldn't move the air very well at all, clearly we could hear something and see something, but not enough. By knowing that that wasn't very effective, we have no other way to deal with that, and we therefore were conscious that she may not respond to our ongoing resuscitation. But you would hope that by continuing the pressure and sometimes CPR itself -- the chest compressions -- in much the same way that gentle physiotherapy can move secretions, you might hope that CPR itself could also change the dynamics within the chest as well.

Q. When you were asked questions by the Coroner in a similar manner again to Dr Plunkett, you said that in your experience you normally do see some improving heart rate. But presumably that is where the attempts to intubate -- inflate the lungs -- are successful, which wasn't the case with Hayley?

A. That's correct.

Q. So really in Hayley's case it is a problem as far as you were concerned in getting oxygen into the lungs which led to the cardiac arrest?

A. Sir, the failure of Hayley to be able to, and then me to be able to, get air into her lungs was a direct link to her dying. There were clearly other dynamics in place in terms of her body's predisposition to being able to cope with that stress, but any infant who wasn't able to move air in and out of their lungs would die if we weren't able to supplement it.

Q. You talk about bradycardia, which is the dropping heart beat, and she has got that while you are trying, unsuccessfully to get air into the lungs, and that would be a reaction you would expect through lack of oxygen? That is correct?

A. That is correct, yes.

Q. And then you failed to get air into the lungs and the heart rate continues to drop and then ceases?

A. That's correct.

THE CORONER: Ms Lucas?

Questioned by Ms Lucas:

MS LUCAS: Dr Neal, since Hayley's tragic death, you have taken part in the Trust's internal investigation, is that correct?

A. That's correct, yes. I was asked for comment on the time line of events, and that was with a communication with the Government's Department at the hospital.

Q. Did you send an e-mail to the Government's Department with your views from 25 January 2010?

A. I did, yes.

Q. I would like to have a look at that, if possible, page 155, please.

THE CORONER: This is C30.

MS LUCAS: Dr Neal, could you read that out, please?

A. Certainly. "Comments from Dr Richard Neal. Dear Nina Barbosa, thank you for contacting me regarding this case. I was aware that an SUI investigation was taking place. I have read the time line as provided by yourself and agree with the details in terms of my involvement. I am afraid that, despite reviewing the incident repeatedly in my own mind, I am unable to identify any preventable factors. Hayley may well have been better moved to PICU in the preceding 24 hours, but regular medical reviews took place by the cardiology team and these were reassuring. The deterioration appears to have been extremely sudden. Please keep me informed as to progress with the SUI. Sincerely, Dr Richard Neal."

Q. That was from January 2010. Are you still of the same opinion?

A. I am.

Q. Thank you. Thank you, sir.

THE CORONER: Thank you very much indeed. Mr Brawn, please.

Mr William James Brawn (Affirmed)

Questioned by the Coroner:

THE CORONER: Tell me, please, your full name and your full qualifications?

A. William James Brawn, MBBS, Fellow of the Royal College of Surgeons.

Q. Tell me when you first qualified as a doctor?

A. 1970.

Q. As a surgeon?

A. 1975.

Q. Tell me how long you have been a consultant at Birmingham Children's Hospital?

A. Since 1988, September.

Q. And confirm that you are registered with the General Medical Council?

A. Yes, I am.

Q. What I want you to do, if you would, please, is to tell me in simple terms what Fallot's tetralogy is -- just as simple as you can make it.

A. Okay. Fallot's tetralogy -- the normal heart has two pumping chambers. One pumps the blood round the lungs and one round the body. In Fallot's tetralogy there's a hole between the two pumping chambers so the blood can mix. It's a large hole. It's unrestricted, and if there was no obstruction in blood flow to the lungs, the patient would have heart failure. The lungs would be very wet, there would be far too much blood going round the lungs. But that happens sometimes. In Fallot's tetralogy, which is one of the commoner congenital heart lesions, then there is an obstruction in blood flow to the lungs. That obstruction may be minor -- just muscle -- or it can be more severe, or it can be completely obstructed, so-called atresia. In other words, the artery to the lungs has not formed properly. And those children need other forms of

blood supply such as Hayley had with the shunt that was performed, and before that she was kept on prostaglandin, I believe, in the hospital for about two months before they performed that shunt in Northern Ireland. So it's a condition where the patient is blue. The normal oxygen level in the blood is, say, 100%. It's often round about 80% and you can live with that. If you are at the top of a mountain, for instance, your oxygen saturation may be 80% and if it drops below that, then you may need the shunt. Then sometimes after birth that little duct which closes, which forms a shunt, is opened up with prostaglandin, as it was in this child's case, and then you have got time on with the shunting. But the shunt is the way of bypassing blood to the lungs and this obstruction. But it's important to emphasise there is a spectrum of conditions, so that during the Fallot's tetralogy you may have quite well-formed arteries to the lungs with only limited blood flow -- with only a minor reduction in blood flow to the lungs. Or in extreme conditions there may be no pulmonary arteries at all and the blood may come from a different source altogether.

Q. So on a scale of one to 100, how bad was Hayley's?

A. 80%, I would have thought.

Q. 80%?

A. Yes.

Q. Now, when we are born we have a hole there anyway, do we not?

A. We have a hole between the two collecting chambers of the heart. I was talking about the pumping chambers.

Q. Right.

A. And in those there is a muscle wall between the two, and that is usually sealed off completely. There is a small hole between the two collecting chambers which lead into these pumping chambers and that's there to direct blood away from the lungs because the lungs aren't functioning before you are born.

