

Wednesday, 9 November 2022

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(10.30 am)
MR JUSTICE GOSS: Yes. Jury in, please.

(In the presence of the jury)

MR JUSTICE GOSS: Yes, Mr Astbury.

MR ASTBURY: My Lord, I call Dr Elizabeth Newby, please.

DR ELIZABETH NEWBY (affirmed)

Examination-in-chief by MR ASTBURY

MR ASTBURY: Good morning. Can we start with your full name, please?

NEWBY: Elizabeth Anne Newby.

ASTBURY: And your profession, please?

NEWBY: Doctor.

ASTBURY: Thank you. We understand that you were employed at the Countess of Chester Hospital, certainly during the month of June of 2015, in (inaudible) capacity as a consultant; is that right?

NEWBY: That's correct.

ASTBURY: Can I begin by asking when you first qualified as a doctor?

NEWBY: Gosh. 1995.

ASTBURY: And qualified in your specialty?

NEWBY: I finished my training in 2006.

ASTBURY: And your specialty is?

NEWBY: Paediatrics.

ASTBURY: Thank you. You were employed at Chester in the capacity of a consultant paediatrician?

NEWBY: Yes.

ASTBURY: When did you start at Chester as a consultant?

NEWBY: Um... Beginning of 2006. Sort of February/March time, I think.

ASTBURY: So you'd been there some years at the time I'm going to ask you some questions about now in June 2015?

NEWBY: Mm-hm.

ASTBURY: We've heard about the general set-up with consultants at the time, for example the consultant of the week system, weekend cover and night cover. Did you have any additional responsibilities when you were at Chester at that time?

NEWBY: Not particularly, no.

ASTBURY: I'm going to ask you questions, please, about a baby called [Baby D], who we know was born just after 4 o'clock on 20 June 2015, which was a Saturday --

NEWBY: Mm-hm.

ASTBURY: -- by emergency caesarean section at an age of 37 plus 1, as it's expressed, as far as her gestation was concerned. She had a history of premature rupture of membranes. We have heard from other junior doctors who treated [Baby D] and her condition and treatment through her period on the neonatal unit. I'm going to ask you please about your contact with [Baby D]. You may be asked more about those details in due course but I'm going to ask you about your contact. There will be notes, hopefully, appearing on the screen to assist you as we go through.

NEWBY: Good, okay.

ASTBURY: My understanding is your first dealings with [Baby D] were on the evening of 20 June 2015, so that would have been later in the day she was born. We've heard she was admitted to the NNU some hours after her birth.

Could you from recollection, initially, tell us, please, how you came to deal with [Baby D] on that particular evening?

NEWBY: Could I see the medical notes?

ASTBURY: Of course, yes. Could I ask Mr Murphy to go to slide 34. What you'll see is we have a coloured presentation, but behind the slides we'll go to the original notes.

NEWBY: Okay, thank you.

ASTBURY: Hopefully that helps. Slide 34, please. These are notes from Dr Brunton, but I understand that at that stage you had a conversation with him about [Baby D]; is that right?

NEWBY: That's correct, yes.

ASTBURY: So if we go to his notes. They're timed at 21.45.

NEWBY: Okay, yes.

ASTBURY: Cast your eye over those notes, please. Are you able -- they do continue on to the next page. If we could briefly go on to the next page if that helps.

NEWBY: Yes. That's fine, thank you.

ASTBURY: So having refreshed your memory from those, do you recall any contact with Dr Brunton that evening concerning [Baby D]'s condition?

NEWBY: Yes. Yes, Dr Brunton had phoned me at home. I had left the unit for the day, but I was aware of [Baby D] because Dr Rylance had made me aware of her and Dr Brunton telephoned me to say that he felt that she wasn't managing on CPAP, her gases had deteriorated, and so he wished -- he felt that the right course of action was to intubate and ventilate her and I agreed with that and he went ahead and did that.

ASTBURY: I mentioned earlier this was a Saturday --

NEWBY: Mm-hm.

ASTBURY: -- and you described you were on the unit earlier but you'd gone home. So what were your responsibilities over that particular weekend?

NEWBY: So as the consultant on call, we would always be in the hospital from 9 in the morning to complete ward rounds, so to see every patient that was admitted, that was on the ward, on the paediatric ward and on the neonatal unit, and then we would stay until it was -- things had quietened down, everything was sorted and there were no outstanding issues or particularly sick patients that needed review, and then we would be on call from home.

ASTBURY: Okay. I mentioned before this was a Saturday.

NEWBY: Yes.

ASTBURY: Would you do just the Saturday or both days of the weekend?

NEWBY: Both days.

ASTBURY: So you discussed with Dr Brunton intubating [Baby D]?

NEWBY: Mm-hm.

ASTBURY: You presumably had an input into the decision?

NEWBY: Mm-hm.

ASTBURY: We've seen and heard that that was then what took place.

NEWBY: Mm-hm.

ASTBURY: You have helpfully set out -- I'm just going to ask you to cast your eye again over those notes. They run across two pages. If we can go back to the first page, please, and if you can just take a moment and tell us, please, if there's anything significant in there that you recall informing your decision or that stands out to you.

NEWBY: Okay. So she was requiring a relatively high percentage of oxygen. On the CPAP she was needing 48% oxygen, and she had a respiratory acidosis shown on her blood gas, which means that she is not managing to clear CO2 effectively --

ASTBURY: That's carbon dioxide --

NEWBY: Yes.

ASTBURY: -- exhaled by the body and that has an effect on the -- is that the pH of the blood?

NEWBY: Yes.

ASTBURY: Sorry to interrupt.

NEWBY: So yes, so she has a respiratory acidosis, a high carbon dioxide, and a high oxygen requirement and at the time in 2015 CPAP was what was available to us as a non-invasive mode of helping babies with their ventilation. So at that time the next step would be intubation and ventilation.

ASTBURY: And we've heard that that involves passing a tube down the baby's throat --

NEWBY: Mm-hm.

ASTBURY: -- and into the lungs to assist with breathing.

NEWBY: Yes.

ASTBURY: Okay. Again, if we can go to the second page, please, and check there's nothing else there that significantly bore on your decision or your discussions at that stage.

NEWBY: No. That's fine.

ASTBURY: Thank you. Now, after intubation has been facilitated, I understand the process is to take an X-ray of the baby to check the position of the tube.

NEWBY: Mm-hm.

ASTBURY: So if we could go next, please, to slide number 3 and go behind it. Would you have been alert to this or would this have been Dr Brunton's sole responsibility to review this?

NEWBY: Dr Brunton would have reviewed this, yes.

ASTBURY: So if we can go, please, to slide 50. Scroll down.

We can see what we've been told is effectively a sticker which goes into the notes and which deals with the findings of any given X-ray or scan or imaging that takes place. Is that in accordance with your understanding?

NEWBY: That's correct, mm-hm.

ASTBURY: Thank you. If we go next, please, to -- is there anything -- I mean you've seen -- you've been through the notes in preparing your statement. Is there anything of note in respect of the position of the tube?

NEWBY: As Dr Brunton's commented, it's a little bit high, the tube, it's sat just at her clavicles, so he has advanced that a little bit, by 0.75 of a centimetre, and has documented that he has done that, which would be -- would make the tube more secure.

ASTBURY: Thank you.

NEWBY: Yes.

ASTBURY: Could we go next, please, to slide 55, Mr Murphy.

We can see that the slide at the front had your name on, so I'm going to ask you, please, to look at the document that's behind it and explain to us what that pathology report tells us. That was taken, as I understand it, later in that particular evening.

NEWBY: Okay. So [Baby D] had been noted to have a raised bilirubin level when she was first admitted to the unit, which was higher than expected for her age at that time.

So we would investigate to look for an underlying cause of that. One of the underlying causes for that would be a discrepancy between the maternal and the baby's blood group. The most common cause would be, for example, a Rhesus negative mum and a Rhesus positive baby or an ABO incompatibility. This showed that the baby's blood group was A positive and there were no antibodies detected in the baby's blood which shows that there was no blood group incompatibility, so that was very unlikely to be the cause for the raised bilirubin.

ASTBURY: So that's to do with that bilirubin level, which we have heard referred to -- well, relating to jaundice and discolouration of the baby?

NEWBY: Yes.

ASTBURY: Slide 107, next, please. I understand your next involvement with [Baby D] was the following morning, the morning of the 21st, which is now the Sunday.

NEWBY: Yes.

ASTBURY: I'm going to ask to go to your notes, please. If you could explain to us -- we can see there 9.25 that morning.

NEWBY: Mm-hm.

ASTBURY: Your name at the top. Is that "D2"?

NEWBY: Day 2 of life it refers to, yes.

ASTBURY: Thank you. Then [Baby D]'s age on the next line; is that right?

NEWBY: Yes:

"37 plus 1 weeks' gestation. Caesarean section for failed induction."

So I've just recapped the history a little bit from the day before.

ASTBURY: Take us through that, please.

NEWBY: Yes. It says that:

"[She was] born in good condition but had an apnoeic episode reported at 12 minutes of age."

Ie she's stopped breathing:

"She then started grunting after that. She was brought round to the neonatal unit at 3.5 hours of age, was noted to be cyanosed with poor saturations in the 40s."

ASTBURY: Pausing there, cyanosed is?

NEWBY: To appear blue.

ASTBURY: Right. That's a sign of what?

NEWBY: Poor oxygenation.

ASTBURY: Right. And that would be presumably consistent with the saturation figure that you have then gone on to mention which represents what, please?

NEWBY: So the percentage of oxygen in the blood, if you like.

ASTBURY: So it's in the 40s, where would you expect or hope to have it?

NEWBY: Hopefully over 92 for a baby of that gestation.

ASTBURY: Okay. And then your next note confirms what you told us, she was initially on CPAP?

NEWBY: Mm-hm.

ASTBURY: But then as a consequence of your conversation with Dr Brunton, ventilated overnight?

NEWBY: Mm-hm.

ASTBURY: Could you then take us, please, through the rest of your note, which can I confirm is based on your examination --

NEWBY: Yes.

ASTBURY: -- of [Baby D]?

NEWBY: Yes. Dr Brunton had extubated her just prior to handover at 9 o'clock because she had done extremely well on the ventilator and very quickly after being extubated her gases had normalised and the oxygen levels had come down, probably in relation to having received a dose of surfactant, which is a drug that we give to help with the compliance of the lungs, which we give down the ET tube when we intubate and ventilate babies.

So actually, prior to handover in the morning, she had been very good on minimal pressures and low oxygen, so he had extubated her for review on the ward round. And indeed she seemed good from a respiratory point of view.

She'd been extubated 25 minutes prior to my review, she was self-ventilating in air --

ASTBURY: Pausing there, that's obviously SVIA. Does that mean any breathing assistance at all?

NEWBY: No. So she was breathing on her own, yes, in air, so no supplementary oxygen. Her saturations were 100% in air.

She was pink and well perfused. I felt that she was a bit quiet still and so I had noted that heart sounds were normal, her chest was clear, I felt that when I examined her, when I handled her and moved her limbs, she felt perhaps slightly as if her tone was a little bit increased.

ASTBURY: Explain to us tone, please.

NEWBY: Tone. So your tone is -- gosh, how can I explain tone?

ASTBURY: I hope you can!

NEWBY: So rather than feel it -- so if you have low tone you'll be floppy, so you won't be able to maintain and hold your posture, if you like. If you picked up a floppy baby it would almost sort of hang in your arms like a rag doll, is the best way to explain it.

A slightly -- a baby with slightly increased tone, when you moved their limbs they might not move as fluidly as you expected, you might feel some resistance to movement.

ASTBURY: Right. So here, tone was increased, so was that the latter of the scenarios?

NEWBY: Yes. She felt a little bit tense and stiff to handle.

ASTBURY: Okay. Then the last line in that paragraph, if I can put it that way, something present?

NEWBY: Moro. The Moro reflex is a primitive reflex that babies have. If you hold them and then you slightly let their head go, there is a natural reflex that they will push their --

ASTBURY: Right. For the benefit of the tape, you're holding your hands up and throwing them up as if -- does the baby not quite jolt but react?

NEWBY: It's a primitive reflex.

ASTBURY: And in respect of your examination of [Baby D], what, if anything, did that tell you?

NEWBY: That was normal, so I was a little bit more reassured about her neurological examination.

ASTBURY: Okay. Then P stands for?

NEWBY: Plan.

ASTBURY: Could you tell us please what the plan was based on your examination that morning?

NEWBY: Okay. So we'd recently extubated her, so we needed to do a capillary gas an hour post extubation to confirm she was managing off the ventilator, continue with the IV antibiotics, repeat her U&Es, which refer to blood electrolytes and renal function, because she was on IV fluids, we weren't feeding her at that point. And CRP refers to C-reactive protein, which is a non-specific inflammatory marker, which is -- when raised can be indicative of infection.

And await the blood cultures, which is blood that we always take when we -- before starting babies on antibiotics to see if there are any organisms in the blood that we could identify responsible for infection.

ASTBURY: Did you have any particular concern at that point?

NEWBY: So I felt it was likely that there was an element of infection given the history. We knew that she had -- mum had had prolonged rupture of membranes, she'd had the apnoeic episode just shortly after birth. She had developed respiratory distress and needed intubating, slightly increased tone, and the fact that she was a bit quiet would all be consistent with infection.

ASTBURY: Okay. I understand that the next time you had any involvement with [Baby D] was when you received a call from Dr Rylance; is that right?

NEWBY: Yes.

ASTBURY: That was 1 o'clock that afternoon?

NEWBY: Mm-hm.

ASTBURY: I think if we can go, please, to slide 127. If we click into that. I know it says Dr Chowdhury. That's the same page. If we go down.

We can see there a note at 13.25 --

NEWBY: Mm-hm.

ASTBURY: -- shortly after your conversation with Dr Rylance.

Does that assist with the conversation that you had with her?

NEWBY: Yes. Yes, Dr Rylance had phoned me to say that although, from a respiratory point of view, [Baby D] appeared to be doing well, she was concerned that she remained quite quiet and I think -- I'm trying to...

I think there was a blood gas that had a bit of a metabolic component, so she'd wanted to give her a little bit of fluid and she felt that we should have some central access so that we could monitor the situation a bit more clearly.

ASTBURY: I'll ask you to pause there. Metabolic component?

NEWBY: So a blood gas looks at respiratory status and also a metabolic component, which would be a surrogate measure for your cardiovascular status. So a metabolic acidosis implies that you're not perfusing your tissues as well as you should be and therefore you're building up lactic acid, which would give you the acidosis. So yes, a metabolic acidosis would imply some kind of cardiovascular compromise and underperfusion of peripheral tissues.

ASTBURY: Perfusion being?

NEWBY: The amount of blood and oxygen that's getting to the tissues.

ASTBURY: Thank you. As a result of your conversation was any decision made?

NEWBY: So the decision was -- Dr Rylance wanted to insert some umbilical lines to give us a little bit more of a clearer picture of what was going on so I agreed that that was a very reasonable thing to do. I think, although I don't know if it's -- I'd have to refer to the notes whether it was documented, but I think she gave [Baby D] some fluid and actually, after insertion of the lines, the gases were better and things seemed to improve.

ASTBURY: We can see from the note that those -- well, tell us what the note tells us, please. It says UVC and UAC.

NEWBY: Yes:

"UVC inserted, SPR Rylance, aseptic technique, at 5 centimetres. UAC inserted, SPR Rylance, aseptic technique at 20.5 centimetres."

And those are the batch numbers for the lines that went in.

ASTBURY: Okay. If we can go, please, to slide 133. We can see there the note timed at 2 o'clock from Dr Rylance.

NEWBY: Okay. So yes, Dr Rylance has attempted to insert the lines. Unfortunately, she wasn't able to advance the UVC far enough, so that was removed. So she had continued and inserted the UAC, which had gone into the correct position but wasn't sampling back. She pulled that back, having confirmed on the X-ray that it had gone in too far, and it started sampling when placed at 9 centimetres. So the gas that's documented before is an arterial gas rather than a capillary gas, which gives us a much more accurate evaluation of the situation and in fact that gas is completely acceptable: normal pH of 7.34, normal CO₂, and a base excess which would be acceptable, and a normal lactate. A normal lactate would mean that in fact perfusion was adequate.

ASTBURY: Just so we understand, what's the significance of the arterial sample?

NEWBY: So you're sampling more centrally, if you like. When you take a capillary gas you can't fully evaluate the oxygen content of the blood because the blood has gone out to the capillaries by then, whereas an arterial gas gives you a very accurate measure of exactly what's going on.

ASTBURY: Right, okay. We can then see, if we scroll down a little, reference to X-rays or an X-ray.

NEWBY: Mm-hm.

ASTBURY: Explain those to us, please.

NEWBY: Okay. She's then commented that the UAC is probably actually a UVC and is in the liver, which we wouldn't want to happen. So she's pulled it back further. So actually, that gas is probably a venous gas rather than an arterial gas.

ASTBURY: Right.

NEWBY: But it's still acceptable and in fact as a venous gas is a good gas.

ASTBURY: Right. Do you recall during that conversation what [Baby D]'s breathing status or ventilation status was at that stage in the afternoon?

NEWBY: I don't know without there being a record.

ASTBURY: If you don't remember, you don't remember. Could I ask next for tile 136.

If we go to the fluid balance chart, please. If we can look at the entry, please, at 1.30 that afternoon on the right-hand side (inaudible).

NEWBY: Yes, it is, yes.

ASTBURY: We can zoom in, I think, if that helps.

NEWBY: It's fine. So a fluid bolus has been given.

ASTBURY: And the purpose of the fluid bolus?

NEWBY: To help with tissue perfusion.

ASTBURY: Okay. There we go.

NEWBY: Lovely.

ASTBURY: We can see there a little more clearly an entry at 13.30, "Saline bolus, 0.9%" is that?

NEWBY: Mm-hm.

ASTBURY: And volume, 30ml?

NEWBY: Mm-hm.

ASTBURY: Initialled by the nurse on the right-hand column?

NEWBY: Yes.

ASTBURY: Did you have any more conversations or contact with [Baby D] during the course of the rest of that particular afternoon or evening?

NEWBY: Not that I recall, no.

ASTBURY: We've heard that [Baby D] had an episode at about 1.30 in the morning, so into the Monday when you would still have been on call.

NEWBY: Mm-hm.

ASTBURY: Do you remember that?

NEWBY: Yes.

ASTBURY: Can you tell us what you remember of that, please?

NEWBY: I remember Dr Brunton phoning me to say that [Baby D] had had an episode of profound desaturation and he asked if I would come and have a look and go into the hospital and assess her.

ASTBURY: Okay. Any particular reason he wanted you to come and have a look that you can recall?

NEWBY: I can't... I mean...

ASTBURY: We can go to your notes in a minute. I wonder if you can remember.

NEWBY: A baby that had -- you know, I think it was because she had been so stable and then had deteriorated.

ASTBURY: Right, okay.

NEWBY: Yes.

ASTBURY: If we can go to slide 218, please. If we scroll down a little bit, please, we can see Dr Brunton's signature on the left.

NEWBY: Mm-hm.

ASTBURY: We can see -- and we've been through this already so I'm not going to ask you about this. We can see his notes that he made. We can see the last line that he wrote in his manuscript was:

"Discussed with Dr Newby. Will R/V [I assume] on NNU."

NEWBY: "Will review", yes.

ASTBURY: We can scroll down then. That's your handwriting?

NEWBY: It is, yes.

ASTBURY: If you could read that for a moment, please.

(Pause)

I would like you just to talk us through that entry, please.

NEWBY: Okay. So I arrived on the unit around 2 in the morning.

When I arrived she was saturating well on CPAP in air.

Peripherally her feet had a prolonged capillary refill time, around 4 seconds, fingers around 3 seconds, and there were two - - I've put in inverted commas -- bruised areas on her abdomen, like evolving purpura.

ASTBURY: I'm going to ask you to pause there. Whereabouts on her abdomen were these two areas, can you remember?

NEWBY: Gosh... I can't say precisely, to be honest. There were two areas. They were sort of elongated areas, one... I can't remember. I can't say.

ASTBURY: Okay. But you remember or you noted there were two areas?

NEWBY: Yes.

ASTBURY: Do you remember there were two areas?

NEWBY: Oh yes, definitely. I couldn't give you the precise position on her abdomen, but there was definitely, as I've noted, these two areas.

ASTBURY: Could you help us with the appearance of those two areas, please?

NEWBY: Yes, they were quite hard to describe in a way. It was almost like a sort of brown discolouration.

ASTBURY: Right.

NEWBY: We didn't know what to make of them, to be honest.

ASTBURY: Right.

NEWBY: It was quite unusual. We assumed -- we felt it must be related to infection and we kind of discussed that had it been an older child, perhaps round on the paediatric ward, thinking of, for example, meningococcal disease, which we see not so much these days, thank goodness, but then you might attribute it to sepsis and DIC, which occurs with sepsis, disseminated intravascular coagulation, which is when the sepsis triggers your inflammatory cascade and you get overwhelming activation of inflammatory cytokines and your clotting becomes abnormal and therefore you get bruising and purpura appearing under the skin.

ASTBURY: You said you considered that?

NEWBY: I considered it because we didn't know -- we... But I knew that couldn't apply to a neonate because you don't see meningococcal disease in neonates. But we just felt that the only thought we had that night was that this must -- that it must be related to infection.

ASTBURY: Okay. You used the word purpura. Could you explain that one to us, please?

NEWBY: Purpura just refers to a big bruise under the skin, really.

ASTBURY: All right. So it was brown in colour?

NEWBY: Mm.

ASTBURY: Anything else you remember about it?

NEWBY: Just really the shape in a way. They were sort of linear bruises. Bruises is the best way I can describe it, really.

ASTBURY: So let's just carry on with your note for now, please.

Next is a reference, I think, to more saline.

NEWBY: Yes. So Dr Brunton had already given another bolus of saline and he'd repeated her bloods whilst I was on my way in. So we were waiting for those blood results to come back just while we were assessing her and seeing how she was over the next hour or so whilst we were waiting for the bloods to come back. And I have just noted the last blood results from the evening

before, which were taken at 8.35, noting that she had a low sodium and that her platelets were low as well.

ASTBURY: Okay. Just carry on with the note, please, sorry.

NEWBY: I've noted that the fluids that we were giving her at the time were just 10% dextrose, so there was no additional electrolytes in those, so we added in some sodium chloride to the fluids to correct the low sodium.

We increased the dose of her antibiotics, the benzylpenicillin, from twice a day to three times a day, to cover for severe infection, and we've added another antibiotic, cefotaxime. We made a plan to do an abdominal X-ray and to continue with supportive management. She was on CPAP at the time and she was in air and I remember myself and Dr Brunton having a discussion about whether there was an indication to re-intubate her at the time given this episode, but it was difficult to justify re-intubating a baby that was saturating 100% in air on CPAP. So we just discussed that we would obviously have a very low threshold to intervene and intubate her were things to deteriorate from a respiratory point of view.

ASTBURY: Okay. She'd had this profound episode --

NEWBY: Mm.

ASTBURY: -- but by the time you're considering whether to intubate, you've described her as saturating at 100%?

NEWBY: Mm.

ASTBURY: How did it unfold then once you'd arrived?

NEWBY: So really, by the -- when I got there she was -- she had recovered. As I've noted, she's saturating well. Still a little bit peripherally poorly perfused, but she was picking up and she seemed more settled.

ASTBURY: What about the bruising that you saw on the abdomen?

NEWBY: So that was still present and it was -- I just can't remember, to be honest. That was definitely still present when I arrived because I have noted it and I remember seeing it. What happened to it as we were -- I was on the unit for about an hour or so because I wanted to just wait and see what happened for a while and make sure she was stable and I wanted to see the blood results before I left. I can't remember whether it changed or not, to be honest.

ASTBURY: Okay. If we continue, I think, with your note. Is that the end of it on that particular tile? I'm sorry, okay.

We can see your signature at the bottom. So that's --

NEWBY: Yes.

ASTBURY: You're relying on your recollection for staying on for the hour?

NEWBY: Yes.

ASTBURY: And you don't now have a recollection of what happened to the rash over that period?

NEWBY: No.

ASTBURY: All right. Are you aware of any other incident that followed that in the early hours of that morning?

NEWBY: Yes. So I left and then not long after, I was called back urgently to the unit because [Baby D] had had a further episode of collapse, and Dr Brunton was in the process of resuscitating her when I arrived.

ASTBURY: Just dealing with that, are you able to say what time you left the unit?

NEWBY: I don't know. I must have been there perhaps an hour, an hour and a half, because that's the usual time it takes the labs to turn things round. So probably an hour -- probably approximately an hour.

ASTBURY: Okay. How long after you had left do you think you had that call from Dr Brunton, can you say?

NEWBY: Not long. Maybe an hour at the very most. It wasn't long.

ASTBURY: So what did Dr Brunton ask you to do?

NEWBY: He just asked me to attend urgently.

ASTBURY: Okay. Did you?

NEWBY: Yes.

ASTBURY: What did you find when you went back?

NEWBY: When I arrived, there was a full resuscitation in progress. [Baby D] was intubated and they were resuscitating her as per the protocol and she was receiving full CPR.

ASTBURY: Do you remember who was present?

NEWBY: I remember Dr Brunton being there. I remember one of the nursing staff, Caroline Oakley, being there.

I don't remember who else was there.

ASTBURY: Right. If we can go, please, to slide 264.

This is the note commencing on your arrival, not taken by you, but it indicates that you arrived.

NEWBY: Yes.

ASTBURY: At 4.07.

NEWBY: Mm-hm.

ASTBURY: We can then see the measures that were taken in an attempt to resuscitate [Baby D]. If we can scroll down the page, please. At 04.15 we can see that you made a request. Could you just tell us about that, please?

NEWBY: So we -- by then she'd had five doses of adrenaline, so as per the NLS guidelines at the time I asked that we increase the dose of adrenaline to 0.3ml per kg. We then gave a further bolus of sodium chloride. Do you want me to continue?

ASTBURY: I'm just going to ask you to pause there. You were by now treating [Baby D]?

NEWBY: Yes.

ASTBURY: And were able to see her?

NEWBY: Yes.

ASTBURY: Were the marks still on her abdomen at that point?

NEWBY: I really don't know. I really don't know.

ASTBURY: Yes, 4.18, please, is your next entry.

NEWBY: Yes. So by 4.18 we had -- it had been 28 minutes since the collapse and there had been no response at all to any of the measures taken. So it was very, very unlikely at this point that we would be successful. So I spoke to the parents to explain that to them and we took the decision to discontinue resuscitation.

ASTBURY: And we can see that that was at 4.21, the decision was taken, and that [Baby D] sadly passed away at 4.25.

NEWBY: Mm-hm.

ASTBURY: If we go back to slide 258, please. This is your retrospective note --

NEWBY: Mm-hm.

ASTBURY: -- of those events. If we can just go through it, please. We can see the crash call, you record, at 3.58 am.

NEWBY: Mm-hm. Yes.

ASTBURY: That's about an hour after you'd left on the last occasion by your recollection?

NEWBY: Yes.

ASTBURY: So you assume you would have left about 3 am, you're called about an hour later, and you're there at 4.07.

NEWBY: Mm-hm.

ASTBURY: "Resuscitation in progress", so as documented above.

I should just say that these clinical notes, of course, run one page after the other --

NEWBY: Yes, they do.

ASTBURY: -- so what we have just looked at is in fact the page before and you then come to your make notes afterwards.

NEWBY: Mm-hm.

ASTBURY: "On arrival, third dose of adrenaline just given."

NEWBY: Okay.

ASTBURY: I can't read that next bit, I'm sorry. "Further drugs"?

NEWBY: "Further drugs as documented. CPR in progress. ET tube position checked."

We would always check to ensure the tube was in the correct place. We could hear air entry and the capnograph, which is a little device that we attach to the end of the ET tube, was changing colour, which shows with each breath that there is

carbon dioxide coming out, so it's a fail-safe way of ensuring that the ET tube is indeed in the trachea.

ASTBURY: So that tells you air is going in and out?

NEWBY: Yes. And as per the protocol, every 2 minutes there would be a pulse check and no heart rate was detected throughout the resuscitation. Mum and dad were in attendance throughout. At 25 minutes, there had been no response to resuscitation, so I had a discussion with the parents about the likelihood of success if we continued, which was unfortunately minimal, and we took a decision to stop resuscitation.

ASTBURY: Sorry, doctor, you're just dropping your voice a little bit.

NEWBY: Sorry, sorry. So we discussed that it was very unlikely that resuscitation attempts would be successful. So we took the decision to stop. So CPR was -- we stopped CPR at 4.21 and I have documented that there was no heart rate detected and no respiratory effort after that.

ASTBURY: And you signed off at the bottom of the page?

NEWBY: Yes.

ASTBURY: If I can take you finally, please, at this stage, to slide 280 and a note there made at 4.50 am.

NEWBY: Mm-hm.

ASTBURY: Just tell us a little bit about that, please.

NEWBY: I then had a discussion with the parents about what had happened. It appeared unexplained. She had collapsed very suddenly, so I discussed with them that I would need to speak to the coroner, who would require a post-mortem examination, given the circumstances of the collapse.

ASTBURY: Then we can see at 10.15 am, later that morning, as you'd indicated, you discussed the case with the coroner's office.

NEWBY: Mm-hm.

MR ASTBURY: Thank you. I have no more questions for now.

If you could wait there, please.

Cross-examination by MR MYERS

MR MYERS: Dr Newby, I'm just going to go back over some of the ground that you have covered and I'll try and deal with these matters in the order that they happened as best I can, so I'd be grateful for your help with this.

Were you aware of the way that [Baby D] had presented in the hours immediately after her birth?

NEWBY: Yes.

MYERS: And so you were aware that it appears there had been issues with regard to her ability to breathe and her colour and her overall condition?

NEWBY: Mm-hm.

MYERS: And do you agree that, certainly at that point, the way she was presenting was consistent with an infection of some sort?

NEWBY: Yes.

MYERS: You were aware, weren't you, that the initial blood gas results from early on indicated a mixed respiratory and metabolic acidosis; is that right?

NEWBY: Mm-hm.

MYERS: Thank you. And that would indicate some kind of compromise, both with her respiration and her cardiovascular functions more generally?

NEWBY: Yes.

MYERS: And we're talking about cardiovascular functions, not everybody's familiar with the expressions that are used.

By cardiovascular, do you mean the way that the heart and the vessels associated with that and the breathing system are working?

NEWBY: Yes, and the... In a way, it's more a measure of tissue perfusion.

MYERS: So how well, for instance, air is travelling through the body tissues?

NEWBY: Yes.

MYERS: Or oxygen in particular, I suppose?

NEWBY: Yes, oxygen supplied to the tissues, yes.

MYERS: Were you aware, again continuing into the evening, there appeared still to be blood gas readings that indicated respiratory acidosis?

NEWBY: Mm-hm.

MYERS: So we know that at 9 o'clock that evening, she was intubated and put on a ventilator. Is that to try to help her to get the oxygen in that she needs?

NEWBY: Yes. Yes, so she was requiring a reasonably high amount of oxygen, just below 50%, and she had a respiratory acidosis, so she wasn't -- that would indicate that the CPAP wasn't providing her with enough support for her breathing.

MYERS: Right.

NEWBY: So the next stage would be intubation and ventilation.

MYERS: So that's why that happened?

NEWBY: Yes.

MYERS: Then I think we saw an X-ray earlier. I'd just like to take you to that to ask you about it. The X-ray was at slide 43. I wonder if we could have a quick look at that and then we'll have a look at the note that goes with it.

Just to remind us, this is the X-ray that was taken.

Was the purpose of the X-ray at this point just to check on the position of the tube that had been placed?

NEWBY: No, it would have been to look at the lungs in general as well.

MYERS: Right, to look at the lungs?

NEWBY: Yes.

MYERS: With that in mind then, can we just take a look, please, at the next slide you saw and we all saw in relation to that, which was slide 50, please.

If we scroll down we can see where it's got the X-ray review, which is Dr Brunton's initial view, it would seem. It says:

"No obvious signs of consolidation or pneumothorax."

Pneumothorax, would that be a break in the surface of the membranes round the lungs?

NEWBY: Yes, an air leak, so you would have air outside the lung within the chest cavity.

MYERS: So we don't have that?

NEWBY: No.

MYERS: But he has put -- it looks like:

"Likely RDS type picture."

No criticism of you, you haven't explained that to us, could you tell us what that means, "likely RDS type picture"?

NEWBY: Yes. So in babies that are born early, and also in babies who are a little bit more mature, because although [Baby D] was early she wasn't very early, she was 37 weeks, but we can still see this picture in more mature babies. So respiratory distress in premature babies is particularly due to lack of surfactant production. Babies don't produce surfactant prior to 32 weeks' gestation, surfactant production increases with maturity, surfactant helps to open up babies' lungs, reduce surface tension within the alveoli, so it makes it easier to breathe.

If you're born early or there are other factors which switch off surfactant production, such as being the infant of a mum with gestational diabetes or sepsis as well, then the lungs become stiff because of the lack of surfactant, and we see this rather ground glass/white appearance of the lungs on X-ray. That would have been the reason why Dr Brunton administered some Curosurf, which is replacement surfactant in effect.

MYERS: We can just see the reference to Curosurf in the note that follows it at the bottom of that page.

NEWBY: Yes.

MYERS: So we can follow, "Likely RDS type picture", means that Dr Brunton is recording it appears to be likely to be respiratory distress syndrome that we can see?

NEWBY: Mm-hm.

MYERS: And that's to do with the lungs not being properly developed; is that correct?

NEWBY: Mm-hm.

MYERS: And that it make it more difficult to perform the breathing function? In fact if we just look at the picture then, if we could just look at slide 43, Mr Murphy, which is the X-ray.

If we look, we can see the area of the lungs -- we can probably all work out roughly where that would be from looking at the chest on the photograph. When you said about -- did you say ground glass shadowing?

NEWBY: Yes.

MYERS: Is that the slightly foggy look to it?

NEWBY: Yes.

MYERS: Thank you. We can see that down, thanks.

We know that the next morning, round about 9 o'clock, it was felt that it was possible to take [Baby D] off the ventilator?

NEWBY: Mm-hm. Yes, I think she'd responded really well overnight, presumably due to the surfactant. We often see this, particularly with bigger babies. So she was able to be extubated the next morning.

MYERS: And you know she's responding well because there had been blood gas readings overnight which showed an improvement and coming up to the levels that you would hope her to be at; is that right?

NEWBY: Yes.

MYERS: Then was the decision taken, just to see in the first instance, how she coped in air without any support?

NEWBY: Mm.

MYERS: While that was taking place -- if we go to slide 107, please, we can look at the notes that you made, Dr Newby.

I'm not going to read through all of them with you because we have been through them with you. I just want to draw out a couple of points. Overall you could see an improvement from what you had understood to be the position with [Baby D] the day before; is that right?

NEWBY: Yes.

MYERS: You still made some findings that were matters of potential concern. They included the fact that she seemed to be

quiet. You've described to us as well her tone was a little, did you say stiff, in the way she felt when handled in that way? And your concern at this time was that these may still be signs of sepsis or an infection of some sort?

NEWBY: Mm-hm.

MYERS: Is that correct?

NEWBY: That's correct.

MYERS: Whilst she was off the ventilator and before she was given any other breathing support, did you do a blood gas test which indicated the results were not so satisfactory?

NEWBY: I would have to refer to the records.

MYERS: All right. In fact, in the statement -- we will come to the records shortly, but just to help with your recollection, Dr Newby, you record in your statement that 1 hour after extubation [Baby D]'s blood gas results were not satisfactory, pH had dropped to 7.193, and so she was then started on nasal CPAP.

NEWBY: Yes. That's correct, yes.

MYERS: So the picture we have is that she'd been ventilated overnight, that had led to an improvement --

NEWBY: Mm-hm.

MYERS: -- she was taken off the ventilator round about 9 or 9 o'clock (sic); that's correct, isn't it?

NEWBY: Yes.

MYERS: You still had concerns as to whether or not there was sepsis or infection; possibly there was.

NEWBY: Mm.

MYERS: And in the course of the hour that she was off the ventilator, her blood gas readings deteriorated --

NEWBY: Mm-hm.

MYERS: -- and so she was put on to CPAP to support her breathing?

NEWBY: Yes. Mm-hm.

MYERS: You described to us that there was a -- came a point when Dr Rylance, I think, contacted you because of some concern about the lactate readings; is that right?

NEWBY: Mm-hm.

MYERS: We've seen the notes. Is that round about 1 o'clock that afternoon?

NEWBY: It was, yes.

MYERS: And you've explained to us again, I just want to confirm, if the lactate goes above the level that it's meant to be at, that can indicate that there is metabolic acidosis taking place?

NEWBY: Yes.

MYERS: Again, which means that air is not perfusing through the body tissues in the way it should?

NEWBY: Mm-hm.

MYERS: So although there are aspects of recovery and improvement that you have seen with [Baby D] at this point, it's also the case that there is a continuing issue with her ability to perform respiration --

NEWBY: Mm.

MYERS: -- and for oxygen to travel round her body in the way that it should; is that correct?

NEWBY: Mm-hm.

MR JUSTICE GOSS: I'd rather you would say yes or no.

NEWBY: Oh sorry, sorry.

MR JUSTICE GOSS: It's just that there is a recording going on.

NEWBY: Sorry.

MR MYERS: To complete that picture, that is something which may be consistent with infection, isn't it?

NEWBY: It could be.

MYERS: It could be.

Although the aim had been to insert an umbilical arterial catheter, what we end up with in fact is a catheter inserted through the umbilical vein; is that correct?

NEWBY: Yes, we did, yes.

MYERS: But that still enabled you to take, you would hope, better readings than you could from capillary gas; is that correct?

NEWBY: Yes, because it's central access.

MYERS: And you can also use it to give fluids to [Baby D] if you need to?

NEWBY: Mm-hm.

MYERS: I think you've described to us that after that had been inserted, in the period afterwards, the gas improved.

NEWBY: Yes, much better.

MYERS: Much better. I want to just confirm -- there's one aspect of the notes that we have and I just want to understand if you were aware of this, Dr Newby.

I'll refer to it in two places. The first is in the clinical notes at page J2221, but it's slide 158, please, Mr Murphy. It's a note by Dr Rylance.

If we could go behind that, please, and have a look at the note itself. It's down towards the bottom part of the notes. I suppose actually if we could just look at the time if we could at the top, please. This is a note by Dr Rylance. So we're up to 7 o'clock on the evening of the 21st now.

NEWBY: Yes.

MYERS: A review by Dr Ogden, but if we go down to the bottom, it says:

"Stable on CPAP. Tried taking her off but respiratory effort became irregular and desaturated a few [by Dr Rylance, I apologise] times so put back on."

Do you see that?

NEWBY: Mm.

MYERS: And likewise, in the nursing notes, at slide 105, please, I'm going to look at the lower of these entries.

It's a note by Nurse Bissell at 19.45 on the 21st, just a little bit later than Dr Rylance's note that we saw.

If we enlarge the lower half, the note for 19.45.

Can you see it says:

"Repeat bloods taken by Dr Rylance via UVC. Blood gas satisfactory. Dr Rylance wanted to try [Baby D] off CPAP so taken off at 19.15. However, [Baby D] began shallow breathing again and dropped her saturations to mid-80s so put back on. Her breathing has now improved and she is saturating at 100% in air. To remain on CPAP for the time being."

So just so you have the picture, Dr Newby, we can see that efforts to take [Baby D] off CPAP during the course of that evening had to be desisted because her saturations dropped to the mid-80s?

NEWBY: Yes.

MYERS: You would hope, if she was making a complete recovery, it might have been possible to take her off CPAP; that's fair to say, isn't it?

NEWBY: Yes.

MYERS: Just before we come to the events in the early hours of the morning of 22 January (sic), can I just ask you to look at the blood gas readings. They're at slide 112.

We should be able to see all of them, in fact, on the one page almost. Thank you, Mr Murphy.

To help us interpret the material we have here, can I just ask you, if you look at the third column along, if we start at 19.47 we can see a C with a circle round it. Does that indicate that the sample of the blood gas is a capillary sample?

NEWBY: It does.

MYERS: So it's usually a heel prick, isn't it?

NEWBY: Yes.

MYERS: And you've described to us that having central access by the umbilical vein was a better way of obtaining better readings. So we see that from 14.08, don't we, on the 21st?

NEWBY: Yes.