Q. But this hole we are talking about is something totally different from that?

A. Correct.

Q. And you simply cannot have it collect in those two pumping chambers -- you should not have it?

A. You shouldn't have it. Correct.

Q. Okay. Once the surgery had been completed on 14 October, your job is finished? Is that right?

A. Well, not essentially. I mean, we see the patients every day -- usually twice a day at least, morning and afternoon or evening in the Intensive Care Unit. On the wards we don't tend to see them so much by that time. We are concentrating on the operating and the patient before operation, and usually on the Intensive Care Unit. But it's not unusual for us to, as it were, bump in or see the patients or their parents on the wards when we are seeing patients pre-operatively -- before another operation.

Q. Okay. Now, I understand Hayley was on intensive care for seventeen days?

A. Yes.

Q. Is that unusually long, or is it just one of those things that can happen?

A. It's long. It's long. I can't give you the medium or minimum time, but a lot of patients with Fallot's tetralogy that we operate on would go back to the ward the next day.

Q. We know that she was on the third centile, is that right?

A. Yes.

Q. And, as I understand it, that means out of a hundred babies, 97 would be bigger than her. Is that right?

A. I think so. I am not a statistician, but yes. It means that she has not grown. She really needs to put on weight and grow, and I think this is one of the issues with Hayley. When she was born she was quite small -- unusually small -- and we never sometimes really know why that is. There are some conditions where children are small, say, in the old days with rubella -- German Measles -- that sort of thing, which would interfere with growth, but it is not always apparent, even if a premature baby born at 30 weeks or 32 weeks can be proportionately the right size, but some children get through to maturity before they are born -- say at 40 weeks or 37 weeks -- and they are smaller than they should be, and sometimes we don't know why that is.

Q. If this has nothing to do with it, you just say so. But we have been hearing about the Pugh's Charts and there seems to be one range for children from nought to one, and then you move on from one to five. Do you know that?

A. I'm not familiar with the Pugh's Chart that much. I tend to look at the patient. I am getting old-fashioned, I am afraid, in that sense. But it's a way of trying to, I think, score the way the patient is clinically, which is fair enough, I think. We tend to be more in the Intensive Care, and I like the immediate response that we see from the management of the patients there.

Q. Okay. We also heard, I should have said, that I arranged for Dr Stümper to read your --

A. Yes, he did, yes.

Q. -- and refer to parts of your operation notes because I wanted it done chronologically. We heard that Hayley's heart was on the right side instead of the left side.

A. Yes.

Q. What I want to know is: first, did that cause you particular problems at surgery; and two, whether or not it did, is that likely to have caused further problems in recovering from surgery?

A. It's always difficult to know, but the position of the heart is normally over on the left side. So in a child like Hayley, where we have to put a tube in, a valve tube from the heart to the lungs, when the heart is over to the right side more, in the mid-line, then there is not much room between the heart and the breast bone to place those tubes and that influences the type of operation you can do, and I am sure I said to mum and dad at the time that we would try and repair the heart, but we may not be able to do that. We may not be able to close the hole. We have got great experience in our institution of dealing with very complex pulmonary atresia and one of the commoner operations we do is just to place a tube directly from the heart to the lungs, but it is restrictive. So it acts, if you like, like a Fallot's tetralogy, but allows sufficient blood flow to oxygenate the patient better, and then later on you can come back and close the hole. In Hayley's case the heart was very well over and I really couldn't get a tube in to get blood to the lungs. I felt it would be compressed. So we put what we call half a tube in -- a mono-pass -- so it has some valve-like effect, but it's not perfect, and we close the hole to stop the bug going round. The issues are quite complex in the sense that you have to make those decisions at the time. We knew that she had two veins from the upper half of the body, which is unusual, and because of the position of the heart, that makes access and the technical aspects of the operation more difficult. In fact, this one on the right side from the indwelling line she had in had become narrowed and had a lot of extra blood vessels around it. So you have to make those sort of decisions, and I think in the post-operative she would probably have had a better course if we could have got a valve tube in. However, if we had done that, I think it would have got compressed. It's a problem that we might have had and, in addition, if there is any high pressures in the lungs, or any problem with the lungs afterwards, that pressure on the heart would probably have been better tolerated. So that may have influenced to some degree the outcome, I think -- the fact that we couldn't put a competent valve in -- a 100% competent valve in.

Q. I know it is obvious, but I am going to say it anyway, when you were operating on Hayley -- or any baby like this -- it is not simply a matter of looking at some bits or preordained and moving A to B. When you open the baby's chest, you really see things clearly for the first time and you are having to work with what is there?

A. That's true, but these days we know pretty much what we're going to find.

Q. Right. So you knew her heart --

A. We knew where the position of the heart was and that sort of thing, yes, absolutely.

Q. So there are no surprises?

A. There can be, but I don't think there were particularly in this case, no.

Q. Okay. We know you had a fall-back procedure --

A. Yes.

Q. -- if you had not been able to do something.

A. Yes.

Q. That would have required going back at a later date to re-operate, would it?

A. That is what you have to balance with the risk of re-operation. In general, re-operations are not very risky in our hands, but when the heart is in that position, you have got a value tube -- if you put a tube behind and you cut open the breast bone and you cut into that tube, obviously that is very dangerous. So those things you need to take into account, and also that she was small. We wanted her to grow and get better -- bigger and tolerate these sort of operations, so trying to give her the maximum amount of time. Rightly or wrongly, I took the decision that the best thing was to do a near normal circulation type of repair that we could.

Q. Okay.

A. And generally children of all ages -- even when they are very, very small; even premature, very, very small -- the nearer you can get them to a normal circulation the better in terms of outcome.