MYERS: Then if we just look to the column to the right of that, the pH, we can see that before that point, the two readings before that on the morning of the 21st at 10.14 and then at 12.10, they indicate a pH that is acidic, don't they?

NEWBY: Yes.

MYERS: And then, as you'd said, the readings improved after the venous catheter had been put in. We see that at 14.08 and 18.44, don't we?

NEWBY: Yes.

MYERS: Then if we look at the next two readings, 23.52 and then 01.14, the readings deteriorate at that point, don't they?

NEWBY: Yes.

MYERS: We can see the pH becomes more acidic, doesn't it?

NEWBY: It does.

MYERS: And the base excess in particular goes further outside the range you would hope to keep it in?

NEWBY: Yes.

MYERS: Which again reflects acidosis of one variety or another with [Baby D], doesn't it?

NEWBY: It does.

MYERS: I'm going to move to the events that unfolded then. The first one we deal with at 1.30, Dr Newby, your evidence is that by the time you arrived to deal with [Baby D], she appeared largely to have recovered from what had taken place.

NEWBY: Yes.

MYERS: You saw the colouring that you've described to us.

NEWBY: Mm-hm.

MYERS: That was there. You were asked about how long it persisted and you were unsure about that.

NEWBY: Mm.

MYERS: I think just to help us, could we look at slide 223, please? It's a note by Dr Brunton.

Scroll down, please.

Were you with Dr Brunton once you arrived to deal with [Baby D]?

NEWBY: Yes.

MYERS: He records:

"Clinically much improved. Areas of discolouration completely disappeared."

You have no recollection at all as to how the discolouration presented by the time that [Baby D] appeared to have improved?

NEWBY: I can't remember to be honest. I can't remember.

MYERS: It's important if you can't remember to leave it at that.

NEWBY: Yes.

MYERS: Thank you. If we look at the notes that you made, which are at slide 218, please. Scroll down, please.

You noted -- we can see on the notes it says:

"Sodium 127, platelets 104 at 20.36."

Was that something you noted from earlier in the evening by going back into the records?

NEWBY: Yes.

MYERS: And that was the sodium and the platelets at levels below the levels you would hope them to be in a healthy baby, isn't it?

NEWBY: Yes.

MYERS: Your diagnosis at this point, with what you had to work with, was that some kind of infection, infective process had taken place; is that correct?

NEWBY: Yes.

MYERS: And in fact did you increase the antibiotics that were given to [Baby D] at this point --

NEWBY: Yes.

MYERS: -- with that in mind? Now, we know that there's a second desaturation that happened at 3 o'clock, about 3 o'clock. You weren't called to attend for that one, were you?

NEWBY: No.

MYERS: Do you recall whether there was actually any discussion with you about that at the time that it took place with Dr Brunton?

NEWBY: (Pause). It's very difficult.

MYERS: Well, don't guess if you don't recall.

NEWBY: Yes, I feel like it, but I couldn't say for sure.

MYERS: Again, I appreciate this isn't your note, but I'd like us to follow this alongside what you're saying.

If we look at slide 222, please. It's the second page.

If we scroll down so we can see the entry for 03.15, these are Dr Brunton's notes from the second event that we're dealing with.

There's no record of any discussion with you in the course of those.

NEWBY: No.

MYERS: And there are no notes made by you relating to this.

NEWBY: Mm.

MYERS: Before I ask any further questions about this, can I just ask you a general point about the ability of babies to cope, particularly very newborn babies. We've heard in this case about how babies have deteriorated sometimes to a degree that was not anticipated or is not expected. That's the way it's been described.

NEWBY: Mm-hm.

MYERS: Just as a matter of experience, as someone who works with neonates, it can happen, I'm going to suggest, that a baby who is unwell can have sufficient reserves to in effect keep going for a while before the problems they have absolutely break out. Is that true from your experience of them? As if they have enough strength to keep running at a certain level and then they can deteriorate very rapidly, can't they?

NEWBY: Yes.

MYERS: Again, this is really a matter for your experience, but does it seem there comes a point sometimes when a baby that has maintained a particular level of functioning ceases to be able to do that for whatever reason?

NEWBY: It can happen. It can happen. Although I was very surprised by being crash called to [Baby D] that night.

MYERS: That's right.

NEWBY: Yes.

MYERS: But your experience is that it can happen?

NEWBY: Mm.

MYERS: And sometimes a baby, particularly if there are underlying problems, may use his or her reserves to keep going up to a certain point and then it becomes too much; is that correct?

NEWBY: Yes.

MYERS: All right. We know that [Baby D] had required, but for one very short period, some sort of respiratory support or assistance throughout her life, hadn't she?

NEWBY: Yes.

MYERS: And we've seen, and I've gone over with you, the consequences at one point when CPAP was removed and she was seen to desaturate; that's correct, isn't it?

NEWBY: Mm-hm.

MYERS: Looking at the clinical picture that we have, by the time she had had two desaturations, there would have been no basis to believe that she would cope better or cope at all without respiratory support, would there?

NEWBY: I think you have to assess the clinical situation at the time, really.

MYERS: From what -- I understand that. But from what we see here, we've seen a baby who's required support almost entirely throughout her short life.

NEWBY: Mm.

MYERS: We've seen at least one recorded instance of desaturations when she was taken off CPAP. We've seen here blood gas readings that show a deterioration, just after about quarter past 11 or half past 11, and also at 1.15 in the morning. We've seen that, haven't we?

NEWBY: Mm-hm.

MYERS: And we have seen two instances in which she has, for whatever reason, desaturated at 1.30 and then at about 3 o'clock.

NEWBY: Mm.

MYERS: Against that background, there's no reason to believe that she will do better if respiratory support is removed, is there?

NEWBY: Um... No, but I think... I... Prior to the decision to take her off by Dr Brunton, she had been stable and she was very agitated by the CPAP. At the time I still think it was reasonable, just because of the great ease of being able to put the CPAP back on, were it not to be successful.

MYERS: You'd said to us a little earlier this morning that after that first incident, there would be a low threshold to intervene and this was about intubation --

NEWBY: Mm.

MYERS: -- were there to be deteriorations from a respiratory point of view. Do you remember saying that?

NEWBY: Yes.

MYERS: So what you were telling the jury was that after the incident at 1.30, the concerns were such that there would be a low threshold to intervene by intubation if there was any further deterioration and there was a further deterioration. So I'm suggesting, Dr Newby, that actually, in reality, the clinical picture was of somebody who required more respiratory support, not less. Don't you agree that is what we see?

NEWBY: However, the gases were very good after that incident and the further episode where she had desaturated, I believe she had recovered very quickly and it was felt at the time that this was more due to agitation than she was struggling to breathe.

MYERS: It was felt she was agitated and that's why the decision was taken to take CPAP off her?

NEWBY: Yes.

MYERS: All that I'm identifying is that but for that, that wouldn't have been a very good idea at all, would it?

NEWBY: I think it's difficult to say, to be honest, without assessing the baby myself at the time.

MYERS: Right. In your experience can the handling of a baby, holding a baby, lead to stress that can lead to desaturation as well?

NEWBY: It can, yes.

MYERS: And in any event we know that it would seem, within a relatively short period of time of being taken off CPAP, you were then called because there'd been a significant deterioration, hadn't there?

NEWBY: Yes.

MYERS: Your opinion after the event, in the period after the event, was that this was due to an infection, to sepsis; that's correct, isn't it?

NEWBY: Yes.

MYERS: You took the view of that looking at all of the circumstances, not just one particular feature; is that fair to say?

NEWBY: Yes.

MYERS: So for example, even though [Baby D] did not have a high CRP reading, and we've heard about CRP, she had had a very high bilirubin reading in the first few hours of life, hadn't she?

NEWBY: Yes.

MYERS: Which is a marker for infection in the absence of another explanation?

NEWBY: Yes.

MYERS: And she'd shown signs of respiratory difficulties, in fact, throughout the course of her time on the unit, hadn't she?

NEWBY: Yes.

MYERS: And certainly at that point, your view was that the rash that you had seen might have been due to infection?

NEWBY: Yes.

MR MYERS: Thank you, Dr Newby.

Re-examination by MR ASTBURY

MR ASTBURY: Just three matters, please, Dr Newby. Firstly, you described to us in your evidence the areas of discolouration that you saw when you first attended [Baby D] in the early hours of the morning and you took us through your thought process at the time: bruising, purpura and/or infective process.

NEWBY: Yes.

ASTBURY: Your attention has been drawn to the fact that Dr Brunton put in the notes very soon after the first incident that it disappeared completely.

NEWBY: Yes.

ASTBURY: And you've also had your attention drawn to the fact that it was back again at that incident at 3.15 that you weren't involved in.

NEWBY: Mm.

ASTBURY: Does that assist you with that thought process of whether it was bruising or purpura?

NEWBY: I think it makes -- I think it's difficult to -- makes it more difficult to explain what it was because bruising would not disappear in that manner, neither would purpura, which is due to bleeding under the skin.

That wouldn't likewise fade.

ASTBURY: We may all be familiar with this, but bruising wouldn't disappear and appear again within a short period?

NEWBY: No.

ASTBURY: And you were saying purpura is caused by bleeding under the skin?

NEWBY: Yes.

ASTBURY: That's caused, is it, by an infective process, that was the reference there?

NEWBY: Yes.

ASTBURY: Would that disappear and reappear?

NEWBY: No, no.

ASTBURY: Secondly, you were asked about little babies and their ability to fight and fight and fight and then suddenly crash.

NEWBY: Mm.

ASTBURY: And your answer was, "It can happen", you agreed it can happen. But you went on to say you were very surprised to be crash called in [Baby D]'s case in that context.

Can you explain why?

NEWBY: Because although I was concerned when I had been in at 1 in the morning after the first episode, she did not appear to be a baby in extremis. She was saturating well in air on the CPAP, she'd had a normal gas after that episode, she was handling okay, she didn't appear to be a baby in extremis. So although, yes, I admit these things can happen, that was not what I was expecting that night to happen.

ASTBURY: Right. And finally, this: it was suggested that the decision by Dr Brunton just before [Baby D]'s final collapse may have had a bearing, the decision to take her off the CPAP.

NEWBY: Mm-hm.

ASTBURY: Now, I think you said, "Well, the mask is there to put back on." Just to be clear, the baby is being monitored?

NEWBY: Mm-hm. Yes.

ASTBURY: Would the saturations, had that been a feature, have alerted the staff in those circumstances, were the CPAP to have been a contributing factor?

NEWBY: Yes. You might see her desaturating and I'm sure there would have been a plan to repeat a gas very soon after taking her off the CPAP because that would be normal practice.

ASTBURY: In your experience would you have expected such a collapse, were it the CPAP that had caused it?

NEWBY: No, I don't think so. CPAP doesn't really provide -- I mean, it does provide respiratory support, but it's fairly low level respiratory support, really. So I think it would be... It would be... I don't think it would be expected that a baby would have a profound collapse just from being taken off CPAP.

ASTBURY: Right. If that was the cause of the collapse, would you have expected a different response to resuscitation?

NEWBY: Yes, maybe, because if it was a purely respiratory collapse, the immediate start of resuscitation is to provide respiratory support.

MR ASTBURY: I have no more questions. Does my Lord have any questions? Questions from THE JUDGE

MR JUSTICE GOSS: Just in relation to that, the resuscitative process is to get the baby breathing again?

NEWBY: Yes.

MR JUSTICE GOSS: And do you that by a number of methods?

NEWBY: Yes. So you would initially apply a mask, a bag, and --

MR JUSTICE GOSS: Neopuffs we've heard of.

NEWBY: Yes, Neopuffs. Then if the situation didn't respond, you have then lost the heart rate, then you would immediately go on to intubate and ventilate the baby to provide a more secure airway, which happened that night as part of the resuscitation.

MR JUSTICE GOSS: But to no avail?

NEWBY: To no avail.

MR JUSTICE GOSS: Right. Thank you, Dr Newby. That completes your evidence at this stage. I see that you are due to come back later during the course of the trial. Would you please not talk to anyone about anything to do with this case?

NEWBY: Of course not, no. Of course not.

MR JUSTICE GOSS: You wouldn't anyway. I'm obliged to say this to every witness. Thank you very much then. We'll see you again later during the trial.

That's a good time for the break. Members of the jury, a 10-minute break, and the next witness, who will be screened again, but you ignore that.

(11.58 am)

(A short break)

(12.10 pm)

KATHRYN PERCIVAL-CALDERBANK (sworn)

Examination-in-chief by MR ASTBURY

MR ASTBURY: Thank you. Can we begin with your full name, please?

PERCIVAL-CALDERBANK: My name is Kathryn Leslie Percival-Calderbank.

ASTBURY: Thank you. Your profession, please?

PERCIVAL-CALDERBANK: I'm a senior neonatal nurse practitioner.

ASTBURY: Thank you. I'm going to ask you some questions, please, about events in the -- on the 20th into 21 June back in 2015.

Our understanding is that you were a nurse employed at the neonatal unit at the Countess of Chester over that period of time?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: Also, I think your practising name at that stage was slightly different.

PERCIVAL-CALDERBANK: Yes.

ASTBURY: I think you were known at that stage as Kathryn Percival-Ward?

PERCIVAL-CALDERBANK: That's correct.

ASTBURY: So when we look at some documents in a moment, you'll forgive us, you appear in that name because that's what the records show.

PERCIVAL-CALDERBANK: Yes.

ASTBURY: Thank you. When, please, did you first qualify as a nurse?

PERCIVAL-CALDERBANK: I qualified as a nurse in 1988.

ASTBURY: Thank you. When did you move into neonatal nursing?

PERCIVAL-CALDERBANK: I got the position on the neonatal unit at Chester in 1993.

ASTBURY: Right. Did you work at Chester between 1993 and the events that we're going to discuss in a moment?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: You told us you're a senior practitioner now. What was your status back in June 2015?

PERCIVAL-CALDERBANK: It was the same.

ASTBURY: Thank you. Given your senior status, did you operate from time to time as a shift leader?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: I'm going to ask you specifically about a night shift.

Can you tell us anything about night shifts at the time back in Chester?

PERCIVAL-CALDERBANK: They -- we came on at -- well, we came on at 7 o'clock, had a handover, or came in for 7.30 for a handover.

Then we would work until 8 o'clock the following morning.

ASTBURY: Right. With heard a little bit about the handover, how you would have a group discussion and then a handover, if you had a designated baby, at that baby's bedside or cot side from the nurse who'd had responsibility for them on the preceding shift.

PERCIVAL-CALDERBANK: Yes.

ASTBURY: Were night shifts noticeably different than day shifts?

PERCIVAL-CALDERBANK: They were quieter because you didn't have all the other people in the other departments, so other departments were working on less people. But within the unit we still had the designated amount of nurses. The only difference was that doctors would do a rotation of shifts and would be on an on-call system.

ASTBURY: We've heard a little bit about that so I won't ask you more about that.

I'm going to ask you please to look at the screen to your right and I'm going to ask Mr Murphy to put up slide 168.

If we can go behind it, please. This is a representation of the shift between the 21st running into 22 June 2015. We can see at the top, as you kindly indicated, beginning at 7.30, the name of the consultant on duty, the two doctors on duty and then, more

significantly for you, please, the nursing staff that were on duty. We can see your name, that of Ms Letby, Mrs Oakley and [Nurse C] and also Elizabeth Marshall, who was a nursery nurse at that stage, and we've heard that they would tend to concentrate on babies in rooms 3 and 4 rather than the higher acuity in rooms 1 and 2.

Is that your recollection?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: Thank you. If we scroll down again please, we have a representation of baby locations and designations. If it assists in your recollection, you'll recognise the plan, I hope, at the centre of that particular diagram, showing nurseries 1, 2, 3 and 4.

PERCIVAL-CALDERBANK: Yes.

ASTBURY: If we look we can see your name with a baby -- we've anonymised those babies who are not part of the trial -- the baby given the initials EB in nursery 4.

PERCIVAL-CALDERBANK: Yes.

ASTBURY: You also had three babies for whom you were responsible in nursery 3. One, [Baby B], about whom we've heard something already, and babies PE and HM.

Hopefully that accords with your recollection of that shift?

PERCIVAL-CALDERBANK: Yes, to the best of my knowledge.

ASTBURY: Can you tell us, please, what you do remember of that particular shift?

PERCIVAL-CALDERBANK: I remember coming in and having a handover and then going into the designated rooms, where I was taking a handover of the other babies that were given to me to be cared for.

ASTBURY: Again we can see there three in room 3, one in room 4.

We're particularly interested in any events that took place that may stick in your memory as unusual.

PERCIVAL-CALDERBANK: I know that I was on the outside nurseries, but I was aware that Caroline Oakley was going on her break. She sort of had told me that she was going on her break and would I just keep a listen out if anything happened, in case anybody

needed any assistance there, but her baby was very stable and she felt that it wouldn't need anything being done to it.

ASTBURY: Okay. So you recall being asked to look after the baby?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: We've heard a little bit about the arrangements that might be made for breaks on a night shift. Either the -- I should say the supervising nurse might allocate those sort of arrangements or they could be arranged between nurses themselves. Is it your recollection that was arranged between the two of you?

PERCIVAL-CALDERBANK: It was just that she was going off and she said that the other two are in there, you should be okay, but just in case, just to keep a listen out. It wasn't a formal arrangement, it was just to keep an eye out. I remember I went in to look at the baby, she was nice and stable and settled. I just checked around all the monitoring and everything that she was stable and then I left the room.

ASTBURY: Is that something you would routinely do when you were asked to cover a break?

PERCIVAL-CALDERBANK: I tend to, yes.

ASTBURY: So you actually went into room 1, you satisfied yourself as to firstly [Baby D]'s condition?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: I should ask you, who was the baby? That's my mistake.

PERCIVAL-CALDERBANK: It was [Baby D].

ASTBURY: And you satisfied yourself as to her condition?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: You checked the equipment, I think you said?

PERCIVAL-CALDERBANK: Yes. Well, I checked the monitoring and her saturations and her heart rate were okay.

ASTBURY: You told us you then felt able to leave the room at that point?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: Do you remember what time that was?

PERCIVAL-CALDERBANK: I think it was round... Round about half 12, 00.20, something like that, or even 1 o'clock. I'm not really sure what time that was at the time.

ASTBURY: All right. What happened after you'd left the room?

PERCIVAL-CALDERBANK: The baby seemed quite settled. I popped in another time, about 10 minutes later, and she was okay. I was at the desk round the corner because of having the other babies, I was trying to keep a listen out for my other babies.

ASTBURY: Let's just pause there because I think we've still got the plan up on the screen. Can you give us an idea of where you're describing when you were at the computer?

PERCIVAL-CALDERBANK: It was round the corridor.

ASTBURY: If we look at the plan we can see rooms 2, 3 and 4 up the left-hand side.

PERCIVAL-CALDERBANK: Yes.

ASTBURY: We can see a corridor running up almost the centre up to the left and nursery 1 to the right. Perhaps using the numbers or any of the rooms that have a name, can you give us an idea where it was close to?

PERCIVAL-CALDERBANK: It was between room 2 and room 3. It was actually...

It was a bit further round -- where is it? Where 5 is the milk room, it was before that, it was just round the corner, because there is another door on the neonatal unit.

ASTBURY: We have heard in fact, if we look at nursery 1, there are two doors into nursery 1. The second door is not marked, it should be to the left there as we look. Are you saying it was closer to there?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: So you were there, you were keeping an ear out for your respective babies. Tell us what happened then, please.

PERCIVAL-CALDERBANK: I was aware that alarms had gone off, so I don't know whether somebody had shouted me or that it was the alarms that alerted me, but I went into the nursery.

ASTBURY: Which nursery?

PERCIVAL-CALDERBANK: Into nursery 1.

ASTBURY: Right. And what did you find in nursery 1?

PERCIVAL-CALDERBANK: The baby, her monitoring was showing that she was desaturating and her heart rate had dropped.

ASTBURY: Which baby, sorry?

PERCIVAL-CALDERBANK: Baby [Baby D]. I wasn't -- I don't know whether there was anybody else around the baby at the time, but I think there might have been. I checked on the baby's condition. I'd quickly put some hand sanitiser on my hands and was going to go in to give the baby gentle stimulation and see if the baby needed any oxygen, see if the baby would recover from that.

ASTBURY: We've heard there's sort of a process when a baby desaturates --

PERCIVAL-CALDERBANK: Yes.

ASTBURY: -- which is a staged process, would you agree?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: So you were going to begin by?

PERCIVAL-CALDERBANK: Gentle stimulation and check on the baby's head position, whether she'd put her chin on her chest. Had she -- was she breathing. That would alert whether we needed other means.

ASTBURY: You thought someone else might have been there in the room, you can't say for sure. Did you do this on your own or were you assisted by anybody?

PERCIVAL-CALDERBANK: I think I was assisted by somebody.

ASTBURY: Can you (overspeaking) --

PERCIVAL-CALDERBANK: I can't clearly remember who it was, but I have a feeling it might have been Lucy, but I can't categorically say who it was.

ASTBURY: Right. Let's concentrate on what you recall doing. Did the gentle stimulation work?

PERCIVAL-CALDERBANK: It did start to bring the heart rate up, but then the saturations still remained low, so we would give the baby some CPAP -- would give some -- use the Neopuff and put

some oxygen and gave some facial oxygen and then would give some PEEP. And then the baby still wasn't really responding, so we would give some gentle breaths by the Neopuff, with putting the head in the right position so that you got a good airway.

ASTBURY: Okay. Do you remember who used the Neopuff?

PERCIVAL-CALDERBANK: I think it was me.

ASTBURY: Right. Did [Baby D] respond to the Neopuff?

PERCIVAL-CALDERBANK: She did start to respond, but also in the process, the doctor was called. I don't know whether the doctor was in the room at the time, Dr Brunton, or he was -- or we actually called him in as well.

ASTBURY: Okay. When you were tending to [Baby D] and with that gentle stimulation or during the Neopuff, did you notice anything about her?

PERCIVAL-CALDERBANK: I don't know whether it was during or just after, but we noticed that she had some sort of -- there was a rash on her trunk and arms.

ASTBURY: Right. Are you able to be a bit more specific about where it was?

PERCIVAL-CALDERBANK: It was on her body, her arms and her -- so all from her chest downwards, her trunk and her arms, and it wasn't like a normal rash that you would know if a baby was becoming septic because they tend to be -- the blood vessels seem to be more bluey and they're just quite mottled. This was more -- there seemed to be a larger -- like mosaic-type rash, and it was a reddy-blue -- reddy-brown colouring.

ASTBURY: All right. So not like the rash you might ordinarily see, is that what you're saying?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: What do you mean by a mosaic?

PERCIVAL-CALDERBANK: It wasn't like a petechiae, which is like a spotty rash, it was more like the vessels or like oval-type markings on the skin, but like the vessels of blood, or whatever it was, seemed to be meeting up on each other.

ASTBURY: Okay. So oval in shape?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: And were those vessels meeting up with each other forming that oval shape or is that something else?

PERCIVAL-CALDERBANK: That's what it appeared to be, what I can recollect, yes.

ASTBURY: Okay. And can you remember the colour of the rash, if we call it that?

PERCIVAL-CALDERBANK: She was quite a pale-skinned baby, so they seemed to be more pronounced and a brownish-red.

ASTBURY: Brownish-red, okay. You mentioned it appeared to be blood vessels. Did you form a -- from your experience were you able to recognise it from anything you'd seen before?

PERCIVAL-CALDERBANK: Not before, no. The only thing I could think of, the way it was, was some sort of like -- I've seen something, but I don't know whether it's before or after this, something where you get -- where the baby has discolouration on one side of the body, it's like a harlequin discolouration. But really this is -- we hadn't actually ever seen anything like it before.

ASTBURY: So at the time you didn't feel you'd seen anything like it before?

PERCIVAL-CALDERBANK: No.

ASTBURY: Do I take it then that the other occasion you're describing with a harlequin-like appearance, that's since this particular incident?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: Are you able to say roughly when that was?

PERCIVAL-CALDERBANK: No, no.

ASTBURY: Are you able to say where it was when you saw it on the second occasion as in which place of work it was?

PERCIVAL-CALDERBANK: It was within Chester, yes.

ASTBURY: Okay. You can't tell me how soon or long it was after this one?

PERCIVAL-CALDERBANK: No, but that harlequin-type effect wasn't on [Baby D], it was on a subsequent baby (overspeaking) --

ASTBURY: So different on the second baby?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: But obviously in your own mind you have linked the two?

PERCIVAL-CALDERBANK: No, I hadn't linked, I just -- I think I said to Dr Brunton, I said, "The only thing I can think of is", when we're trying to work out what this rash was, I said it's very -- how it came and went was like a harlequin sequence for other babies. That's the only thing. So I had seen it in a previous baby in my experience beforehand, but not -- that was -- it was just trying to come up with a solution why this baby had done this.

ASTBURY: You said you discussed it with Dr Brunton; is that right?

PERCIVAL-CALDERBANK: Yes.

MR JUSTICE GOSS: At what time? Can we just be clear? When did you discuss it with Dr Brunton, at the time you saw it?

PERCIVAL-CALDERBANK: Yes, it was at the time, and it was later discussed when Dr Newby came in as well.

MR ASTBURY: We're concentrating on that first occasion when you are describing the rash to us and you discussed it then with Dr Brunton?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: Okay. Tell us, please, what happened as things then proceeded.

PERCIVAL-CALDERBANK: Then as much as I'm aware, [Baby D] then responded and her breathing returned and she settled back into a normal pattern of breathing.

ASTBURY: Okay. Are you able to -- do you recall how long that might have taken, for example?

PERCIVAL-CALDERBANK: I don't, no, I'm afraid. It was a bit of a blur.

ASTBURY: I understand that. Did you notice what happened with the discolouration?

PERCIVAL-CALDERBANK: After a while, that seemed to disappear and dissipate.

ASTBURY: Okay. Did you see [Baby D] again during the course of the remainder of your shift?

PERCIVAL-CALDERBANK: I'm not aware that I did, but I might have been called in at other times in the subsequent events later on.

But I was probably busy outside with the babies that I had.

ASTBURY: So when these incidents take place, does everybody rush to the same place or are there other responsibilities ongoing?

PERCIVAL-CALDERBANK: There are other responsibilities and because of the staffing that was in the room and if there were other people available, they would deal with that.

ASTBURY: Okay.

PERCIVAL-CALDERBANK: But I would have always gone in and seen if they needed any assistance if I was able to.

ASTBURY: Right, okay. Do you have any recollection of doing that or any other significant events involving [Baby D] that morning?

PERCIVAL-CALDERBANK: I'm not sure. I might have helped with drawing up some drugs or trying to find things for people, but I'm not aware of what I did.

MR ASTBURY: Thank you. I have no more questions. If you could wait there.

(Pause)

MR ASTBURY: My Lord, I'm asked to ask one additional question if I may.

MR JUSTICE GOSS: Certainly, of course.

MR ASTBURY: If we can go to tile 12, please. This is a document, as you may have seen, entitled "Blood gas record", from the intensive care unit at Chester. If we can scroll down, please. You'll be familiar with these sort of forms, I take it, and the entries thereon?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: Could I ask you to look, please, at an entry at 01.14, which is a little further down. Bearing in mind what you told us about the timings that morning, can you tell us whether that is your handwriting?

PERCIVAL-CALDERBANK: No, that's not my handwriting.

MR ASTBURY: All right. Thank you. My apologies for that.

Cross-examination by MR MYERS

MR MYERS: I'm just going to ask you a couple of general questions and then just a few points about the incident you've told us about.

You'd worked, by the time we're dealing with, at the Countess of Chester for about 20 years, hadn't you, something like that?

PERCIVAL-CALDERBANK: Yes.

MYERS: You noticed, didn't you, that between June 2015 and July 2016, which is the period we're looking at in this case, it did seem to be a particularly busy period, didn't it?

PERCIVAL-CALDERBANK: Yes.

MYERS: Did you form the impression at least that there seemed to be a lot of sick babies who were admitted?

PERCIVAL-CALDERBANK: There were a lot of babies that became sick, yes.

MYERS: Well, I'm helped by the statement -- you made a statement to the police, didn't you, on 9 January 2018 --

PERCIVAL-CALDERBANK: Yes.

MYERS: -- after you'd been interviewed?

PERCIVAL-CALDERBANK: Yes.

MYERS: And what you described is that:

"During this time we were particularly busy and a lot of sick babies were admitted."

PERCIVAL-CALDERBANK: Yes. That's what --

MYERS: Does that help jog your recollection?

PERCIVAL-CALDERBANK: Yes.

MYERS: All right. You were used to the way that the unit operated and the sort of babies you normally had admitted, weren't you?

PERCIVAL-CALDERBANK: Yes.

MYERS: And one of the things that struck you was that it seemed to you that some of the babies who came were babies who would normally have been born at other hospitals?

PERCIVAL-CALDERBANK: There was a hope that you could transfer some babies out, yes.

MYERS: A hope that you could?

PERCIVAL-CALDERBANK: Yes.

MYERS: Because it seemed that some of the babies that you had seemed to be the sort of babies who would normally be in a tertiary unit, wouldn't they?

PERCIVAL-CALDERBANK: There were changes made, yes, so they were to take certain levels of babies, yes.

MYERS: That who was to take them, sorry?

PERCIVAL-CALDERBANK: The tertiary hospitals would take them.

MYERS: But wasn't the impression that you had that some of the babies who you had at Chester were babies who normally would have expected to be at the tertiary unit?

PERCIVAL-CALDERBANK: When we were extremely busy, yes, some of them should have been at that tertiary units, but unfortunately those tertiary units were busy also.

MYERS: That's what I wanted to establish, thank you.

Can I just ask you something else, again it's a general point. If your attention is drawn to a baby who you've identified as unwell in some way or possibly becoming unwell, for instance if there's an alarm or you just noticed they're desaturating, in the first instance in your experience does a nurse take time just to confirm what the problem is before they act?

PERCIVAL-CALDERBANK: Yes.

MYERS: And then you would take whatever action you thought necessary to deal with the problem once you've assessed what it is?

PERCIVAL-CALDERBANK: Yes.

MYERS: Is it the case that there are obviously levels that you can respond and sometimes you might wait just to see if the baby self-corrects?

PERCIVAL-CALDERBANK: Yes, that's correct.

MYERS: If that doesn't appear to be happening and if you believe you can, you might then react by stimulating the baby or even giving the baby some oxygen yourself?

PERCIVAL-CALDERBANK: Yes. That's correct.

MYERS: And then if the problem seems to require more assistance then you'd ask for assistance from another nurse; is that correct?

PERCIVAL-CALDERBANK: Yes.

MYERS: Or you might even crash call a doctor if it's something which looks more serious?

PERCIVAL-CALDERBANK: Yes.

MYERS: When we look at the events for [Baby D] on the 21st and 22 June 2015, did you find, when you cast your mind back to them, that a lot of details were not clear, some may have been and some were not?

PERCIVAL-CALDERBANK: I'm sorry, I'm unsure.

MYERS: Did you rely a lot on notes and things like that that you'd read to help you with recalling details?

PERCIVAL-CALDERBANK: I did, yes. That's what I had to look at.

MYERS: All right. You became aware that [Baby D] had desaturated; is that correct?

PERCIVAL-CALDERBANK: I was alerted.

MYERS: Alerted, right.

PERCIVAL-CALDERBANK: Yes.

MYERS: Would it be right, you're not too sure what it was that drew your attention to that?

PERCIVAL-CALDERBANK: No. I'm unsure whether it was the alarms or it was somebody shouting for help.

MYERS: We know that Caroline Oakley, whose nurse [Baby D] was, came back from a break --

PERCIVAL-CALDERBANK: Yes.

MYERS: -- to assist. Do you recall asking Lucy, Lucy Letby, to go and fetch her at some point during what happened, that is Lucy Letby to fetch Caroline Oakley?

PERCIVAL-CALDERBANK: I don't know who I was asked to go and get Caroline but we asked -- we said, "Can you go and get Caroline please".

MYERS: Your recollection, tell me if this is right, is that one or other of you went to get Caroline?

PERCIVAL-CALDERBANK: Yes.

MYERS: But you're not sure who it was?

PERCIVAL-CALDERBANK: No.

MYERS: The discolouration that you've described to us, today you described it as a mosaic, red/brown colour, and you have said things to the jury that it was like vessels, oval markings and she was pale and it was a brownish-red. That's what you said in evidence now.

When you described this to the police -- I am looking at the statement on 9 January 2018 which is a couple of years after this, about 4 years ago from now -- at that time what you said was that [Baby D] had been mottled over her trunk and legs.

PERCIVAL-CALDERBANK: Yes.

MYERS: And then you just said that you'd seen babies in the past with discolouration from circulation issues or from sepsis, but on this occasion it looked unusual.

PERCIVAL-CALDERBANK: Yes.

MYERS: And that's actually as much as you said back in 2018 about the colour.

PERCIVAL-CALDERBANK: Yes.

MYERS: Right. You made this statement after being interviewed by the police, didn't you --

PERCIVAL-CALDERBANK: Yes.

MYERS: -- as a witness.

PERCIVAL-CALDERBANK: Yes.

MYERS: No reference to mosaic or reddy-brown or vessels or things like that, was there?

PERCIVAL-CALDERBANK: No.

MYERS: I just wonder if you could help us. That extra detail, is that something that you may have picked up from what other people have said when you've gone back and talked about this?

PERCIVAL-CALDERBANK: I might have done, but also it's my recollection. There are other elements that have come back that I remember and thinking -- because it was so unusual.

MYERS: I'm not disputing you said it was unusual, but you accept that it's possible that you may have been influenced a bit by discussions that have talked about the colour of the rash?

PERCIVAL-CALDERBANK: It... No, because it was an odd rash. It wasn't like a normal septic rash. It was a different type of rash.

MYERS: But when you gave the statement to the police and you were interviewed, you were able to give as much detail as you could remember, didn't you?

PERCIVAL-CALDERBANK: Yes.

MYERS: And you had the time to do that, didn't you?

PERCIVAL-CALDERBANK: Yes.

MYERS: And can you help us with why you didn't provide, for such an unusual rash, details like mosaic, red-brown vessels then?

PERCIVAL-CALDERBANK: Because when I was asked, I wasn't -- I couldn't actually describe it, I just said it was very unusual and it was like a mottled-type rash, which would -- it was still a mottled rash but it was unusual.

MYERS: People have talked about this rash amongst work colleagues, haven't they?

PERCIVAL-CALDERBANK: Mm. I think -- I'm not... Not that I'm aware of.

MYERS: Can you help us with how you got the extra detail?

PERCIVAL-CALDERBANK: Because I started thinking about what happened in the events because I was -- as I was getting sleepless nights, I was thinking about the events that happened.

MYERS: But certainly not something you remembered or are able to describe when you actually made the statement after the interview 4 years ago?

PERCIVAL-CALDERBANK: No, not at the time, no.

MR JUSTICE GOSS: Sorry, the date of that statement?

MR MYERS: 9 January 2018.

We can agree that all you said about it then, Ms Percival-Calderbank, is that it looked unusual?

PERCIVAL-CALDERBANK: Yes.

MYERS: In any event, you went on to say that the discolouration disappeared and she became a normal colour again?

PERCIVAL-CALDERBANK: Yes.

MYERS: And, as far as you could tell at that point, she seemed to have recovered from whatever it was that had taken place?

PERCIVAL-CALDERBANK: Yes.

MR MYERS: Thank you.

Re-examination by MR ASTBURY

MR ASTBURY: You've been asked, Nurse Percival-Calderbank, about what you did or didn't say to the police in your statement.

PERCIVAL-CALDERBANK: Yes.

ASTBURY: I think it was alluded to, but you were interviewed by the police before your witness statement was compiled; is that right?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: Can I please remind you, if I may, what you said at that stage.

MR JUSTICE GOSS: Date?

MR ASTBURY: We don't have the date, my Lord, I'm afraid.

The statement -- we can find it. But it comes before the statement.

MR JUSTICE GOSS: It's before the statement is made?

MR ASTBURY: Yes.

MR JUSTICE GOSS: The statement is then compiled from what's said in the interview. So it's some time before 9 January 2018.

MR ASTBURY: Just to remind you about what you actually did say about colour and the like:

"When we were looking at her, afterwards, she got -- her trunk and her legs went a motley colour and was odd.

So I remember shouting the doctor to come, 'Could you come and have a look at this?'"

PERCIVAL-CALDERBANK: Yes.

ASTBURY: "This is unusual, this discolouration, and blotchiness over her body."

PERCIVAL-CALDERBANK: Yes.

ASTBURY: Do you remember saying that during --

PERCIVAL-CALDERBANK: Yes.

ASTBURY: -- the course of your interview?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: You then said:

"She went a motley colour."

Then you said this:

"It was -- we'd seen things called like a mosaic where -- or there's a condition where you get half the body that goes a funny -- which is a circulatory issue."

So they're your words?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: Let's just break that down a little bit, "Like a mosaic".

PERCIVAL-CALDERBANK: Yes.

ASTBURY: Do you remember saying that to the police during --

PERCIVAL-CALDERBANK: Yes.

ASTBURY: -- your interview?

PERCIVAL-CALDERBANK: Yes.

ASTBURY: And that's what you were describing to us before --

PERCIVAL-CALDERBANK: Yes.

ASTBURY: -- with the pieces? You talk about "half the body".

PERCIVAL-CALDERBANK: That's when I was talking about the harlequin sequence that you would get with a mosaic -- a harlequin sequence, it tends to be half the body.

ASTBURY: So that's what you were describing to the police before you provided your --

PERCIVAL-CALDERBANK: Yes.

MR ASTBURY: -- witness statement? All right, thank you.

I have no more questions. Does my Lord have any questions?
Questions from THE JUDGE

MR JUSTICE GOSS: Just one thing. You referred to it not being a spotty rash --

PERCIVAL-CALDERBANK: Yes.

MR JUSTICE GOSS: -- not petechiae.

PERCIVAL-CALDERBANK: Yes.

MR JUSTICE GOSS: What are petechiae?

PERCIVAL-CALDERBANK: Petechiae are if you -- like little spots all over the skin.

MR JUSTICE GOSS: Pinpricks of blood?

PERCIVAL-CALDERBANK: Similar. If you've have a baby that's had a difficult delivery, sometimes they might have it on their face.

It's that sort of rash. If you have prickly heat that could be like a petechiae-type rash. It's like that, spotty, but they tend to be small -- a smaller rash.

MR JUSTICE GOSS: Right.

PERCIVAL-CALDERBANK: And they're just red and raised. That's it.

MR JUSTICE GOSS: Just red and raised. Thank you.

Right. Thank you very much. That completes your evidence at this stage.

PERCIVAL-CALDERBANK: Okay.

MR JUSTICE GOSS: Thank you for coming and giving it. You will be coming back again later during the trial.

PERCIVAL-CALDERBANK: Yes.

MR JUSTICE GOSS: Please do not speak to anyone about anything to do with this case and in particular your evidence or any of the matters that you have spoken about or will be speaking about.

PERCIVAL-CALDERBANK: Yes.

MR JUSTICE GOSS: All right? Thank you very much indeed.

Please just wait there for the moment.

We're going to have to have a break now.

MR ASTBURY: Yes.

MR JUSTICE GOSS: We will just have a 5-minute break. Is it Dr Evans?

MR JOHNSON: It will be Dr Evans. So whether or not you prefer to build the break into lunch and finish slightly earlier and start earlier, I don't know. It's a matter for your Lordship, obviously.

MR JUSTICE GOSS: I'm told that the break will take longer than 5 minutes, so in those circumstances we'll have the lunch break now. Could you be ready, please, to start again at -- I'll say 2 o'clock, rather than 1.55. All right? So ready to be in court for 2 o'clock, please.

Thank you very much.

(In the absence of the jury)

MR JUSTICE GOSS: Timetable?

MR JOHNSON: Yes, please. You'll remember, my Lord, that NASA recently hit an asteroid at quite a distance with some sort of space probe. Well, we had actually predicted the witness from

Switzerland for yesterday from about a month ago, so we're running pretty much as predicted on timetable. We have a slight problem in the next couple of days to the extent that Dr Arthurs can only give evidence on Friday, so that's immovable.

Between now and Friday we have Doctors Evans and Bohin. The only way to use the undoubted spare time that's going to arise now over the next 2 days will be to start the [Babies E & F] case, which would involve getting [Mother of Babies E & F] here, and I know my learned friend is, and we, frankly, are keen to have some sort of break between cases for all sorts of reasons.

MR JUSTICE GOSS: We ought to try and keep them in compartments, really.