Q. So can you give me some figures? Roughly how many -- not identical, but similar -- operations do children's hospitals carry out each year?

A. Probably about twenty of these a year.

Q. About twenty?

A. Yes.

Q. And how does that compare against the rest of the British Isles?

A. About the same, I would think, for a place like Great Ormond Street or Guy's Hospital -- similar sort of numbers.

Q. Sorry?

A. Great Ormond Street and Guy's Hospital would have the same sort of numbers that we put through our unit. Maybe in the Brompton the numbers would be somewhat similar, I would have thought. We tend to deal with a lot more of the more complex pulmonary atresias, such as Hayley had, together with collaterals -- a lot of extra vessels going into the lungs. We have got the largest experience -- the second largest experience -- in the world of that condition, which is partly why the patient was sent over to us. We receive a lot of complex patients from Northern Ireland and from other centres.

Q. Okay. So it is not just major surgery, it is the particularly complex situation?

A. Yes, we have the largest sphere of congenital corrected transposition in the world. We have the largest experience of univentricular heart surgery in Europe -- probably the third largest in the world -- and complex pulmonary atresia, the second largest. And the recent review in Oxford, we had the best results in the UK over a ten year period for all heart surgery.

Q. Have you seen the post-mortem examination report from Dr Marton?

A. Yes, yes.

Q. He records that the right ventricle was slightly thicker than he would have expected. Can you tell us about that?

A. Well, the right ventricle in this condition is always thicker from birth onwards. It is always bigger. It is part of the Fallot's tetralogy (meaning four). There is a hole, there is an obstruction in the blood flow to the lungs, and there is overriding of the septum, which is not so important. But there is cardiac hypertrophy -- enlargement of the heart, and that is always there. So one would have expected that. As to the degree caused by the heart failure in the period after the operation, I am not sure. But I think it is a fair surmise that over that period of time it would have got bigger before it got smaller again, and that's why when they come back from the operating room we often leave the chest open -- we close the skin, maybe sometimes we put a plastic patch in -- to give time for the heart to recover, and Hayley had that. We did that with her as well. So it is quite common now to leave the chest open in complex sort of reconstructions for young children, to give time for the heart to recover a bit, over one day or sometimes a little bit longer.

Q. We have heard from the two consultants who were involved in the resuscitation that they managed to get no response at all, and they say that that is uncommon. Normally, you would expect to get some response, even if it was not successful, but some response. Do you want to comment on that?

A. It is very difficult. I think sometimes you get a response, sometimes you don't. I think the comment made about getting oxygen around the blood, you would have hoped that that would have helped, but the heart may have already been under such strain that it couldn't recover. We have situations where -- only a week or two back we had a child who was on the Intensive Care Unit under very close observation and suddenly arrested and stopped like that, and we couldn't get the heart going again at all. It is very worrying and very puzzling, but we have no real insight into that at this time. It doesn't always happen, but it can happen. We have seen it on many occasions. It may take, in certain situations where you have time and it's proper to put them on artificial heart, then that heart will recover sometimes over the next three or four days, but it takes quite a long time.

Q. We know that there were doctors and nurses actually looking after Hayley shortly before. We know that the senior house officer was paying -- I was going to say particular attention -- even more attention because she thought that Hayley was the sickest child at that time, and yet we know that although they saw her an hour before, they were quite satisfied. They thought that she was obviously still sick, but she was improving. And then they saw her just twenty minutes before the collapse, and they still thought she was improving, that things were all right. A. Well, it's a tragedy when that happens, and you always wished that you'd notice something before that happens, but I've been in a situation on many occasions where you see a patient, sometimes on the ward round -- I can remember two straightaway -- where you walk past a patient and everything seems to be fine and you are called back and they have arrested. It's jolly difficult sometimes. We always try to learn and pick up things and try to do better, but we still lose patients. We still have those arrest sort of situations, which we can't recover.

Q. Okay.

A. Fortunately, they are a lot rarer than they used to be.

Q. I am trying to put this in an appropriate way. If I do not manage, you will have to forgive me. You set off with a Plan A and a Plan B, and I know in an awful lot of surgery there are alternative things that might be done.

A. Yes.

Q. And when you do A or B and the patient dies, there must be a temptation to think --

A. If I'd done something else.

Q. -- "Would it have been better if I had done the opposite?"

A. True, true. I think to have left Hayley, we wouldn't have got much further as she was. Without doing anything, I think she would have been on that third centile and that would have been a real problem, and the underlying growth pattern and so forth that she exhibited before she was born may have been a determining factor, I don't know. In terms of choice of operation, she had already had one shunt done in Ireland. So that would have been another shunt, and I think would have put too much blood round the lungs anyway. Just from experience it does seem, as I said, that if you can get a more physiologic repair and a near normal circulation as possible, that's the best way forward, and that's something that is not only agreed with here, but in the States and in places like San Francisco, where they do a lot of very small baby surgery, even down to premature babies, and we've done them here as well. I think it just gives you more -- you have got less variables to deal with. It's bad enough trying to deal with the airway, as you have heard, and the lungs themselves. I think one of the things with Hayley was the way the lungs behaved afterwards, and it may be she just didn't respond to the increase in blood flow as we would have expected in terms of, you know, they were wetter than we would have thought. Sometimes, you see, for instance, if you have little blood flow to the lungs and you increase it, particularly to part or the whole of the lung, that lung gets very dense and edematous -- swollen and wet -- until it can cope with the increased flow because the lymphatic return from the lung itself is not entirely normal as well. It takes time for that to acclimatise, and I think in that period after the operation in the Intensive Care Unit -- those seventeen days -- a lot of the problems had to deal with that sort of issue with the lungs really.