MR JOHNSON: That's really where I'm going, you've seen where I'm going. The necessary or the inevitable consequence is that we're going to have a short day tomorrow and a short day on Friday.

MR JUSTICE GOSS: Dr Arthurs will not -- will he take very long?

MR JOHNSON: It's not just this case, there are other cases, so we won't restrict him to this case, we'll have an assessment of what else we can reasonably deal with at the same time. He certainly deals with [Baby C], so we'll certainly deal with [Baby C]. Whether we can or should foresee cases that we're yet to start is something we'll think about and talk -- I'll speak to Mr Myers about.

So we'll try to -- without putting things out of kilter, we'll do as much of Dr Arthurs as we can. I'll see when else he's available and how that fits in.

MR JUSTICE GOSS: Yes. We'll just do as much as we can then, but not start the [Babies E & F] until Monday.

MR JOHNSON: I just thought if the jury had some advance notice, it might benefit them.

MR JUSTICE GOSS: Yes. So can I give them -- should I say that they will not be here -- it won't be a full day tomorrow?

MR JOHNSON: No.

MR JUSTICE GOSS: Are you confident it'll only be half a day? Not more than half a day.

MR JOHNSON: The only evidence to call on Thursday will be Dr Bohin.

MR JUSTICE GOSS: It'll be well under half a day then.

MR MYERS: I can't see either day taking more than half a day then if that assists.

MR JUSTICE GOSS: I'll explain that to the jury then and explain what the difficulty is.

MR MYERS: As my learned friend Mr Johnson says, the reality is that we are as we would have hoped to have been at this point in terms of overall time, it's just that some of the matters have proceeded a little bit more quickly than had been anticipated up to this point and we are a little bit stuck with some fixed points, which are clinicians who can only attend court at particular times.

MR JUSTICE GOSS: Exactly. All right. I've already said that we won't go on to the next babies.

MR MYERS: That is enormously helpful.

MR JUSTICE GOSS: I know the time can be used in other respects. If there's any reading that can be done -- there may be some reading that could be done? No?

MR ASTBURY: We've done it, my Lord, I'm sorry. In respect of this compartment of the case, if I can put it that way, we finished that yesterday.

MR JUSTICE GOSS: No, but the next one in relation to the --

MR ASTBURY: We'll have a look at that.

MR JUSTICE GOSS: I was wondering if we could go through a sequence of events or something, or is that going to be difficult?

MR ASTBURY: I know the chronology we've hoped to keep is: parents, sequence of events chart, then clinical witnesses.

MR JUSTICE GOSS: You can think about that and see if we can use a little bit more time.

All right. Thank you very much. 2 o'clock then.

(12.51 pm)

(The short adjournment)

(2.00 pm)

(In the presence of the jury)

DR DEWI EVANS (recalled)

Examination-in-chief by MR JOHNSON

MR JOHNSON: I recall Dr Dewi Evans, please.

Dr Evans, would you identify yourself for the sake of the recording, please?

EVANS: Dr Dewi Evans.

JOHNSON: Thank you. Dr Evans, you have provided a number -- four, I believe, separate reports in the case of [Baby D]; is that correct?

EVANS: I have.

JOHNSON: Thank you. If we could just list them for the record, please. Is the first is dated 7 November 2017?

EVANS: Yes.

JOHNSON: Was that what you have referred previously to as your screening report?

EVANS: Correct.

JOHNSON: Was your second report dated 31 May 2018?

EVANS: Yes.

JOHNSON: Was your third report, dealing with some issues that were raised with you, 15 October 2021?

EVANS: Correct.

JOHNSON: Your final report, what was the date of that, please?

EVANS: 21 October 2021.

JOHNSON: Thank you. Does that simply deal with pagination in the medical records?

EVANS: Yes. Sorry, there were a couple of other minor reports, confirming various things --

JOHNSON: Yes.

EVANS: -- little admin things, yes.

JOHNSON: Thank you. As before, Dr Evans, I'll concentrate on your report of 31 May 2018.

Have you been present, albeit over the link in the court next door, throughout the evidence concerning the life and the death of [Baby D]?

EVANS: Yes, I have, apart from late Friday afternoon last week.

JOHNSON: I'd like to deal with the material that you were sent first of all, if I may, please. That is set out in your report at paragraph 3, I believe. Did you receive the medical records from the Countess of Chester Hospital primarily?

EVANS: Yes, I did.

JOHNSON: Did you also receive material from Alder Hey Children's Hospital in Liverpool?

EVANS: Yes, I did.

JOHNSON: And did that material from Alder Hey primarily relate to the post-mortem examination of [Baby D]?

EVANS: Yes.

JOHNSON: Did you also receive some medical photographs and some X-rays from the Countess of Chester?

EVANS: X-rays, yes.

JOHNSON: I think one of the issues you raised in your report is that as at that date, in other words over 4 years ago now, you hadn't seen the gynaecological records relating to [Mother of Baby D].

EVANS: No.

JOHNSON: But have you now seen those?

EVANS: Yes.

JOHNSON: Thank you very much. Just to put this into the sequence then, I hope there'll be no problem with me just briefly setting out the chronology, taking it up at paragraph 6 of your report.

Do you list in chronological sequence various events during [Baby D]'s life?

EVANS: Yes, I do.

JOHNSON: Starting with her birth at 4.01 on Saturday, 20 June?

EVANS: That is correct, yes.

JOHNSON: You record her gestational age at 37 plus 1?

EVANS: Yes.

JOHNSON: Her birth weight at 3,130 grams?

EVANS: Yes.

JOHNSON: You have now seen the Apgar scores, which were referred to in evidence; is that right?

EVANS: Correct, yes.

JOHNSON: Do you record, at your paragraph 8, [Baby D]'s original -- or initial, I should say -- oxygen saturation level at a low 48%?

EVANS: Yes.

JOHNSON: I think that was at 19.30 hours on 20 June.

EVANS: Yes.

JOHNSON: That's tile 8. I'm not asking us to look at it now, but if anyone wants to note it down.

You record [Baby D]'s blood gases at tile 12?

EVANS: Yes.

JOHNSON: The fact that she, [Baby D], was treated with intravenous penicillin and gentamicin?

EVANS: Correct.

JOHNSON: That information recorded at tiles 13, 14, 20, 21 and 22 of the sequence?

EVANS: Yes.

JOHNSON: Together with a bolus of 0.9% sodium chloride?

EVANS: Yes.

JOHNSON: And do you record also her saturations, blood gas results, which we have seen at tile 23, at about the time she was started on CPAP, ie 8 pm that evening?

EVANS: Yes, 100%, yes.

JOHNSON: Did you then turn your mind to Dr Brunton's examination of [Baby D] at 21.45 hours on 20 June?

EVANS: I did.

JOHNSON: And that information is at tile 34.

Did you note at your paragraph 11 that, although [Baby D] was showing signs of improvement, the medical staff decided to intubate her?

EVANS: Yes.

JOHNSON: And did you record the fact that at 23.00 hours, I think it's tile 51 or tile 34 or tile 35, [Baby D] was given Curosurf?

EVANS: Yes.

JOHNSON: Did you move on, on 21 June, to record at 1.50 the results of the blood gases which are recorded at tile 69?

EVANS: Yes.

JOHNSON: Which is also J2218. And did you conclude that [Baby D] was stable on pressures -- on ventilatory pressures of 16 over 5 --

EVANS: Yes.

JOHNSON: -- in 30% oxygen, with a respiratory rate of 40?

EVANS: That's correct, yes.

JOHNSON: The next event in the chronology, as you recorded it, was the fact that [Baby D] had the ET tube removed at 9 am on 21 June?

EVANS: Correct.

JOHNSON: And then your paragraph 13. Did you record that at 2 pm on 21 June, the two lines were inserted through her umbilicus?

EVANS: Yes.

JOHNSON: One was removed, the other remained in place and was withdrawn; is that right?

EVANS: Correct.

JOHNSON: We know from the evidence of Dr Brunton, I think, that the line that he thought was an arterial catheter was in fact a venous catheter?

EVANS: Yes.

JOHNSON: I think that's Dr Rylance, I beg your pardon. I think that's tile 133.

Did you record at your paragraph 14 that, in an entry timed at 19.00 hours on 21 June, [Baby D] had been:

"... in air all day, saturating well, no desaturations"?

EVANS: Yes.

JOHNSON: That, I think, is at least partially referred to in Dr Rylance's notes?

EVANS: Yes.

JOHNSON: Did you next record the fact that immediately post extubation, so this is going back to the morning, [Baby D]'s blood gases had been "not good"?

EVANS: Correct.

JOHNSON: And it was that fact that had led to her being put on to CPAP?

EVANS: Yes.

JOHNSON: Did you record next the blood gas results at 18.44?

EVANS: Yes.

JOHNSON: Then your paragraph 15, the fact that [Baby D] had passed urine for the first time?

EVANS: Yes.

JOHNSON: So moving on to the night shift and your paragraph 16, this is in Dr Brunton's notes at tile 174, did you record the fact that Dr Brunton had recorded that at 21.10 hours Dr Brunton had recorded various readings for sodium, which was high, bicarbonate --

EVANS: Yes, sodium was low.

JOHNSON: I beg your pardon.

EVANS: And "potassium H", that's hydrolised, not high, by the way. A minor point.

JOHNSON: Not at all. Was it noted at that stage that [Baby D] had saturations of 100%?

EVANS: Yes.

JOHNSON: That there was no increased work of breathing or signs of respiratory distress syndrome?

EVANS: Correct.

JOHNSON: So that's the lead-up to the events that happened at about 1.30 in the early hours of the morning of 22 June; is that right?

EVANS: Yes.

JOHNSON: Is that a fair summary of the facts as you set them out in your report?

EVANS: Yes.

JOHNSON: Thank you. Did you turn your attention next to Dr Brunton's notes made at 01.40 hours?

EVANS: Yes.

JOHNSON: Which is the jury's tile 214. I'm looking at your paragraph 17 now, please, Dr Evans. So far as you were concerned, and so far as the notes of Dr Brunton were concerned, and taking into account the evidence he has given, what did you feel were the relevant features of [Baby D]'s desaturation at that time?

EVANS: Well, I think the first point to say is that it would have been very, very surprising because up until then she was very, very stable. She was responding to the treatment that she had received from the age of about 4 hours, when she was admitted to the neonatal unit.

And just before this, she was having oxygen saturations of 100%, you can't do better than that, she was not requiring additional oxygen, her only support was CPAP, which simply gives the air at a slightly higher pressure to keep the lungs open. And clinically, there was no increased work of breathing. In other words, there was no evidence that she was suffering any respiratory problem. In other words, she was a very stable baby.

So for a baby who was over 3 kilos, that's nearly 7 pounds, suddenly changing so rapidly is something that is incredibly unusual for anyone used to dealing with babies on a neonatal unit.

JOHNSON: Thank you. You record the fact that the nursing notes record:

"Extremely mottled +++ and tracking lesions, dark brown/black, across the trunk."

Did you find that to be of significance in this context?

EVANS: It's very significant and it's also again extraordinarily unusual. This is not something that happens out of the blue in one's experience of dealing with babies, particularly this comment regarding tracking lesions, suggesting they move around, and also the discolouration being described as dark brown/black across her trunk. In other words, across her chest and abdomen. And again, she was needing 60% oxygen, so she'd gone from not requiring any oxygen at all -- 21% oxygen, air -- to 60%. So that is pretty unusual.

JOHNSON: All right. You noted next the information that's at tile 218, which is Dr Newby's note made at 2 am and the fact, as she has told them to us this morning, about these areas of discolouration on [Baby D]'s abdomen and also the information that's recorded at tile 224, referring to the cefotaxime.

EVANS: That's another antibiotic, cefotaxime.

JOHNSON: The next entry to which you refer in your report, which is at paragraph 18, is blood gas readings taken from [Baby D], which are also set out in the tiles 219 and 222.

EVANS: Yes.

JOHNSON: The fact that [Baby D] was clinically much improved, that the areas of discolouration had completely disappeared.

EVANS: Yes.

JOHNSON: The next entry, so I'm going to your paragraph 20 now, please, Dr Evans, refers to a further note made by Dr Brunton, which the jury can find, if they want it, at tile 236, timed at 3.15 on the morning of 22 June, where noted:

"Called urgently to paediatric ward as [Baby D] had further episode of being very upset and crying and desaturated to 80% in 100% oxygen."

EVANS: Yes.

JOHNSON: "Skin discolouration again became more prominent but not as obvious as previously."

And then the fact that [Baby D] appeared distressed on CPAP with two plus marks and continuing:

"Clinically appears very well. She is in air.

There is no increased work of breathing. Abdominal palpation. Notes skin discolouration (slight) over the right side of the abdomen."

And the plan at that stage was to take [Baby D] off CPAP and to give her a fluid bolus and check the gas, her blood gases again, in a further 1 hour.

EVANS: Yes.

JOHNSON: We come then to the fatal event, which was noted up by Dr Brunton at tile 253 at 04.35 hours.

EVANS: Yes.

JOHNSON: This was a record of what Dr Brunton had seen when he'd been called to the neonatal unit at 03.55; is that right?

EVANS: Yes.

JOHNSON: The relevant notes, if anyone wants to make a note, is J2226. You set out in your report the timings and events that are there set out in Dr Brunton's notes; is that correct?

EVANS: That's correct, yes.

JOHNSON: I'm not going to run through those because we've been through them more than once already and we all have a written record of them in the sequence of events.

Now I want to move on, please, Dr Evans, to your paragraph 23. If we could just put up tile 220, please.

If we go to the document behind, thank you very much.

If we can just see it all in one go if possible.

Thank you very much.

At your paragraph 23, Dr Evans, did you review the information that is contained in this particular document that we can see on the screen?

EVANS: I did.

JOHNSON: And did you start, in effect, with a verbal description of what can be seen from 19.00 hours on 21 June?

EVANS: Yes. I can't read it from here, but that's 19.00 at the beginning, yes.

JOHNSON: All right. Well, by reference to your report, please, and we can go to the chart and point these things out one by one if we need to, do we start with [Baby D]'s heart rate at the top of --

EVANS: Yes.

JOHNSON: -- the chart?

EVANS: Yes.

JOHNSON: And how did you -- how would you describe what we can see on that heart record, please?

EVANS: Right. That is a normal heart rate record. The values vary all within the normal limits. There is one spike, ie increase in heart rate, just before the end of the mark, which then falls. So therefore a normal heart rate, apart from that one increased spike, which is around -- between 1 and 2 am. So therefore that's a normal heart rate apart from that one blip.

JOHNSON: What about the respiratory rate, the respirations?

EVANS: Same again. All the respiratory markers are within the normal range, they're all 40 to 60, and you get an increase to 60 around the same time as the increased heart rate. So you've got two values of 60 and then you have the drop. So therefore normal respiratory pattern up until about 1 in the morning.

JOHNSON: And the temperature, any significance to any of those readings?

EVANS: Normal temperature readings.

JOHNSON: Thank you. Further down the chart, if we could just scroll down, please.

EVANS: I think I'll open up my own because I can see it a bit better.

JOHNSON: Can we see [Baby D]'s blood pressure recorded there under BP?

EVANS: (Pause). Right, I'll check my own because I can't read that on there.

There's a blood pressure value of -- two blood pressure values. The first is 69/45 with a mean pressure of 53.

JOHNSON: Yes.

EVANS: And the next one is 66/34, with a mean pressure of 45.

JOHNSON: Yes.

EVANS: And the last one is 68/39, with a mean blood pressure of 48. All those values are perfectly acceptable for a baby of [Baby D]'s size and age. So normal in other words.

JOHNSON: Yes.

EVANS: And the other bits down the bottom, slightly above the value of BP, you can see O2 on the far left. There's a value O2. If you look at the values towards the right, there are three values of 21. There's 21, 21 and 21. That means 21% oxygen, of air, and underneath the line O2 you can see SaO2, that's what that reads, not very clear, it's oxygen saturation. There are three values: one is 100, one is 94, and the last one is 99.

So that relates to oxygen saturation and values of 94, 99 and 100. Perfectly normal, indicating good respiratory results.

JOHNSON: Yes. All right.

EVANS: So a very stable baby, in other words.

JOHNSON: So [Baby D] in air?

EVANS: Yes.

JOHNSON: No supplemental or additional oxygen and recording blood saturations which, as you have told us, are perfectly acceptable?

EVANS: Yes.

JOHNSON: Thank you. Did you move on to consider the findings at the post-mortem?

EVANS: I did.

JOHNSON: Do you defer to the pathologist, Dr Marnerides, so far as the post-mortem is concerned?

EVANS: I do.

JOHNSON: Did you consider the issue of the failure to give [Mother of Baby D] any antibiotics in the light of her premature membrane rupture?

EVANS: I did. I did -- I'm not sure. Yes. Yes, I did. Yes.

I -- yes.

JOHNSON: And I think to be fair, you also took into account the witness statement of [Mother of Baby D], which was supplied to you by the police, setting out the chronology of her treatment?

EVANS: Yes.

JOHNSON: That is your paragraphs 30 and 31.

EVANS: Yes, I did.

JOHNSON: You recorded, I think at your paragraph 31, that [Baby D] had been born 60 hours after her mother's membranes had ruptured.

EVANS: Yes.

JOHNSON: Did you flag up under your observations a need to clarify the hospital's policy regarding giving antibiotics to mothers in [Mother of Baby D]'s position following the early rupture of membranes?

EVANS: Yes, I did.

JOHNSON: Thank you.

Did you consider -- I'm going to your paragraph 33 now, please, Dr Evans. Did you consider the Apgar scores at 5 and 10 minutes that had been recorded for [Baby D]?

EVANS: Yes, I did. They were 8 and 9, which is -- both of which are satisfactory, yes.

JOHNSON: Did you also then -- I'm going to your paragraph 34 -- did you also then look to seek to explain why it was that [Baby D] had been in a poor condition following her birth?

EVANS: Yes, I did. I thought that her condition was consistent with early onset pneumonia.

JOHNSON: And what features of [Baby D]'s condition caused you to reach that conclusion?

EVANS: Well, she was -- the Apgar scores were satisfactory, so that's not too bad. But she was grunting and cyanosed soon after she was born and her respiratory rate was increased, so all of these are markers of some kind of respiratory problem.

JOHNSON: Yes.

EVANS: And the commonest respiratory problem in any baby of 37 weeks' gestation is infection, pneumonia. To add to that, her bilirubin was 92, which is raised, and although babies commonly get jaundice, if the bilirubin is abnormally high initially in the first 24 hours, it's not normal and in cases of infection the red blood cells haemolyse, they burst, and that causes the jaundice. So a raised bilirubin is a non-specific marker of infection in a situation of this nature. And on top of that, we've got grunting, which is again a well-recognised clinical indicator of something abnormal and worrying respiratory-wise. And of course she was cyanosed, you know, her colour was blue, was not normal.

JOHNSON: Yes.

EVANS: So all of this, very straightforward, all of these added up to early onset pneumonia.

JOHNSON: Thank you. Did you take the view that once she had been admitted to the neonatal unit, [Baby D]'s management had been acceptable or not?

EVANS: Yes. Once she got there -- she was about 4 hours of age when she got there and I thought her management was entirely consistent with what I'd expect of a modern neonatal unit.

JOHNSON: Thank you.

EVANS: She received antibiotics and she received respiratory support and intravenous fluids.

JOHNSON: Was the decision to remove the ET tube from [Baby D] at about 9 o'clock on the morning of the 21st a reasonable one in all the circumstances?

EVANS: It was, because she was getting better. She was making what I consider a very satisfactory improvement -- and in fact a far more rapid improvement than I would expect given the

condition she was in when she arrived at the unit. But all the respiratory markers, monitoring, that were carried out were great and therefore she was taken off endotracheal intubation, yes.

JOHNSON: Thank you. Having removed the ET tube and the blood gas results that were then reported, was it a reasonable decision to put [Baby D] on to CPAP to support her breathing?

EVANS: Yes, it was. Although she was satisfactory when full ventilation was removed, her condition did not settle completely and therefore standard management -- she still needs a little bit of support, CPAP is that form of support, so she was put on CPAP and she stabilised very, very promptly on what is, by any standards, very minimal respiratory support. So that was great.

And over the day, as we've heard, her condition stabilised and, you know, she remained very well.