Q. Okay. Now, the advocates are going to ask you questions, but can you please keep talking to me?

A. Okay.

Questioned by Mr Weitzman:

MR WEITZMAN: The surgeon in Northern Ireland, Mr Gladstone, did he retire, do you know?

A. I think he has now. I'm not exactly sure when, because he was going to be retiring for some time, I think. We have had quite a lot of patients from over there -- many patients. Basically, we deal with the more complex ones and he deals with more straightforward ones.

Q. Can I ask you to look at the letter that you sent Dr Casey, the cardiologist in Northern Ireland -- or rather Dr Miller did.

A. Dr Miller did, did he?

Q. Yes, 12 August 2009.

A. Can I --

Q. I am going to get you a copy. It is appended to Dr Casey's statement.

A. Is it the one dated 12 August 2009?

Q. It is, yes.

A. I have it here.

Q. Thank you very much, Dr Brawn. Just looking at the bottom of the first page --

THE CORONER: I am sorry, I need to find it myself.

MR WEITZMAN: My apologies, sir. (Pause)

THE CORONER: If one of the advocates can help me, I would be grateful.

MS LUCAS: Sir, you had my copy the other day.

THE CORONER: I have it.

MR WEITZMAN: Thank you, sir. Now, you were at the cardiac surgical conference, is that right?

A. Yes.

Q. So you were part of the group discussion --

A. Yes.

Q. -- once Hayley had been referred by Northern Ireland to the Trust?

A. Yes, yes.

Q. I am just going to ask you to go through this with us. Looking at the first paragraph, "Functional pulmonary arteria with VSD, although there was some antigrade flow, into small main pulmonary artery". Is that the main pulmonary artery before it branches left and right?

A. Yes. It's what I mean by 80%. She had some form of flow, but there wasn't enough. They felt in Ireland they should put a supplemental shunt to increase oxygenation at that time.

Q. So 20% of blood is leaving the left ventricle into the pulmonary artery?

A. I'm sorry?

Q. I am so sorry, I was coughing. 20% of the blood --

A. That's a figure, but yes. Because she'd been on positive pressure(?) before, so presumably she needed quite a supplemental flow, and that shunt that was put in was really taking the place of the prostaglandin.

Q. Let us deal with the shunt. She had previously undergone a left modified Blalock-Taussig shunt. Can you just explain to me from where and to where that goes?

A. Well, it's variable, but it's a little plastic tube -- Guedel tube -- usually about 4mm from the arm artery in the left side of the chest to the artery on the left side -- usually the left pulmonary artery because you can't access the main pulmonary artery, and obviously you can't obstruct that because you would shut off all blood flow to the lung at the time of creating the shunt.

Q. Looking at the second paragraph: "Distal right pulmonary artery distribution appears good, although there is a preferential flow towards the left side. The left pulmonary veins drain normally, but the right pulmonary veins are not demonstrated. They do not appear to be any collaterals from the descending aorta. The left side .... (read) and the right atrium is ...." -- and that is as a result of the echocardiogram, or is that --

A. I think it was an angiogram.

Q. An angiogram. Okay. Then it says: "We have discussed this data in some detail in our cardiac surgical conference and are in agreement that further indication is indicated, particularly given the degree of left pulmonary artery obstruction." What is obstructing the left pulmonary artery?

A. Well, where the duct enters the left pulmonary artery before birth, and kept open by (inaudible), when it closes, the duct tissue which closes can, and quite often does, involve the left pulmonary artery itself. That not only closes the duct, but it also narrows down the pulmonary artery.

Q. Oh, I see --

A. But it also may be because of the shunt as well. It's not unusual for the shunt insertion, where it's put in surgically, to narrow the artery as well.

Q. And the ductus arteriosus, which joins to the aorta and is kept open --

A. Yes, it is open before you are born.

Q. And kept open by the drug after you are born --

A. After you are born it closes, but since the seventies this prostaglandin drug has been marvellous because it keeps babies alive. You can start it straight after they are born and then resuscitate them.

Q. So it may be that once Hayley came off that drug and that duct closed, it slightly restricted the left pulmonary artery?

A. It could be the latter or it could be the shunt -- either.

Q. And it goes on to say: "And while the small calibre of the right pulmonary artery" --

A. Yes.

Q. -- what is meant by that?

A. The right pulmonary artery looks small, but that may have been just a filling across, because sometimes you get streaming when you inject the dye, so you don't truly see the true size of the vessel.

Q. So the angiogram, that scan you do beforehand. Going back to the question the Coroner asked you, it is not always as informative as when you open up and look inside the chest?

A. Yes, that's partly why you'd need the fall-back position, because if you have -- you know they are in continuity, the vessels, so you can get blood into both sides. But then it's a matter of whether you can enlarge them sufficiently for all the blood from the heart to go through without obstruction. So, for instance, it may be that in some situations -- not in Hayley's case -- then to leave a narrowed vessel to the right or to the left can be an advantage because if you had unobstructed flow you would flood the lungs, but, balancing the two gives you an ideal sort of pulmonary circulation. But, as you know, we elected not to do that in Hayley's case because we felt we could enlarge them sufficiently.

Q. I am going to come to that, because there was some evidence earlier on before you were here, Mr Brawn, questioning whether that was the right decision. I just want to go through that with you.

A. Yes, fine.

Q. "We would be happy to admit Hayley for further evaluation, which may include a CT angiogram to further delineate the distal right pulmonary artery, pulmonary veins with a view to surgical intervention on the same admission". Now, that CT was not done?

A. I think it was abortive, if I remember rightly. I don't know why exactly, but anyway --

Q. There was an attempt to do it, but it was not possible to get the results.

A. Yes.

Q. And then we have your operation note, which is with your statements, and I am also going to pass up to you the written operation notes, if I may.

A. Yes.

Q. The handwritten ones. (Handed)

THE CORONER: C32.

MR WEITZMAN: We have got "Introduction" in the typed operation note. "The child was born small for dates and found to have complex Fallot's with a small right ventricular outflow tract and severe dextra cordia. Bilateral superior vena carva. She was maintained on prostaglandins for a few weeks and then shunted. Now comes forward for consideration of surgery with a stenosed left pulmonary artery, the shunt entering probably the left upper lobe vessel but good sized left pulmonary artery, although we are not sure about the left upper lobe and the rather small right pulmonary artery. There is severe dextrorotation with bilateral severe and vena cava severe stenosis. With the vessels, makes this a bit difficult." So just again -- and I am sorry to ask you to repeat yourself -- explain at this point the two choices that face you?

A. Well, we could put a valve tube in from the heart and bypass the narrow pulmonary artery into the lungs, repairing the pulmonary arteries and close the hole, and then we, hopefully, have got a complete repair. At some stage that is going to need changing, the tube, because it's quite small. Or we could put in a monocusp, as I did, because of the position of the heart. Or we could put in a smaller tube -- valved or non-valved -- so that we had the hole in the heart still open, with a

restriction in the blood flow to the lungs through the tube, but which would allow sufficient blood flow to the lungs so that the patient was well-oxygenated.

Q. You have indicated -- and tell me if this is right or wrong -- that one of the determining factors as to which choice to make was the size of the pulmonary artery?

A. It can be, yes -- whether you can open them up to a sufficient size.

Q. And when you got inside Hayley's chest, that was the first time because one CT angiogram had been aborted and you were not sure that the other one was fully diagnostic?

A. Yes.

Q. That was the first time you were able to visualise the pulmonary arteries?

A. Yes.

Q. And if we look in the written operation note, it says: "Intra-operative findings", and five lines down it says: "Fairly good sized LPA and RPA" -- and then I can't read the next notes?

A. 6 Hayvy(?) dilator -- so that is the 6mm dilator. Because we know from studies of normal sized babies what the size of vessel should be within standard deviations, so 6 would be about right for that child size.

Q. So when you could see the heart it was plain that the two branches of the pulmonary artery were not too narrow --

A. Not too bad, no.

Q. -- to go on with the operation which you wanted to do?

A. Correct.

Q. And the advantage of that operation, if you could do it, was you were not going to have to open her up again so quickly?

A. Correct.

Q. And again we see that in your written note on procedure -- about eight lines down: "Having clipped the shunt and cooled the right pulmonary artery, which didn't seem too bad a size" -- the required size being 6mm?

A. Yes.

Q. Now, one of the concerns about a baby post-operatively is reflux of the blood from the lungs along the arteries, is that right?

A. Yes.

Q. If you have arteries of sufficient size to establish the flow, is that less likely?

A. Yes. If you have any obstruction distally, then that would exacerbate it because as the blood goes forward it would have nowhere to go. So it would come backwards and forwards more easily.

Q. And the fact that you had arteries, or pulmonary arteries, of the right size made you feel, "Well, this is an appropriate operation for Hayley"?

A. Yes, and then we've got the monocusp in there as well. In normal Fallot's tetralogy -- not as extreme as Hayley's -- then that's a routine operation.

Q. Can you help me with the monocusp, please?

A. All it is -- normally, if you look at a section of the valve across like that -- a tube across like that -- we have three little cusps --

Q. Yes.

A. -- and what we do is use one of those on the arterial wall so that it sits against the back wall of the artery or the heart. So it provides some degree of anti-reflux coming back. So when the heart is relaxing and filling up, it stops the blood flowing back into the heart. But it is not perfect.

Q. You are putting a valve into the pulmonary artery before it branches to stop blood flow back either from the left or right pulmonary artery?

A. That's correct.

Q. So you are left with a situation where, although it has been a difficult operation, you do expect the flow to be appropriate?

A. Yes.

Q. But you do have an enlarged right ventricle?

A. Yes.

Q. And the right ventricle --

A. And you have also got the tube which you have stuck on the front of the heart behind the sternum.

Q. And that tube is supplying blood from where to where, please?

A. That's going from the heart to the lungs. That's the pathway now from the pumping chamber to the lungs.

Q. I am sorry, I missed that?

A. From the pumping chamber to the lungs -- from the right ventricle to the lungs.

Q. So blood is not going through the right pulmonary artery to the lungs?

A. Yes, it is. It is going to the main pulmonary artery and then dividing into two to the left and the right side, and we had also closed the shunt as well.

Q. I am sorry, I have not understood the tube. It is my fault.

A. It's okay. What we do is -- because there was a connection between the heart and the lungs, although very narrow, we open that up and lay on that monocusp.

Q. I see.

A. So it's not separate from the original pathway. It enlarges the pathway so the pathways are enlarged from the main pulmonary artery out into both lungs.

Q. And did you do some grafting to the left pulmonary artery because it was hyperplastic?

A. I don't think I did, did I, because quite often what you can do is to extend your incision into the left, so the same patch runs into the left.

Q. I see. So you have got an enlarged right ventricle historically --

A. Yes, and she will have been born with that.

Q. She will have been born with that because there's extra work on the right ventricle?

A. Because of the underlying Fallot's tetralogy, because normally when you are born, pumping chambers are about the same size. But after you are born, then the pressures in the lungs drop, so the right heart becomes weaker and it gets smaller.