JOHNSON: Yes. Looking at things in the round and taking into account the evidence that appears in the records, and indeed that you have heard, what view did you come to so far as [Baby D]'s condition immediately prior to her collapse?

EVANS: Can I just put one bit there to get the chronology right --

JOHNSON: Please.

EVANS: -- if that's okay?

JOHNSON: Yes.

EVANS: She was stable on CPAP and the medical staff, in the evening prior to her collapse, took her off CPAP. This didn't work, so they put her back on CPAP. That is perfectly standard management, especially in a baby who by this time was not needing additional oxygen. She was a big baby, over 3 kg. Some babies don't like CPAP very much, you know, it's quite intrusive, can be -- having something over your face. So they tried her off CPAP.

Her oxygen saturations dropped so they put her back on CPAP and her condition reverted to normal more or less straightaway and stayed perfectly normal in air, oxygen saturations normal, until the early hours of the following morning.

JOHNSON: So what conclusion did you come to so far as her condition in the time immediately before her collapse some time after 01.00 hours on the 22nd?

EVANS: Just prior to that, if I'd seen her I would be very, very confident that she'd be very well the following morning and we would be looking to either maintaining her on CPAP, because she's still only, you know, a couple of days of age, or trying her off CPAP again to see if she can now breathe without CPAP.

So her condition could not have been better and her condition clinically was entirely consistent with a baby recovering from early onset pneumonia -- not recovered from pneumonia, recovering from pneumonia. Nobody, I think, recovers from pneumonia in such a short time.

So this -- you know, she was really doing exceptionally well and clinically very satisfactory.

JOHNSON: How would you describe [Baby D]'s response to the treatment that she had received?

EVANS: When now?

JOHNSON: In the time immediately before her collapse.

EVANS: Oh, extremely satisfactory. You know, her improvement was far quicker than I would have expected, to be frank.

It was remarkable that her oxygen values -- oxygen saturations, you know, 100% or 99% without the need for any supplemental oxygen at all. Now, that is an indicator of a baby whose lungs are functioning satisfactorily.

JOHNSON: Thank you.

EVANS: So very good.

JOHNSON: So you having told us that there is clear evidence that her lungs were operating satisfactorily --

EVANS: Yes.

JOHNSON: -- can we look at the three collapses at about 01.30, 03.00 and 03.45 hours on the morning of 22 June, please.

EVANS: Yes.

JOHNSON: We have heard evidence as to the nature of [Baby D]'s response following the first collapse. Is that typical in these circumstances?

EVANS: It isn't, actually. It's very unusual because her deterioration was very rapid. Her oxygen fell, her heart rate fell. It was very rapid, which usually is an indicator of some

kind of serious pathology, you know, but if it is an indicator of serious pathology, then resuscitation will work, but this is followed by the need for far more in the way of clinical support. In other words, she would need additional oxygen, she would not have recovered so promptly.

But within a very short period of time, she was back, not requiring oxygen, and well. So this is an incredibly unusual response for a baby who's 37 weeks' gestation.

JOHNSON: So what you're saying is the speed of her response and the nature of her response is inconsistent with the gravity of the collapse being part of the pneumonia that no doubt she had?

EVANS: It's inconsistent with the pneumonia or any other one of the -- inconsistent with what we call septicaemia or sepsis, in other words a generalised infection. If she had a generalised infection, sepsis, she would not have made this very prompt recovery within a very short period of time.

JOHNSON: Yes. Looking at your paragraph 39, Dr Evans, did you remark on the abdominal discolouration which had been reported by the treating medical staff?

EVANS: Yes. The word I used was "intrigued". This was something that I found very unusual again. It was intriguing, both with regard to its appearance, and I think we've heard from the local people, local staff looking after her, their descriptions of all of this, noting tracking, bruises.

The other thing, which is even more remarkable, is that it disappeared. It disappeared within 35 minutes according to my report.

So these abnormalities, they could not be bruises.

JOHNSON: I think some of the treating doctors have referred to this, but why can't they be bruises?

EVANS: Bruising is due to damage to blood vessels under the skin, whether you get kicked in the shins playing football or whatever. If you get damage to tissues underneath the skin, the blood vessels are traumatised, they break. Blood leaks out of the tissues and then comes close to the surface, where the bruise appears.

If that happens, as is the experience of all of us, I suspect, the bruising will last several days. So bruising will not disappear within a matter of an hour or two or less. So therefore this could not be bruises.

The other thing it could not be is what I think Dr Newby this morning described as purpura. Purpura, again, are blood spots. Same principle: tiny blood spots under the skin, which you get in any number of conditions. I think one of the people mentioned meningococcal septicaemia.

If you get purpura, if you get these little blood spots under the skin, they just don't disappear, they'll be there for days, and if they are due to some serious underlying condition, they don't just not disappear, but you get an increase in the number of purpuric spots. So you get a spreading of purpura and this is associated with continued deterioration in your baby, in your patient.

Therefore the fact of all of this discolouration disappeared in a short time, not bruises, not purpura.

JOHNSON: Okay. In coming to your final conclusion, which we will come to in a moment, did you note the report of the post-mortem X-ray that had been taken of [Baby D]'s body?

EVANS: Yes, I did. Yes, I did.

JOHNSON: Did you ask for some assistance from a pathologist in terms of interpreting air which was found within [Baby D]'s body following her death?

EVANS: Yes, I did.

JOHNSON: All right. We can leave that for them.

Can we turn to your opinion, finally, please, Dr Evans, so your paragraph 43. Dealing with the issue of pneumonia, first of all, so far as you could tell, was this a pneumonia that affected both lungs or one lung?

EVANS: Well, the post-mortem says right-sided pneumonia, so just the right lung.

JOHNSON: Yes. In your experience, what conclusion did you draw as to when [Baby D] had developed pneumonia?

EVANS: I think she had developed it before her birth and that would be the result of the prolonged ruptured membranes.

So this was an antepartum pneumonia.

JOHNSON: Antepartum, is that Latin for before birth?

EVANS: Yes, before birth.

JOHNSON: Lawyers aren't allowed to use Latin anymore. I don't think doctors are prevented.

So far as that was concerned, if [Baby D]'s pneumonia had been sufficient to cause her death, what would you have expected the pattern of her decline towards death to have been? How would that have presented?

EVANS: Sure. If a baby's born with a severe pneumonia, usually affecting both sides, but not necessarily, where treatment fails to save her, what you find is that increasing amount of clinical input does not lead to an improvement. I'll explain all of this.

JOHNSON: Yes.

EVANS: When she first presented, she was an unwell baby and required ventilatory support. She was on ventilation, she wasn't on just this CPAP. If her pneumonia had progressed, the clinical team would never have managed to get her off ventilatory support and they probably would have found that as the hours went by, she would have required more and more oxygen, in other words a greater concentration of oxygen probably. She'd have required ventilation with increased pressures, in other words it would have taken greater pressure to keep the lungs open. They would have had difficulties keeping her oxygen saturations at a satisfactory level.

This is what you get in babies who have a severe or a fulminant pneumonia. In [Baby D]'s case, none of this happened. She got better. And as I've said earlier, she improved far, far more rapidly than I would have expected. I would have expected her to improve over 2 or 3 days, say, but she in fact improved over 24 hours -- or less than that, less than that, because she was placed on ventilatory support around 8 pm, I think, 9 pm.

JOHNSON: Intubated 9 pm, extubated 9 am.

EVANS: And extubated 9 am. So over that night her improvement was such that she did not need what I would call full ventilatory support anymore, which is great. On top of that, her oxygen requirements had fallen, you know, didn't need any, and so all of the prognostic factors, all of the predictions for [Baby D] at this time were she was recovering from pneumonia -- not recovered, not fully recovered, but recovering from pneumonia and it would be therefore a matter of, and I use these words advisedly, a little bit of trial and error as to when the medical team would get her away from CPAP to get her breathing on her own.

JOHNSON: Yes.

EVANS: So by 9 am -- at 10 am she was put back on CPAP and was stable on CPAP. So by any account, she was recovering satisfactorily from her pneumonia and essentially she was out of danger.

JOHNSON: Do you exclude pneumonia as being the cause of [Baby D]'s death?

EVANS: No, no, the pneumonia did not -- was not responsible in any way for [Baby D]'s death. Pneumonia is probably the condition that clinicians like myself have dealt with more commonly than any other condition, you know, any other condition, really. And in a situation like this, you know, pneumonia with the correct treatment is curable. You just treat it, antibiotics, oxygen, breathing support if necessary, so standard pneumonia treatment. That's what we do. That's why she was in the neonatal unit.

JOHNSON: Did you reach a conclusion as to what had caused or what was consistent with being the cause of [Baby D]'s death?

EVANS: Yes, I did. As we know, as with when I've given evidence before, initially all I had to go on were the clinical records and I formed the view this is an extraordinarily unusual collapse, unexpected collapse.

This is something that is consistent with her having sustained intravenous air. In other words, she'd received an injection of air, of gas, through a vein into her circulation, causing what we call an air embolus.

As I've discussed earlier, air embolus is incredibly rare, but this is what -- this, I concluded, was the only explanation that -- the only cause that could explain [Baby D]'s collapse and death.

MR JOHNSON: Thank you. Those are all the questions I have for you. Thank you, Dr Evans. Would you wait there for some further questions?

Cross-examination by MR MYERS

MR MYERS: Dr Evans, you haven't been asked, so I'll ask you, what are the features that make air embolism the only explanation?

EVANS: Right, well, let me go through them. The first is that her collapse -- this was a collapse of a baby who was stable and who had an intravenous line in place and where the collapse was unexpected and the changes were rapid and very, very striking. In other words -- the drop in oxygen saturation being the main

one. So that was my first stage in reaching this diagnosis of air embolus.

The second stage was the presence of this discolouration, which is unique in two ways. The first is that it was a pattern of discolouration that experienced neonatal nurses had never seen before and experienced medical people, one of whom is now a neonatologist in Glasgow, had never seen before and had never seen since. So we've got this extraordinarily unusual pattern of discolouration.

The second aspect of the discolouration was that it came and it went. It came and it went. Again, this is something that you do not find as a result of sepsis or other disorders. So that was my second step.

My third stage in reaching this diagnosis was that resuscitation was unsuccessful. This is the fourth of our 17 cases and I think we'll find in future cases that babies did deteriorate as a result of the usual complications that one gets in babies, infection mainly, and resuscitation carried out by experienced medical staff works. You don't need -- they just get better.

So therefore the third step in getting to my diagnosis was the fact that she failed to respond to pretty -- well, pretty thorough efforts at resuscitation.

My fourth stage, which again I defer to the radiology and pathology opinion on, is the presentation of air in the great vessels. The local report said air in the aorta -- so the great vessels could be the aorta or the vena cava. So again we've got air in a great vessel, which is an incredibly unusual phenomenon, as our radiology colleagues will tell us. So that was stage 4.

The fifth stage is that none of the other issues that affected [Baby D] were relevant. You can't explain this on the presence of a pneumonia affecting one lung.

Her sodium was a little bit on the low side, you know, that wouldn't explain her collapse or discolouration or anything else. So therefore, putting -- so we have four stages followed by the fifth and I think have excluded everything else.

So in my opinion, in [Baby D]'s case, we had a full house of clinical characteristics entirely consistent with her having sustained an air embolus, ie air injected into her circulation.

MYERS: Right, thank you. We'll come back to that shortly.

I want to go through next what we have in terms of her condition, leading up to the events in the morning of 22 June, Dr Evans --

MR JUSTICE GOSS: I think we might just have our mid-afternoon break at the moment.

MR MYERS: Yes, of course.

MR JUSTICE GOSS: I'm sorry to interrupt you, Mr Myers.

I was going to have to interrupt you at some stage.

I think this is a good time to have it. We'll just have our 10-minute break now. Thank you very much.

(2.53 pm)

(A short break)

(3.03 pm)

MR JUSTICE GOSS: Mr Myers.

MR MYERS: My Lord.

Dr Evans, you agree, don't you, that as we first encounter [Baby D] after her birth, her condition is entirely consistent with early onset pneumonia?

EVANS: I do.

MYERS: That's based in part because she was grunting and cyanosed, isn't it?

EVANS: Yes.

MYERS: Her respiratory rate was increased?

EVANS: Yes.

MYERS: Her bilirubin was 92. And in fact, it's not just that, is it? Her presentation in the hours that followed indicated the presence of a significant infection, didn't it?

EVANS: Yes.

MYERS: You'd said that it's quite common to encounter pneumonia and the presentation was straightforward. But she was actually quite poorly, certainly from about 12 minutes onwards, wasn't she, when we see her collapse?

EVANS: She was an unwell baby, yes.

MYERS: Yes. She was in a state of very poor health before she went to the neonatal unit, wasn't she?

EVANS: Yes.

MYERS: We know that her mother, [Mother D], hadn't been given antibiotics, contrary in fact to the guidelines of the hospital. You have seen that now, that's right, isn't it?

EVANS: Yes, that is correct, I heard the evidence, yes.

MYERS: And also in [Baby D]'s case antibiotics weren't given until 4 hours after birth.

EVANS: That is correct.

MYERS: And that is a delay that falls below the acceptable standard in her circumstances, doesn't it?

EVANS: It does.

MYERS: Now, your evidence is that by the time of the events that commence about 30 hours after birth, maybe a little bit later than that, she was in a state you would say of near complete recovery; is that correct?

EVANS: She was recovering, she had not recovered, which is the natural history of pneumonia.

MYERS: Yes. In your report that you wrote, and the one that you were taken to, the second of the reports, it's dated 31 May 2018, paragraph 44, you say that there was a window of near complete recovery. There's a difference, isn't there, between recovering and recovery; would you agree?

EVANS: "Near complete recovery", quite happy to use that, or use the word recovering. I think this is semantics.

Perfectly happy to run with either observation.

MYERS: I'm going to suggest to you, the fact is [Baby D] was not anywhere near to a complete recovery, was she?

EVANS: She was recovering.

MYERS: Right. If she's recovering, that means she still has the potential to become quite unwell, doesn't it?

EVANS: She's in a neonatal unit, the best place for her on the planet. If she was becoming unwell as a result of infection, she would have had -- she was on full monitoring, she had nurses all round her, she had doctors round the corner, as it were, and we -- and we recognise, doctors and nurses on neonatal units, we recognise clinical characteristics that would indicate she is not as well as she was or she's getting worse.

She showed none of those just prior to 1.30 in the morning.

MYERS: What I asked was if she is recovering, as opposed to being in a state of recovery. If she's recovering that means she still has the potential to deteriorate and become quite unwell, doesn't she?

EVANS: The potential is there, which is why she was on the neonatal unit, yes.

MYERS: Now, it is a fact, isn't it, that however we describe the assistance she got, she was never able to breathe for any period of time beyond an hour or so without assistance from some sort of breathing support?

EVANS: She was breathing on her own. CPAP does not assist you, does not fill your lungs up and down or in and out, as it were. It is a measure simply to assist keeping the breathing tubes open between breaths. So therefore she was actually breathing of her own accord, but she needed this CPAP method as well. That is it.

MYERS: A child in good health will not need to be ventilated, do you agree?

EVANS: She was recovering from pneumonia.

MYERS: Let's go through what the treatment was. A child who is in good health will not need ventilation, will she?

EVANS: A child in good health would not need to be on a neonatal unit.

MYERS: So you agree with me then? She's not in good health?

EVANS: She was not in good health when she arrived on the neonatal unit. She was recovering in a remarkably short time afterwards.

MYERS: You just said a child in good health would not need to be on a neonatal unit and [Baby D] was on a neonatal unit, wasn't she?

EVANS: She had pneumonia.

MYERS: Because she's not in good health.

EVANS: She has pneumonia.

MYERS: That means she's not in good health, doesn't it? You're a doctor, that why I'm asking you. You're an expert.

EVANS: She had an infective illness that is within the remit of any neonatal unit to treat, so yes.

MYERS: You told the jury that, as we go through that day, all the respiratory markers were great. That's the language you put it in. Is that your evidence?

EVANS: They were satisfactory.

MYERS: Your words were.

"All the respiratory markers were great."

EVANS: Okay, fine.

MYERS: You heard the evidence of Elizabeth Newby this morning, didn't you, Dr Evans?

EVANS: Yes.

MYERS: You know that once [Baby D] was taken off the ventilator, her blood gas readings began to deteriorate before she was put on to CPAP, didn't they?

EVANS: Yes, and my comment regarding her respiratory markers was related to her being put on CPAP.

MYERS: Right. Let's look at the whole picture. Her blood gas deteriorated when she came off the ventilator, didn't it?

EVANS: It did.

MYERS: Dr Newby was concerned that she seemed quiet and she didn't like her tone, it was stiff. She considered she may be suffering from sepsis in all the circumstances.

You heard that, didn't you?

EVANS: I did.

MYERS: Then we found that, because the blood gas readings deteriorated round about 10.14, because of that, [Baby D] was then put on to CPAP.

EVANS: That's fine.

MYERS: Yes. So that indicates, doesn't it, that CPAP is necessary to give her some sort of support that she is at a disadvantage for if she doesn't have it, surely?

EVANS: That's why it's used.

MYERS: Right. So it is necessary to support or assist her breathing, whichever words you prefer?

EVANS: Yes. Let's call it assist.

MYERS: All right. It's necessary to assist her breathing, isn't it?

EVANS: Yes.

MYERS: We heard that still later, at about 12.10, the blood gas readings were still unsatisfactory at that point and Dr Newby considered some form of acidosis was responsible for that.

EVANS: Can you point me to that reading, please?

MYERS: We can put it up if you like.

EVANS: Yes.

MYERS: We'll put up, please, Mr Murphy, in one moment -- it's slide 112. Pop behind there. We'll enlarge, if we could, the central part of the chart which shows the readings for 10.14 and 12.10.

EVANS: Just a minute, I want to look at my own record because it's clearer for me. Give me the time again.

MYERS: 10.14 and 12.10.

EVANS: Right. Let's have a look. Right. 10.14. 10.14, this is just -- it notes, "To start CPAP". So this was just before she started CPAP.

MYERS: Yes.

EVANS: Therefore the CO₂ is raised at 9, 9.02, and a bit later it's 9.97, so those values prove that it was appropriate to put her on CPAP.

MYERS: What I was asking you, Dr Evans, is by the time we get to 12.10, and we can see it here, in accordance with the evidence of Dr Newby and what we see on this table, the blood gas levels were still unsatisfactory even though she was on CPAP. You see that?

EVANS: Yes, well, she was put on CPAP and then 2 hours later the CO2 is down to 5.18, which is spot on. This is what we do, okay? If we have a child with pneumonia who cannot cope without CPAP, you put them on CPAP.

Standard, routine clinical practice.

MYERS: Just looking at your assertion that all the respiratory markers were great, which is what you said to the jury that's what we're looking at --

EVANS: No, no. Nitpicking, I'm afraid. The issue is the respiratory rate during this time was satisfactory or great or whatever you wish to call it. So if you want to look at selected bits of information I am more than happy to comment on selected bits of information. But I think that what I would add to this, I've listened to every doctor who has given evidence, local doctor who's given evidence, and every one of them has said that when you're assessing a baby, you are looking at all the markers. In other words, the well-being, heart rate, respiratory rate, blood tests. You are looking at all the criteria available to you. What you can't do, what you cannot do is what is happening today, is looking at one or two things which are out of sync in this situation, as we're hearing, where a little baby came off ventilation, could not cope without CPAP, so she was put on CPAP. Standard medical care. Okay?

MYERS: We --

EVANS: Standard medical care.

MYERS: We know she had pneumonia, don't we?

EVANS: We do.

MYERS: That's part of the clinical picture, isn't it?

EVANS: Sorry?

MYERS: That's part of the clinical picture, isn't it?

EVANS: What now?

MYERS: That she had pneumonia?

EVANS: Yes, we know. I know.

MYERS: We know her condition the day before. I have just covered that and that's part of the picture to bear in mind, isn't it?

EVANS: Yes.

MYERS: We know that throughout the course of this morning, the morning we're looking at, if she didn't get respiratory support she deteriorated into acidosis. We know that don't we?

EVANS: Tell me about the acidosis. Which --

MYERS: We know that she deteriorated, don't we?

EVANS: Which figure are you pointing out?

MYERS: Don't you want to answer that question? We have had the evidence, Dr Evans, and we know she deteriorated, don't we?

EVANS: She did not stabilise when taken off ventilation so she required CPAP. That's fine.