Q. When we say it is enlarged, we mean its walls are thicker? Is that right?

A. Sorry, I didn't catch that?

Q. When we say it is enlarged, we mean its walls are thicker?

A. Yes, and also the volume is enlarged as well.

Q. Are you able to say which it was in Hayley's case? Or is it a combination of both?

A. At post mortem I would think it would be both.

Q. And if the walls are enlarged, does that mean the muscle bulk is greater?

A. Yes, by the weight of the heart.

Q. And does that mean that those muscles require a larger supply of blood than would otherwise be the case?

A. That's what is supposed, yes.

Q. If Hayley's heart rate goes up and you have got the increased muscle bulk, which needs more blood, that will further increase the need of blood to the right ventricle because the muscles in the right ventricle are working hard?

A. Yes. You can certainly have situations -- and extreme situations -- where patients have very fast heart rhythms and they can go into heart failure and they are presented for heart transplants, and when they discover a fast heart rhythm, revert it and the heart gets better. So that is an extreme condition, but that is the sort of thing that can happen.

Q. You have heard Dr Neal's evidence after lunch and the discussion about the collapse of Hayley's lungs. If Hayley's lungs had collapsed so that blood is not being oxygenated, would the heart then try and compensate by beating faster?

A. Or stop completely. I don't think it beats faster in that situation. With hypoxia it usually slows -- with low oxygen.

Q. Well, at least initially, to seek more oxygen to put around the body?

A. I can't answer that in that situation, I don't think.

Q. There was speculation from the cardiologist about the actual cause of Hayley's death -- whether it was a collapse in the lungs or whether it was a collapse of the right ventricle, in some sense separated from the lungs. Is that something, Mr Brawn, you feel you can comment on?

A. The heart stopped. It became bradycardic. So finally it was a myocardium -- a muscle of the heart that gave up. The underlying cause though is difficult to say, but she suddenly had pulmonary lung pathology as well, and I would suspect that put the pressure on the heart and made it very difficult. We knew that she had that sort of lung problem in intensive care as well.

Q. I suppose that is what I am coming to. If one looks at the sequence of events, it looks as if the lung collapsed, denying oxygen to the heart, which caused the right ventricle to collapse?

A. Yes, that would be a fair surmise, I think.

Q. Thank you.

THE CORONER: Say that last bit again?

A. I think that's a fair surmise.

THE CORONER: Sorry, tell me what is a fair surmise?

A. The lung pathology itself. When you have got a weakened heart, and if you have lung pathology so that you can't oxygenate well, you are in distress, then that would put extra pressure on the heart.

THE CORONER: And how can you tell which comes first, the lungs or the heart?

A. Well, in Hayley's case both existed.

THE CORONER: Sorry?

A. Both existed together in Hayley's case -- at least in the post-operative period in the Intensive Care Unit, and it takes many months for the heart to recover after heart operation. So anything that tips the balance can be very dangerous.

THE CORONER: What I am trying to get clear in my own mind is -- we know that the heart and the lungs obviously depend one on each other?

A. Yes.

THE CORONER: And we know that her heart was in a bad way because it had been operated on and so on -- it was weak.

A. Yes.

THE CORONER: And we know her lungs were in a bad way. What I am wondering is whether you can say: it was the heart that was the cause of all this trouble; or no, no, no, no, it is the lungs that would cause all the trouble; or whether in fact it is a combination of both.

A. It is more likely to be a combination of both because I can't really put my finger on the heart or the lungs. The heart was pretty strong afterwards actually and she went through, you know, quite a lot of lung problems in the Intensive Care Unit with the heart behaving well -- as well as one could have expected in that circumstance. It think it is true to say also I wouldn't necessarily have expected for her to have had such problems with her lungs afterwards as she did, but that is variable from one patient to another. It sometimes happens, and you are not always sure why. There has been a lot, I think, in some of the evidence made of the position of the endotracheal tube, and that is very variable in the Intensive Care Unit because children are always being moved, or their heads are being moved and it's just quite a short distance and those sort of issues are usually fairly transient as soon as you reposition the tube so it doesn't block one or other airway. That usually resolves pretty quickly. Whether she had some underlying predisposition to increased phlegm and lung problems, I don't know. But in terms of the operation itself, I think it went pretty well, but I think the amount of problems she had with her lungs afterwards was a bit of a surprise actually.

MR WEITZMAN: Sir, may I just ask a couple of questions arising from your questions?

THE CORONER: Yes, yes.

MR WEITZMAN: We are concerned -- Hayley died on the morning of 11 November, and I understand that she had had complicated surgery which carries a risk in the outcome, and it is a risk of mortality, as you have described to us. But if we were trying to identify the mechanism of death on the morning of the 11th, you have heard Dr Neal's evidence, and I think you sat on the investigation following her death?

A. Yes, yes.

Q. You were one of the investigating panel?

A. Yes.

Q. And so you know that there were, as you have described it, lung problems?

A. That was confirmed at post mortem as well.

Q. Absolutely. And then you have a situation as described, that is trouble getting air into the lungs, and at that point the heart is bradycardic. No air gets into the lungs and the heart rate drops to zero. So if we were considering the precise mechanism at that time, it is, as you said, a potentially weak heart starved of oxygen by a collapse in the lungs, which causes the heart to give out. You think that is a fair surmise, do you not?

A. Sorry?

Q. You think that is a fair surmise, do you not?

A. Yes, I think that's fair, yes. It is fair because -- only just fair because you have situations where you do oxygenate the patient and the heart still doesn't pick up. So it is difficult to know sometimes. But with the lung pathology as it was, I think that would be a fair -- more than a fair surmise, yes.

Q. And you have made the point in response to a recent question by the learned Coroner that you felt after the operation the heart was reasonably strong and doing well?

A. Yes, yes.

Q. So if that heart -- if Hayley's heart -- had suddenly failed without any prior or other causative events, you would have been surprised?

A. But we do see that.

Q. I accept you see that, and you see a lot of it, so you have the clinical judgment --

A. Yes, yes.

Q. -- which is why I am suggesting in this case you would have been surprised?

A. No.

Q. We are, in some sense, there are a number of possible causes and we are speculating between them?

A. Yes. Exactly.

Q. But the one I have identified is the probable one, is it not?

A. Yes, I think so, yes.

Q. And, in fact, that was the finding of the case review on which you sat?

A. Yes.

Q. And you agreed with that finding?

A. Yes.

THE CORONER: Ms Lucas?

MS LUCAS: I do not have any questions.

MR BRAWN: Can I say something?

THE CORONER: If you want to add something, of course you can.

A. If they want to speak to me they are very welcome to -- the family or whatever.

THE CORONER: Sorry?

A. If the family want to say anything. But I think that in light of what I have said so far about the results in the unit and so forth, then it is proper of me, having worked here for thirty years, if I may to say how much I trust and highly regard the colleagues that I work with, all the way through, from doctors, nurses, physios -- everybody that you have spoke to. That is not to belittle the tragedy that occurred or to say that we can't learn from it. But we wouldn't have achieved the best results in the UK without that team support and effort and I think it's only right for me to try and say that to set things in context, if I may.

THE CORONER: Okay. Thank you very much.

A. Thank you very much.

THE CORONER: Mr Brawn, I am terrible sorry, will you just come back one moment? I am not sure I am going to phrase this right, but there was something because the heart was where it was that meant you had to stop the flow of blood?

A. The operation under circulatory arrest?

THE CORONER: Yes.

A. Circulatory arrest is one of the original methods of doing heart surgery. What it means is you cool the patient right down to 18 degrees centigrade -- normal temperature being around about 37.4 degrees centigrade -- and at that temperature the brain is protected probably for up to an hour, but certainly forty minutes, and you can recirculate cold blood as well to help protect the brain. But it means you can operate on a still quiet field of the heart. More commonly these days we use circulation throughout the operation because it gives you more freedom. It's not such a rush. You can be more careful, if you like. However, there are certain situations -- and I thought Hayley was one -- where, because of the vena drainage, it was not possible to access either the vein from the bottom of the body or the right one which was narrow. So it made it more complicated, and I thought it would be more hazardous for her if we did it that way. So we went on bypassing cooled right down. The other thing is that because the children are so blue, even at this young age they develop a lot of lot of extra little blood vessels in the lungs, and that feeds blood back, so you don't have a clear field to operate in. So, again, cooling the patient right down gives you that clear field and enables you to see much more precisely what you are doing.

THE CORONER: So that is something I need to take into account, is it?

A. I don't honestly think so, sir. I think it's a method of performing the repair. If, for instance, there was brain injury afterwards or something like that, then one would be concerned that that might have been a part of the problem.

THE CORONER: I can ignore it as a problem?

A. I think so, sir.

THE CORONER: I am sorry, I forgot to ask it earlier. Do either of the advocates want to come back on that point? No? Thank you very much. Now, it is seven minutes past three. I will tell you what we are going to do and then we will break for ten minutes. So if anybody wants to say anything more you can.

I have now called all the evidence that I propose to call, apart from the experts and the evidence of the hospital of their own investigation, which I do not want to hear until we have heard the experts. All of that is going to happen in September, we hope.

I am going to break, as I have said, for ten minutes. At the end of that time I am going to ask, first, whether the family want to come into the witness box and give more evidence -- and I emphasise evidence, not comment on evidence that has been given, evidence. If and when they do or do not, then the same goes for everybody else. If there is anybody in court

who has not given evidence and wants to do so, you will have an opportunity to. If there is anybody who has already given evidence and wants to come back and give more evidence -- again, not by way of comment but because you did not bring it out before because you had not heard some of the other evidence -- you will have an opportunity to do so. Okay?

When we have been through that, I shall then be adjourning. I am hoping the advocates with my Office a pre-hearing review date, but, if not, then you will during this ten minute break. That pre-hearing review date will be a short hearing in public, just like every other hearing is in public. The purpose will be to check and make sure that we have now identified the expert, that we know when his or report is supposed to be ready, that we know that the other expert will also be available at the right time, and that the three days are sufficient for the rest of the evidence that we have got to hear. Okay?

The advocates at that pre-hearing review will also be addressing me on the question of disclosure and privilege. You all understand what that mean. I think that the advocates ought to produce for me not only the expert's report, but everything that goes with it. What I do not like is the thought that experts have been talking to advocates and say, "Don't ask me this question because the answer could be embarrassing". Okay? I do not want that sort of thing. What I want is to have everything on the table, so we know nothing is being hidden. If the advocates do not wish to do that, then they are going to have to explain to me, first in writing, and thereafter verbally what the justification for it is. There are two justifications. One will be the legal basis, and there will be reasons for enforcing that legal basis. But I repeat, in case anyone has not got the message yet, an inquest is supposed to be a simple, fact-finding exercise carried out in front of the lowest level of judge -- not a high-flying person from the Supreme Court. I am supposed to find out facts -- not apportion blame, not carry out expert analysis. My job is to try and find out what happened, and I think that that is best done by everybody being open.

So we will discuss that with the other matters at the next pre-hearing review.