MYERS: The whole picture is of a little girl who has respiratory problems, isn't it?

EVANS: Yes.

MYERS: Right. We know that, as we go on into the afternoon, her lactate levels were found to be higher round about 1 pm?

EVANS: Um... Well, we discussed lactate. 1 pm, hang on, just a minute. Well... Just a minute, 1 pm... We've got a pattern here. Let me read them out. There's a 2.3.

One of the medical people said that their lactate values were under 2.5, so we've got a 3.4 and a 4.5. These are values that are raised. This is what you get. This is what happened because she was -- one of them was prior to starting on CPAP. And by 2 pm, it's down to 1.8. So you know, again, we're looking at trends. So if one is looking at things in isolation, this is in -- this indicates that people don't understand how medicine works. I mean, I'm not trying to be rude to Mr Myers, but this is what happens.

We've got lactate a little bit high, CO2 is a little bit high, let's put her on CPAP. Two hours later, her CO2 is 5.18 and her lactate is 1.8. Great. And she's back in air. She's even -- which is great.

That's what clinical practice is about. It's not about picking on one or two markers that don't assist in the overall context of how one assesses a baby --

MYERS: I'm not going to --

EVANS: -- or any patient for that matter.

MYERS: I'm not going to repeat the questions or the points that I make. I've made the point already that the full picture is of a little girl who's unwell with pneumonia.

You agreed with that, Dr Evans. I am not going to go back through that.

EVANS: She's unwell and she's --

MYERS: Let me move on (overspeaking) picture.

EVANS: -- recovering from pneumonia with the aid of CPAP.

Great.

MYERS: In fact, when she was taken off CPAP, as we get into the evening, she deteriorated, didn't she?

EVANS: She did.

MYERS: That goes to show that she has a problem with respiration, doesn't it?

EVANS: No, it goes to show she needs treatment with CPAP.

MYERS: If someone needs treatment with CPAP because they desaturate without it, that is a problem with respiration, isn't it, Dr Evans?

EVANS: It's a problem that requires treatment with CPAP. And if you are looking at a baby of 37 weeks' gestation, who is over 3 kg and on CPAP, is in air with saturations in the high 90s, it's worth trying them off CPAP. It's worth -- listen now, listen. It's worth trying them off CPAP and if the oxygen saturation drops, you put them back on CPAP. I suspect that is something that happens most days of the week in every neonatal unit in the country.

MYERS: (Overspeaking).

EVANS: So she's really, really stable.

MYERS: You don't want to accept the possibility of problems with respiration because that would be something that may undermine your alternative proposal that this is air embolus; that's what this is about, isn't it, Dr Evans?

EVANS: No. I told you why I think she's got an air embolus.

She died of an air embolus.

MYERS: When she was taken off CPAP we've seen she desaturated to somewhere in the 80s.

EVANS: Yes.

MYERS: Would you have just left her off CPAP in that situation?

EVANS: No, I'd have put her back --

MYERS: Why not?

EVANS: I would have put her back on CPAP.

MYERS: Why? Why?

EVANS: Because she needs it.

MYERS: Right. Why does she need it?

EVANS: Because babies who are recovering from pneumonia, from time to time, will need CPAP. It's a standard clinical treatment. It's what you do. You respond to how the patient responds to your treatment. Okay? It is standard clinical medicine that I think most people would find very straightforward to understand -- appreciate.

MYERS: It's not a great respiratory marker if she desaturates to 80 when taken off CPAP, is it?

EVANS: She was taken off CPAP --

MR JUSTICE GOSS: Answer the question yes or no. Just ask the question again.

MR MYERS: It is not a great respiratory marker that she desaturates to 80 when taken off CPAP, is it?

EVANS: Well, it simply means she needs CPAP, that's all.

MYERS: That's your answer, is it, Dr Evans?

EVANS: Yes, simple as that.

MYERS: You've told the jury how [Baby D] was very stable as we go through the evening until her collapse.

EVANS: Mm.

MYERS: And you said no evidence of a respiratory problem.

That's your evidence?

EVANS: In air, oxygen saturations normal, heart rate normal, respiratory rate normal. Those are the four criteria, clinical criteria, that I would look to, and all of them were, prior to her collapse, within the normal range.

MYERS: In fact, you said:

"Prior to her collapse, she could not have been better."

EVANS: She was stable.

MYERS: You said she was doing exceptionally well.

EVANS: She was doing exceptionally well.

MYERS: And do you agree -- is that your evidence, she could not have been better?

EVANS: She was recovering from pneumonia. For a baby of 30 hours, I think, of age, given those clinical markers, she was doing remarkably well.

MYERS: Can we just move -- you said actually to the jury she could not have been better. Is your evidence seriously on her condition that she could not have been better?

EVANS: Given that she had pneumonia and she was recovering from pneumonia, what I said was that is -- she was recovering even better than I expected, actually. I think I said a few minutes ago that I would have expected her to recover over a period of a couple of days, but the fact that she had made this recovery, you know, made this recovery within 24 hours of admission to the neonatal unit --

MYERS: Can we scroll down the page? We've seen, and we've looked at it with other practitioners, that there is -- the readings at 23.52 and 01.14 both show increasing acidosis in terms of the pH for a start. Do you agree?

EVANS: 7.26, bit low. Nothing much to worry about.

MYERS: So those other practitioners, so we can be quite clear about this, the doctors and nurses who have come here and agree that shows an acidic pH, are they right or are they wrong in your professional expert opinion?

EVANS: It is a mild acidosis but, as every medic says, you look at the overall picture. If you scroll across that page she's on CPAP of 5 centimetres in air, therefore she has satisfactory oxygenation. It's a venous sample, which is not as good as an arterial sample, we heard that this morning. And so a pH of 7.26, you know, is slightly low, but nothing to worry about in isolation.

MYERS: When you produced the report that you were taken through in part a little while ago, you go through the various blood gas readings. You didn't refer, as it happens, to either of these two readings when you said that she was doing well. You may not recall it, but I can tell you, it didn't feature in your report.

EVANS: Okay, if I didn't, I didn't.

MYERS: When you went through your evidence to the jury a short while ago you went through various blood gas readings on the way to this point but you didn't mention these two readings that occur before the first event, did you?

EVANS: That's the whole point of my being here, to cover anything that's not been included in the report and that's not been included in evidence-in-chief. So if you want to raise these issues, I will answer them.

MYERS: You identified readings that showed an improvement during the afternoon, didn't you?

EVANS: Yes.

MYERS: You have made no reference in questioning so far or in your report to the readings that we see at 23.52 and 01.14, have you?

EVANS: And your point is?

MYERS: It would be helpful if you just answer the question.

You haven't made any reference to them, have you?

EVANS: I haven't been asked about them.

MYERS: You haven't volunteered that, have you?

EVANS: I haven't been asked about them.

MYERS: They're not in your report?

EVANS: I haven't been asked. If you want me to ask about them I will answer them respectfully.

MYERS: Is it deliberate not to include readings that show a deterioration in the period before the first event?

EVANS: First of all, these readings in isolation, you cannot look at readings in isolation, as one keeps saying. If you want to ask me about those readings, I will answer them.

MYERS: All right. Can -- those two readings, do they demonstrate she could not have been better?

EVANS: She's in air, on 5 centimetres of CPAP, her pH is over 7.25, her CO₂ on a venous sample is 6 point something, 6.5 I think, that's not too bad, I would settle for that. In a venous sample that's okay. And her base deficit is 5.6, I'm not going to get worried about that.

MYERS: 8.9 is bad, isn't it?

EVANS: And then it is 8.9, she is still in air, she's still on CPAP. And looking at... Looking at one little reading that is out of sync with everything else, this is not how clinical practice works.

MYERS: Maybe she was just not very well, Dr Evans.

EVANS: She was stable, she was recovering from pneumonia, she was in air with oxygen saturations of 100%. For a baby who had antepartum pneumonia, ie pneumonia before birth, to be at this stage of progress within this pretty short time, actually, that is something I would be completely satisfied with and, as I did volunteer earlier, I'd expect her to continue improving and she'd probably need to be on antibiotics for 7 to 10 days, maybe, depending on her progress. But you'd carry on with a course of antibiotics and then getting her off CPAP that evening didn't work, no problem with that, you put her back on CPAP. That's how it is, that's how it works. So the following day, if she'd not been the victim of an air embolus, that is my opinion, she would be nice and stable and the medics would have had another go at trying her off CPAP. That's where we are. This is the holistic approach that I take when assessing babies who have conditions like this.

MYERS: Do you agree that at paragraph 36 of the report that you were taken to, you say:

"Immediately preceding her terminal collapse all the clinical markers were normal"?

EVANS: Clinical markers mean: heart rate, normal; respiratory rate, normal; oxygen saturation, normal; oxygen requirement, 21%, that's normal.

MYERS: Do you agree that what we're looking at for 23.52 and 01.14 are not normal? Are they normal or are they not normal?

EVANS: They are not concerning.

MYERS: Are they normal or not normal?

EVANS: 6.56, that's normal. Base deficit, 5.6, that's acceptable, within normal limits. 8.9, slightly raised.

The other pH, 7.2 -- the other CO2 is under 6.56.

I think that says 6.43, that's okay. Yeah, CPAP. In air again. Yeah. Stable.

MYERS: Do you agree she was unable -- we have been over this actually, but she was breathing with CPAP, wasn't she?

EVANS: She was.

MYERS: She deteriorated without CPAP, didn't she?

EVANS: Twelve hours earlier she did -- no, not 12 --

MYERS: No, not 12. 7.15 pm.

EVANS: Let's work that out. Anyway, several hours earlier.

MYERS: Her sodium levels were low?

EVANS: Slightly low.

MYERS: Platelets --

EVANS: Not a concern.

MYERS: Not a concern to you.

EVANS: No, no, not a clinical concern. A sodium of 126, which went up to 129, does not explain what happened to her and that which led to her death.

MYERS: And what you're doing, doctor, is deliberately seeking to exclude factors which go to show she may actually have been unwell. That's what you're doing, isn't it?

EVANS: She was stable. None of the issues that we've talked about, things like a base excess of 8.9 or whatever, none of this explains what happened to [Baby D] during the early hours of Sunday morning, 22 June. None of this is relevant, either in isolation or combined.

What does explain it is air embolus, and I've given everyone the five stages -- you don't need all five stages, but I've given you the five stages that [Baby D] experienced, entirely consistent with air embolus. The first four --

MYERS: You've (overspeaking). I would just like you to answer the questions, Dr Evans, we don't need the list again.

You've given it to us and I'm going to go through it with you. May I proceed with the questions so we can deal with the actual issues I'd like to ask you about? Is that all right? There are three different events, aren't there, that take place going into the early hours of that morning?

EVANS: Yes.

MYERS: 1.30, 3 am, 3.45?

EVANS: Yes.

MYERS: Those are the timings we have from the nursing notes.

We'll return to discolouration shortly, but in terms of breathing, on those occasions they were nothing more than, we don't underestimate them, desaturations, were they?

EVANS: No, those desaturations were significant.

MYERS: To around the 70s?

EVANS: Yes.

MYERS: We have had desaturations when taken off CPAP to just a little bit above that earlier in the day, hadn't we?

EVANS: There's an explanation for that. Okay? There's an explanation for that. The explanation was she was tried off CPAP, put back on, tick, clinical management, that's the way it's done.

MYERS: It's not uncommon to have desaturations like [Baby D] had at 1.30 and 3 in the morning, is it?

EVANS: It's pretty uncommon for her condition to be such that it required crash calling and the efforts that were made to get her round on the first and second occasions.

MYERS: Efforts to get her round? What efforts on the second occasion? Tell us about them, please.

EVANS: Okay. Let me go through it in that case. Just a minute. I'll check on the... I'll check this through the clinical...

(Pause)

MYERS: There are no resuscitative efforts on the second occasion, are there, Dr Evans?

EVANS: Just a minute.

(Pause)

MYERS: We can go to the notes.

EVANS: No, no, I've got the notes on my -- I've got my own copy here, so I'd rather go through that, okay?

MYERS: To assist the jury, so we can have a look --

EVANS: I'm on J2222. The next one is 2223.

MYERS: Can we start with slide 218, please, Mr Murphy?

EVANS: Here we are. I'll give you the number now, just a minute. J2225. Okay?

MYERS: We've got on the screen now the actual notes, Dr Evans, so perhaps we could look at those because they're the original material we are dealing with.

EVANS: "Called urgently to paed's ward as [Baby D] had further episode of being very upset and crying and desaturated to 80% in 100% oxygen."

Right. Now, it's not that she desaturates to 80%, which is significant. But she desaturates to 80% whilst being in 100% oxygen. You can't -- that's pretty serious, right? That's pretty serious. Then it follows:

"Skin discolouration again became more prominent but not as [reads sotto voce] previously. Appears distressed on CPAP."

Then the next line:

"Now in air. No increased work of breathing."

So therefore, this was a very, very concerning issue, okay? It's a very, very concerning issue. Any baby who was in air and is now saturating to 80% only, and requiring 100% oxygen to do it, and then soon after that, wow, she's back in air. So therefore there was a significant event round about that time. Okay?

MYERS: You were talking about the efforts, in effect, to resuscitate her. I was asking you to help us with where we see them on the first two events. So let's focus on the question because you talked about the importance of resuscitation and its failure as part of identifying air embolus.

EVANS: It is.

MYERS: You told the jury about the efforts brought to stabilise her on these first two occasions. We have the notes at 01.40 for Dr Brunton. We're looking through them.

We can see them, it starts from:

"Called urgently to review baby. Nurses noted that became extremely mottled. Also noted to have tracking lesions (dark brown/black) across trunk."

Nothing so far about resuscitation, is there? Is there, Dr Evans?

EVANS: This was a serious collapse, okay?

MYERS: I'm asking you to help us with the question of resuscitation because you've referred to that, so let's carry on. Can you see anything there about resuscitating her as a result of this desaturation?

EVANS: No.

MYERS: Right. Let's carry on:

"60% in oxygen."

That's on examination.

She's on CPAP. There's slight subcostal recession.

We've got HS -- is that heart sounds?

EVANS: Where are we now?

MYERS: What's that, please?

EVANS: Right. "HS 1 and 2", heart sounds 1 and 2, "normal".

"Plus 0" means normal.

MYERS: No resuscitation taking place whatsoever, is there?

EVANS: Well, she recovered.

MYERS: She did. So when you were suggesting there were efforts taken to bring her round from this, there are no efforts taken to bring her back that are resuscitative, are there?

EVANS: She recovered of her own accord.

MYERS: So one of the key factors that you identify for air embolus, when I asked you at the start of this, was the failure to resuscitate, resuscitation is unsuccessful.

EVANS: Yes, she died.

MYERS: At this incident, Dr Evans, she did not die, did she?

EVANS: She died a couple of hours later.

MYERS: We're looking at three events here.

EVANS: Yes.

MYERS: At this first one, 01.40, there is desaturation and she makes a full recovery. You agree?

EVANS: Yes.

MYERS: We have heard a lot of witnesses telling us about it who were there. Yes?

EVANS: A lot of witnesses?

MYERS: Telling us about it who dealt with it. And they described the recovery she made?

EVANS: Yes, I know.

MYERS: You've heard that?

EVANS: Yes, I know.

MYERS: You've also heard that there was no resuscitation required at all.

EVANS: No, no, she required resuscitation. She required resuscitation at her third and final and terminal collapse.

MYERS: Yes. We're dealing --

EVANS: So that is -- listen -- that is what I was talking about, okay? There were two previous very concerning deteriorations from which she recovered.

MYERS: Yes.

EVANS: And then -- and then -- well, then on the third occasion, she crashed and resuscitation was unsuccessful. And to repeat what I said earlier, this is quite remarkable in a baby given the situation she was just before that.

MYERS: I began this section by reminding us there were three separate incidents, I gave the times, you agreed with that.

EVANS: Three separate incidents.

MYERS: I suggested to you that the first two were followed by good recoveries. You made reference to the efforts taken to bring her back. We're dealing with that and there are no resuscitative efforts on event number 1, are there?

EVANS: No.

MYERS: And that, first of all, means that it's not right for to you suggest there were efforts to bring her back then.

There weren't, were there?

EVANS: I didn't say that. What I said was that one of the features characteristics of air embolus is the failure of resuscitation. And you know, we've already -- so...

and resuscitation failed --

MYERS: And there's no failure of resuscitation --

EVANS: -- on her third -- let's look at the whole picture --

MYERS: Well --

EVANS: -- on her third deterioration.

MYERS: We are looking at it, Dr Evans, and there is no failure of resuscitation on that first event, is there?

EVANS: I think we just said that.

MYERS: Right. Second event, 2 am, the one where you specifically refer to the efforts -- sorry --

EVANS: No, no.

MYERS: -- 3 am, the one where you refer to the efforts to bring her back.

EVANS: Let's -- no, no, let's not put words in my mouth. I'm quite capable of speaking for myself.

MYERS: Okay.

EVANS: The second effort:

"Called urgently to paed's ward as [Baby D] had further episodes of being very upset and crying and desaturated to 80% in 100% oxygen."

From which she -- and then she recovered. But this was --

MYERS: Well --

EVANS: Just a minute. This is a serious event, all right? It's a serious event. Then on the third event, she died.

MYERS: I'm grateful for Mr Maher for assisting me with the record we have of the evidence as it unfolds. Because I would quite like to be clear about the way this questioning went, Dr Evans. People may recall it, they may not, but we have the note. I said to you:

"Question: It's not uncommon to have desaturations like [Baby D] had at 1.30 and 3 in the morning, is it?"

And you said:

"Answer: It's pretty uncommon for her condition to be such that it required crash calling and the efforts that were made to get her round on the first and second occasion."

That was your evidence.

EVANS: That was my opinion. She had two crash calls. That's serious, okay?

MYERS: You know and have spent time with these papers and have written four or five reports on this child, haven't you?

EVANS: I have.

MYERS: There is no evidence and she did not require efforts to bring her round on the first and second occasions, is there?

EVANS: She recovered of her own volition on the first and second occasions.

MYERS: So when you said to the jury minutes ago, in answer to my question that it wasn't uncommon to have desaturations like these two, when you said it required crash calling and the efforts that were made to get her round on the first and second occasions, there were no efforts, were there?

EVANS: That is incorrect. That is incorrect. You are completely confusing everybody, I think, because -- because on the second occasion, let's read it again:

"Called urgently to paed's ward as [Baby D] had further episodes of being upset and crying and desaturated to 80% in 100% oxygen."

In other words, the nursing staff, or the medical staff, the nursing staff had put her in 100% oxygen.

That is one of the stages of resuscitation, Mr Myers.

You need to know this.

MYERS: And there is no crash call on the second occasion, is there?

EVANS: For goodness sake -- hang on:

"Called urgently to paed's ward..."

You can interpret it any way you like:

"Called urgently to paed's ward at 3 o'clock in the morning."

For goodness sake, that is -- it's good care, it's good care, but that's what happened. So again, making, you know, just playing at semantics doesn't get us anywhere, I am afraid. She was put in 100% oxygen.

That is what you do to start the steps at resuscitation.

If she doesn't need bagging and Neopuffs and all of that, great. She was put in 100% oxygen to get her round and they did. Great.

MYERS: And there is no requirement to resuscitate on the second occasion, was there?

EVANS: That was the second. That was the second occasion and she was put in 100% oxygen. That is one part of resuscitation, okay?

MYERS: And she recovered perfectly well, in fact, didn't she?

EVANS: Because of the resuscitation efforts that were carried out.

MYERS: Your evidence has been that one of the marking features of an air embolus is the failure of resuscitation.

EVANS: Correct.

MYERS: And for the second time, and the second desaturation we have, there is not a failure of whatever support was given, is there?

EVANS: It depends on how much air went in, first of all, and it depends on the rate at which the air went in.

MYERS: So you're changing --

EVANS: No, I'm not changing. Just listen now, just listen, okay? Therefore, the greater the volume of air that goes in, the greater the danger of death. The greater the speed at which the volume of air goes in, the greater the risk of death. And therefore -- and whilst air embolus is fatal in most cases, it's not fatal in all cases. What determines fatality probably -- probably -- because we know -- because we make so much -- we make such efforts to avoid air embolus, that it is very difficult to get -- I'm pleased to say it's very difficult to get research papers on it.