Paula, I know that at the moment your intention is not to come back -- and I can understand that as you live in Australia. If you do decide to come back -- and of course you can change your mind at any stage -- but just remember how long it takes us to get experts available. It is already, to my mind, too long, and it is going to be even longer. What we do not want is even more adjournments after that.

It is now almost 3.15. We will come back at 3.30.

(Short adjournment)

THE CORONER: It is now 3.30, so the court is in session again. Mr Weitzman, do your clients want to give any more evidence?

MR WEITZMAN: Miss Stevenson would like to give some more evidence, yes.

THE CORONER: Yes.

MR WEITZMAN: Does she need to take the oath again, sir?

THE CORONER: No, she is still on oath from before.

Paula Stevenson (Recalled)

THE CORONER: You are still on oath from before. What is the additional evidence you want to give?

A. Yes. On the night/early morning -- it was the early morning of Tuesday, when Hayley's lung had collapsed. When Hayley's lung collapsed, I was hoping that she would be put into intensive care. So the whole time -- the whole morning I was waiting and waiting for somebody to come. So I was very aware, and I was very alert. So I listened out for the door opening, and I listened out for any footsteps, and I kept a really vigilant eye on her. Most of the time I had my hands in the incubator box -- sorry, in the head box, and I was just trying to stroke her wee head, but then I was worried about the oxygen supply, and I was just telling her I was really sorry that I couldn't get her help.

I swear it was Pam Dawson and Hayley Stretton(?) were very good.

THE CORONER: Sorry?

A. Pam Dawson and Hayley Stretton were very good. They responded to Hayley. But nobody else came into that room. The first time that I saw Dr Porwall was in this court yesterday, and because I was so distressed and so panicked about Hayley's condition, because I was really desperate for her to get help and to be put back into intensive care, you are very alert because your heart is racing. You know the flight or fight syndrome? You are just really aware, and I was actually quite jumpy, and there's no way that he came into the room because I didn't even -- I was too scared to even go to the toilet. So I did not leave Hayley's side the whole time, and I swear I never saw him. I never saw him at all.

THE CORONER: This is the morning of what date?

A. It's Tuesday morning, because he said that he reviewed Hayley between --

THE CORONER: Tell me the date?

A. Sorry, the 10th. The 10th November. So he said that he examined Hayley, I think it was between four and five. Was it between four and five? I did not sleep. I didn't sleep for 38 hours before Hayley died. Okay. That's it.

THE CORONER: Okay. It is obviously a pity that the doctor is not here, but we already knew that Paula was saying that he did not come in.

MR WEITZMAN: I did put that to him, yes.

THE CORONER: Mr Stevenson, anything you want to add?

MR STEVENSON: No.

THE CORONER: Is there anybody else in court who has not given evidence who wishes to do so? Is there anybody else in court who has already given evidence who wants to come back and add to what they have already said? No? Okay.

We are now going to adjourn. We will adjourn until 8.30 on Monday 11 June 2012. That will be at Sutton Coldfield town hall -- not here -- and that is for a pre-hearing review to deal with the matters I have already referred to.

I have already said that I will be going to look at Wards 11 and 12. It would be fairly irresponsible of me to go at the moment, but I will find a time when I am germ-free. I would expect to contact someone at the Children's Hospital. So I do not need the advocates. But you are very welcome, of course, to come if you want to.

When I contact the Children's Hospital, I shall make it abundantly clear to them that all I am going to do is to walk round the two wards. They will not talk to me. We shall simply be walking round.

So if you wish something today, or some other day, it is up to you to arrange it. Okay?

MR WEITZMAN: Yes, sir.

THE CORONER: The next thing is, so far as the witnesses are concerned, the pre-hearing review that I have already announced will be legal argument. I cannot imagine many of you actually want to come and listen to that. If you want to be notified of the confirmation of the next hearing, which we think is going to be 12, 13 and 14 September, then please tell my officers, because otherwise I will not be notifying every one of you individually. If you want to be told and you want to attend, you are of course very welcome to do so. It may well be that I will not be summing up on the 14th. It depends on the evidence that I have yet to hear. So if you want to attend the summing-up, then leave a note that that is what you want and you will be notified, otherwise everything will go through the two advocates. Okay?

Just thinking ahead, a situation might arise where somebody wants to hear more factual evidence. You had better both be prepared to argue that. The court order says that I am supposed to listen to expert evidence at the next hearing, but I do not suppose anyone put to the learned judge the possibility that somebody might decide to ask me to hear more factual evidence. So you might think about it, so that it does not take you by surprise if it happens.

MR WEITZMAN: You are calling two factual witnesses, as I understand it, in any event?

THE CORONER: I am calling two factual witnesses?

MR WEITZMAN: Dr Debenham and Dr Dwaker -- as I understand it.

THE CORONER: I am not being sufficiently precise. I meant factual evidence of what actually happened -- people who were there, etc. Somebody might say, "Well, there is another nurse who can add this, that and the other". Okay? The other two witnesses you are talking about are the ones who carried out the investigation and you can comment on that.

MR WEITZMAN: Yes.

THE CORONER: Good. Okay. Do either of the advocates wish to address me on anything else?

MS LUCAS: No, thank you.

MR WEITZMAN: No, thank you.

THE CORONER: So that is all that we will be doing today. To those witnesses who do not come back again, let me thank you for coming, and in particular thank you for putting your evidence in the way that we can understand. I know it must be very difficult having to dumb things down to my level, but unless you tell it to me in a way that I can understand, it is a pretty pointless exercise. But I do appreciate how difficult it is. Okay. We are now 3.40, and we will start again on 11 June. Thank you all very much.

(The Inquest was adjourned until Monday 11 June 2012)

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