So therefore, on the second occasion, here we are, she's really unwell, you know, she's crying, desaturations to 80% in 100% oxygen, but the resuscitation was successful without bagging. In other words, if we go back to our first cases, this is what happened with [Baby B]. [Baby B] didn't die, she recovered.

[Baby D] recovered on the second occasion thanks to the 100% oxygen and -- and -- um... She... the volume of air was insufficient to kill her.

MYERS: You said --

EVANS: That's the gist of it on the second occasion.

MYERS: What you said in your report, the one which you rely upon and the prosecution took you to, at paragraph 42 was this:

"In my opinion, [Baby D]'s demise may be the result of tampering with her care during the early hours of 22 June. I believe one needs to seriously consider that [Baby D] may have been given some intravenous air causing an air embolus. A small volume would cause a precipitous deterioration in a baby's condition and lead to efforts at resuscitation failing."

EVANS: That's correct.

MYERS: You also said it may explain the abdominal discolouration.

EVANS: Yes.

MYERS: In fact, on the two occasions that we're looking at so far, efforts at resuscitation did not fail, did they?

EVANS: It depends on the volume of air.

MYERS: You say:

"A small volume would cause a precipitous deterioration."

That's what you said in your report.

EVANS: Yes. We can argue about how small is small because we don't know. We can't put a -- we cannot put a volume on and say any baby who receives so many millilitres per kilo will lead to death in all cases. I mean, that information is simply not available because air can only get into a circulation for two reasons. Either: some sort of horrible accident or as a result of a deliberate act.

Now, I am unaware of any -- you know, because of all the equipment and the care nurses and doctors take to avoid air getting in accidentally, people who give air intentionally are unlikely to write it up in the notes, are they? So you know...

MYERS: In fact both of the desaturations that we have looked at, the one at 1.30 and the one at 3 o'clock, could be regarded in fact as warning signs that [Baby D] was not well, couldn't they?

EVANS: No, that is clinically unacceptable. She -- I can't think of any, you know, of the conditions that make babies unwell leading to a presentation of this nature other than -- it just doesn't happen.

MYERS: And you vary what you say about air embolus because I would suggest to you --

EVANS: I do not vary what I say about air embolus. I have explained to you exactly what I've said about air embolus, recognising how limited our information is because of the care we take to avoid the condition occurring.

MYERS: You vary what you say, I'm suggesting, because you're influenced by the allegation rather than the actual underlying facts, Dr Evans.

EVANS: My information is based on evidence, the evidence that I presented in my papers and then -- and perhaps I could go back to my... I think I said to everybody at the beginning that when I did my reports, I did about 30 reports in November 2017, you know, so they were screening reports, so sorry if I've left one or two things out.

But if I go back to my... Where are we here? If I go back to my original paper, I need to read this because I think I was -- just a minute.

(Pause)

Right. In my initial report I say, I quote:

"In my opinion, [Baby D]'s demise may be the result of tampering with [Baby D]'s care during the early hours of 22 June. I believe one needs to seriously consider that [Baby D] may have been given some intravenous air, causing an air embolus."

Right?

"A small volume would cause a precipitous deterioration in a baby's condition and lead to efforts at resuscitation failing. It may explain the abdominal discolouration."

Now, that report was dated 7 November 2017, so 5 years to this. I was reliant at that time on the clinical notes only. I had no information regarding the pathology opinion, which we'll hear in future. I had no information regarding Owen Arthurs' opinion about aortic vein -- aortic gas. I had no information about Lucy Letby. None of this was known to me. No one had said, oi, there are babies dying of air embolus in Chester. I knew none of this.

I was investigating a baby with a blank sheet of paper, which I think is the term I used, from de novo, from the beginning.

That is the conclusion I formed 5 years ago to this week and, since then, I have heard from the local medical people, I have heard from the local nursing people, and we've heard from the other witnesses and they'll give their evidence so I'm not going to quote them.

So in this particular case I am entirely satisfied with my opinion regarding the cause of [Baby D]'s demise.

Okay?

MYERS: And you have said at the outset of your evidence today, when I asked the features of air embolus in this case, you made reference to resuscitation being unsuccessful.

EVANS: I did.

MYERS: Yes. And when we look at what happened, to make it quite clear, there are two occasions when [Baby D] deteriorated and there was not death, there was not unsuccessful resuscitation.

EVANS: It depends on the volume of air given and it depends on the rate at which that volume of air is given. A baby like [Baby D] would be on various lines. If the air -- some of the air was not (inaudible) into her circulation immediately, in other words it was at the end of a line, you need to consider that she was on about 5ml -- I can't remember, but anyway, so many millilitres an hour, so a fraction of a millilitre per minute. And if that air, some of that air, was in the catheter, in the catheter, you know, injected into the catheter 10r but hadn't got into the circulation, that air would then infuse into her circulation over longer than -- would not be instant is what I mean, would not be instantaneous. Therefore that would explain the discolouration. It would explain her desaturations and it would also explain why giving 100% oxygen -- you can't give more than 100% oxygen by the way -- led to her recovery, if only for a short time.

Then next time, as I keep saying, the air that she suffered infused into her circulation was sufficient to kill her. That is it. Okay? That is my medical opinion, Mr Myers. Right?

MYERS: It was a very bad idea for her to be taken off CPAP, wasn't it, when she had just desaturated twice in the 2 hours beforehand; do you agree?

EVANS: All right, we're back to that now, right. What time is this?

MYERS: I'm not meaning to delay you, Dr Evans, I'm not trying to be rude, so please be courteous to me with the questions I ask.

EVANS: What time was the CPAP?

MYERS: It was a bad idea that she was taken off it after the second desaturation, wasn't it?

MR JUSTICE GOSS: I think "a bad idea" is a bit imprecise.

It was clinically inappropriate; is that what you mean?

MR MYERS: I prefer that, yes, thank you, my Lord.

It was clinically inappropriate to take her off CPAP after the second desaturation, wasn't it, Dr Evans?

EVANS: I don't know is the answer to that. I don't know is the answer to that because, you know, the medics thought that she was not tolerating CPAP very well and big babies quite often do not tolerate CPAP very well. So they took her off CPAP. They'd taken her off CPAP the night before, put her back on, she was fine, so therefore if her final -- so therefore CPAP had nothing to do with her final deterioration because if her breathing had become a bit irregular then resuscitation would have worked. Okay? That's what I'm trying to say. Sorry, you were confusing me with this -- you know, the final event with the getting her off CPAP the night before. Sorry about that.

MYERS: Before I ask you --

EVANS: No, no, right. Sorry. I'd just caught up with what you're trying to say. Because I thought you were back on the night before. Apologies for that. Right, let's start again.

She took her off CPAP. Was it a bad idea? I don't know. Did it make a difference? The answer is no, because if her deterioration was simply due to lack of CPAP then putting her back on CPAP or -- she'd have responded very easily to resuscitation. She didn't.

She didn't, okay? She didn't. And anyway, lack of CPAP does not explain air in the aorta on post-mortem.

MYERS: I'll turn to the third event in a moment and deal with that. Before I do, do you agree that it is entirely possible that she could have died from infection?

EVANS: No.

MYERS: Could have done?

EVANS: No, no, no, no, no.

MYERS: That is consistent with the various adverse clinical signs we see during her life and continuing respiratory problems?

EVANS: Correct. She could have died from infection aged 4 hours, but she didn't, and she responded superbly over the next 24 hours or so.

MYERS: You --

EVANS: She responded very satisfactorily over the next -- you know, during 21 June.

MYERS: To make it plain, on behalf of the defendant, I don't accept that, but I'm not going to go through the points that we have dealt with on that already?

EVANS: She responded to treatment for pneumonia. What more do you want?

MYERS: When the pathology was done at the post-mortem -- and you have seen the report of Dr McPartland, haven't you?

EVANS: I have.

MYERS: That examination disclosed acute pneumonia, not in just the right lung, Dr Evans, it disclosed acute pneumonia in the lungs.

EVANS: I am going to leave the pathology to Dr Marnerides.

MYERS: Yes. Well --

EVANS: I am deferring the interpretation of the pathology to Dr Marnerides. That is what clinicians do with regard to autopsy findings, so I am not commenting on that at all.

MYERS: Well, you can confirm the presence of acute pneumonia in the lungs, can't you, from the pathological findings, from the post-mortem?

EVANS: Well, if you -- where else do you get acute pneumonia except in the lungs?

MYERS: Well, you said "the lung" earlier. I'm just being quite accurate. It says "the lungs".

EVANS: I have explained I am deferring to Dr Marnerides' opinion on the autopsy; okay?

MYERS: And you have -- you were ready to point out where it was when you were asked questions a little earlier by the prosecution, weren't you?

EVANS: I was simply covering it. Let's leave the pathology to Dr Marnerides.

MYERS: I'm only doing what the prosecution did and asking you to confirm some aspects of what you were asked.

EVANS: There was one quote I said where I quoted the fact that there was pneumonia in the right lung. That is it.

I am not commenting on the autopsy findings in the lung.

That is a matter for the pathologist.

MYERS: Are you able to confirm there was acute pneumonia in the lungs?

EVANS: Leave it to the pathologists, please.

MYERS: And that it was indicative of acute lung injury?

EVANS: Can we leave the autopsy findings to the pathologists, please?

MYERS: So [Baby D] was born with pneumonia, wasn't she?

EVANS: She was.

MYERS: She was very ill with pneumonia, wasn't she?

EVANS: She was unwell with pneumonia, yes.

MYERS: She continued to exhibit respiratory difficulties at points throughout the remainder of her sadly short life?

EVANS: She did.

MYERS: And sadly, she died with pneumonia, didn't she?

EVANS: She had pneumonia when she died, yes, that's what the pathology said.

MYERS: And that is quite capable of being a cause of death in her case, isn't it?

EVANS: Not in her case, no. Not in her case, no.

MYERS: Now with the third --

EVANS: I have dealt with lots of cases of pneumonia, no.

MYERS: With the third event, you have emphasised, one of the first things you identified to the jury, first of all, that her collapse is unexpected. In fact, the third event followed two other collapses that had taken place, didn't it?

EVANS: From which she made a very quick -- astonishing recovery.

MYERS: You have told us about the steps that had to be taken to get her to that state of recovery, haven't you?

EVANS: She required 100% oxygen on the second time and then she was -- I and quote, she was then...

"Clinically appears well and now in air, no increased work of breathing."

So therefore that is not what you find in a baby who's collapsed because of pneumonia. That's not what you find in babies who have collapsed because of pneumonia or sepsis where, you know, soon after the urgent call, they're in air, no increased work of breathing.

MYERS: Did you hear Dr Newby explain that after the second deterioration, her view was that [Baby D] was in fact on the verge of being put on to a ventilator? There was a low threshold to intervene if there were deteriorations from a respiratory point of view?

EVANS: Yes, I heard that.

MYERS: That's not an indication of a baby with whom the treating consultant regards is in some excellent condition, is it?

EVANS: But she wasn't put on ventilation, was she?

MYERS: She had been told --

EVANS: She wasn't put on ventilation. That's the whole point.

If her condition was unstable, Dr Newby would have put her on ventilation. She was not put on ventilation, ie she'd made this astonishing recovery. Okay? That is it. Let's not try and confuse the issue.

MYERS: She had been there and she had found that her condition was such, didn't she, that if there was any further deterioration she would need to be put on a ventilator; do you agree?

EVANS: A different point altogether and I agree with that.

MYERS: Yes, she did.

EVANS: Different point altogether.

MYERS: Then we come to her being taken off CPAP, don't we?

EVANS: Yes.

MYERS: Which is in fact travelling in completely the opposite direction from that, isn't it?

EVANS: How do you mean?

MYERS: That withdrew support that she'd received up to that point, didn't it?

EVANS: The fact that she was taken off CPAP would indicate to me that the clinicians were satisfied that her condition was stable, that's the first point, because you're not going to reduce the amount of respiratory assistance if you take somebody off CPAP. So that's the first point.

The second point was that, apart from these skin discolourations which was recorded on this chart, she was in air, no increased work of breathing, let's try her off CPAP. That's okay. Gas in 1 hour, yes, okay.

That is what we do, that is what happens.

MYERS: Do you agree that up to that point there had been nothing to indicate that she would do better off CPAP in the sense of the clinical markers and her respiratory condition?

EVANS: I don't know that. I don't know that. I've already explained that trying her off CPAP the previous evening was not -- you know, was a perfectly okay thing to do.

It didn't work so they put her back on CPAP. So that's fine. She's now upset. I don't think she was -- I think it's due to CPAP, let's try her off CPAP. Not a problem because she, (1), is in a neonatal unit, safest place on the planet. She's on full monitoring.

So if she doesn't cope without CPAP, they might find a drop in - her breathing might increase or her heart rate might increase or her oxygen requirement might go up a bit or her oxygen saturation might drop to the low 90s. You know, I am just saying

these are the sort of things that any experienced nurse would look for. So therefore let's try her.

What would not happen -- what would not happen -- let me be absolutely clear about this: what would not happen in a baby of 37 weeks, who is recovering from pneumonia, you take her off CPAP, she wouldn't suddenly crash and where resuscitation, including adrenaline, et cetera, was unsuccessful. That does not -- that is not a clinical process that anybody dealing with babies of this nature see. Whereas if she received a bolus of air intravenously, then we're back to my diagnosis of air embolus, which is what happened in this case. Okay?

MYERS: And your evidence on that is that if she receives a bolus of air intravenously, one of the features that gets top billing in your list, Dr Evans, is the presence of discolouration. You have been very clear about that.

EVANS: It's not top billing at all. I've explained to you the five steps, one of which is this discolouration.

MYERS: It was second, you said. First is the unexpected collapse. The second is discolouration.

EVANS: That's the sequence of events, not the order of priority -- of significance.

MYERS: As it happens there's no evidence or suggestion of any discolouration at all with the third collapse that we're looking at, is there?

EVANS: She collapsed, you know.

MYERS: And that is inconsistent with your theory of air embolus, isn't it?

EVANS: No, it is not. Okay? It is not. Babies collapse, they're doing their best to resuscitate her and they are sadly unsuccessful.

MYERS: There's no discolouration on that final occasion, was there?

EVANS: As far as I know nothing was recorded anyway.

MYERS: And that is inconsistent with the way you've described the presentation of an air embolus, isn't it?

EVANS: No, it is not, because what I said earlier was, I described the five criteria and I said you don't need all five to confirm a diagnosis of air embolus. So in [Baby D]'s case we

had the collapse, failure of resuscitation -- sorry, and air in the aorta. That's for the radiologists to comment on. And the absence of, you know, anything else really. So yes. So yes, I'll stick with that, I'll stick with that.

MYERS: Your evidence on that in conclusion was:

"A small volume caused a precipitous deterioration [this is in the report] in the baby's condition and lead to efforts at resuscitation failing and it may explain abdominal discolouration."

EVANS: Mm.

MYERS: Yes. On the two occasions when we have some abdominal discolouration, resuscitation doesn't fail, does it? Does it?

EVANS: Well, you said earlier she didn't need resuscitation, so you're now admitting that she did have resuscitation, so which one is it, please?

MYERS: On the two occasions when she had discolouration --

EVANS: Which one is it? Sorry, I am not picking on you, I just need clarification. You made an effort to tell me that she did not require resuscitation on the second event and I said to her (sic), yes, she did, she required 100% oxygen, and now you are trying to tell me she did require resuscitation, so which question are you asking me, please?

MYERS: Well, you understand the point, Dr Evans.

EVANS: No, I do not, actually.

MYERS: Resuscitative measures that failed do not feature in events 1 and 2, do they? They do not feature.

EVANS: Depends on the -- it depends on the volume of air given intravenously and the rate at which it was given.

MYERS: You agree --

EVANS: And I think we'll discuss that in a later case as well, so yes.

MYERS: I just want to confirm, taking that sentence to conclude this, you agree that resuscitative efforts did not fail on events 1 and 2, did they?

EVANS: She only required resuscitation with oxygen and it was successful.

MYERS: And although you talk about the embolus may explain the abdominal discolouration, there is in fact no abdominal discolouration on event number 3, is there?

EVANS: There is nothing recorded.

MYERS: You suggest they all missed it?

EVANS: I have no idea, I wasn't there. But if I've got a baby under my care, who's got no chest wall movement, heart rate under 60, you know, I'm not going to start looking at whether she's got a discolouration of her abdomen.

I'm going to go full pelt to try and save a baby's life, for goodness sake.

MYERS: Have you seen any evidence of discolouration on the third event?

EVANS: I have just explained to you that I have not seen anything. I have no idea what the significance of that is, but - yes, but this is not what -- yes, anyway.

MR MYERS: Thank you.

MR JOHNSON: Does your Lordship have any questions? Questions from THE JUDGE

MR JUSTICE GOSS: Just this. We've had a lot of questioning about what actually was observed in relation to the three incidents and I just want to go back to slide 2241, J2241, which are the notes written in retrospect by Caroline Oakley. On the right-hand side:

"01.30. Called to nursery by SN Percival-Ward and SN Letby. [Baby D] had desaturated to 70s. Required oral suction as was bubbly and lost colour."

And she said in evidence about the "bubbly", she couldn't say whether that had come from the nose or the mouth, but "bubbly" and required oral suction. Can I just ask Dr Evans whether that has any significance at all in relation to that first incident?

EVANS: Right. I've seen this, my Lord. This is the 01.30 one, yes?

MR JUSTICE GOSS: Yes.

EVANS: "Discolouration to skin observed", so that was on incident 1.

MR JUSTICE GOSS: Yes.

EVANS: That's the first crash call, if I could call it a crash call.

MR JUSTICE GOSS: Yes, and then it goes on to say after the oral suction:

"Discolouration to skin observed.

Trunk/legs/arms/chin. Dr Brunton called to review.

Saturations 100% and O2 [oxygen] weaned to air."

EVANS: Yes.

MR JUSTICE GOSS: Which indicates that she was given 100% oxygen.

EVANS: Well, she was given oxygen, my Lord, yes, and then once she got better, you've chopped down, you've reduced the oxygen, so she was weaned to air. In other words, she required resuscitation, she did not require --

MR JUSTICE GOSS: Well, in the form -- not physical resuscitation?

EVANS: No, no, no.

MR JUSTICE GOSS: But instead of just breathing -- having the assistance of CPAP in air, she was given 100% oxygen.

EVANS: She was given oxygen, which is step number 1 in any resuscitation process, yes.

MR JUSTICE GOSS: Can you just help on the bubbly aspect?

EVANS: I don't know.

MR JUSTICE GOSS: You don't know anything about that?

EVANS: I can't explain that. I can't explain that, sorry.

MR JUSTICE GOSS: Right. Then further down:

"03.00. [Baby D] crying and desaturated again to 70s.

Commenced on 100% O2 via CPAP and picked up well. Skin discoloured again but less than previously."

EVANS: Yes.

MR JUSTICE GOSS: So again, 100% air.

EVANS: 100% oxygen. Discolouration. She recovered without the need for Neopuff or...

MR JUSTICE GOSS: Right, thank you.

EVANS: And then she settled, handling well.

MR JUSTICE GOSS: That's it, I have nothing else I want to ask. I just wanted to be clear about exactly what was done in relation to those two incidents.

EVANS: So resuscitation was required on all three occasions.

MR JUSTICE GOSS: All right. Thank you. I don't have any other questions, thank you.

MR JOHNSON: Thank you, my Lord.

MR JUSTICE GOSS: Thank you, Dr Evans. That completes your evidence at this stage. Thank you very much.

That completes today's hearing. We'll break off there.

Ladies and gentlemen, 10.30 tomorrow. I was told by counsel that tomorrow and Friday are unlikely to be full days. I was told they are unlikely to be longer than half days, but it won't be possible -- because Professor Owen Arthurs from Great Ormond Street, his next availability, we've been told several times, is not until Friday, so we can't bring him forward to Thursday.

So we are going to finish earlier tomorrow; it won't be a full day. I will say to you, you can expect to be free by lunchtime, but I can't guarantee it. I'll look to counsel.

MR JOHNSON: I'll take the blame.

MR JUSTICE GOSS: All right. So you will probably not -- you will not be required after 1 o'clock tomorrow and certainly Friday will be an early day with Professor Arthurs. The reason is that will then be the end of the evidence relating to [Baby D] and we'll be moving on Monday to the next mother who will be giving evidence.

(4.13 pm)

(The court adjourned until 10.30 am on Thursday, 10 November 2022)