1 February 2023 (Day 63)
Baby I

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Wednesday, 1 February 2023
(10.30 am)

(In the absence of the jury)

MR JUSTICE GOSS: Yes. Oh, no defendant yet.

(Pause)

(In the presence of the jury)

MR JUSTICE GOSS: Good morning. Everything's there? Good.

MR DRIVER: My Lord, we'll be looking at evidence that's contained on the second sequence of events for [Baby I]. May I recall Dr Matthew Neame, please.

DR MATTHEW NEAME (continued)

Examination-in-chief by MR DRIVER (continued)

MR DRIVER: When we broke off on Friday, we were about to consider your involvement with the baby [Baby I] on 13 October onwards, so may I return there, please, and ask Mr Murphy to put on screen tile 49 of the second sequence of events, which you'll see, Dr Neame, refers to notes written by you at 04.45 about events at 03.23 hours on 13 October.

If we could go to Dr Neame's notes, please. We'll see that you noted that you responded to a bleep call at 03.23 to attend the neonatal unit. And that, we understand, is this right, Dr Neame, is an urgent call for attention?

NEAME: Yes. I don't recall whether it was a sort of crash bleep or an urgent phone call bleep.

DRIVER: But at the very least it's an urgent invitation for you to attend on a patient?

NEAME: Correct.

DRIVER: And on arrival, you could see, could you, nurses providing assistance to baby [Baby I]?

NEAME: Yes.

DRIVER: And that they were providing care, is this right, with breathing support --

NEAME: Yes.

DRIVER: -- in the form of Neopuff ventilation?

NEAME: Yes.

DRIVER: And could you continue and tell us what else you recall and what else you have noted about that event?

NEAME: I also noted that [Baby I] was receiving chest compressions and that she was pale and floppy at that time.

DRIVER: So did you join in or indeed take over the management of the assistance being given to the baby?

NEAME: Yes, I took over managing [Baby I]'s airway.

DRIVER: How did you do that?

NEAME: So in my note I've documented that I used something called a double-handed jaw thrust, so that's an alternative method for managing an airway and improving management of the airway.

DRIVER: Is that intended to ensure the airway was patent?

NEAME: Yes.

DRIVER: And upon doing so, could you notice any success?

NEAME: Yes. So with that manoeuvre, [Baby I]'s chest wall was noted to be moving with the ventilation breaths. I also increased the pressure on the breathing support to help with the resuscitation. Then I've continued with my assessment.

DRIVER: Thank you.

MR JUSTICE GOSS: Sorry to interrupt you, "double-handed jaw thrust", then the next word?

NEAME: "Initiated."

MR JUSTICE GOSS: "Initiated", right. "Chest movement..."?

NEAME: "... detected and satisfactory."

MR JUSTICE GOSS: Thank you. I'm not critical, but it's very difficult writing to read.

MR DRIVER: In terms of chest movement, the procedure, the intervention, that you initiated was successful. Did it have the desired effect immediately with regard to the baby's heart rate?

NEAME: At that point, her heart rate was still around 60 beats per minute, so that's lower than normal and lower than we would like.

DRIVER: Did you continue to provide her with urgent assistance?

NEAME: Yes. The chest compressions were continued because of that.

DRIVER: If we scroll up, please:

"Therefore CPR continued..."

Sorry, scroll down, I always get that wrong.

Just below the hole punch that we can see on the screen there, did you intubate the baby?

NEAME: Yes. So the documentation states:

"Intubated due to need for secure airway. Three-millimetre breathing tube [ETT] passed to 8 centimetres at the lips on first attempt and capnography positive..."

So the carbon dioxide test was positive:

"... and there was equal air entry on auscultating."

So listening to [Baby I]'s chest with a stethoscope.

DRIVER: So that was a successful intubation --

NEAME: Yes.

DRIVER: -- at first attempt? The capnography monitor indicated that she was exhaling carbon dioxide and, when listening, it sounded right --

NEAME: Yes.

DRIVER: -- on both lungs? Was that the end of the urgent assistance given to [Baby I] or did it continue?

NEAME: No, the cardiac compressions continued in the usual three chest compressions to one breath from the breathing support ratio. I tested [Baby I]'s chest with a cold light to detect any evidence of pneumothorax and in my documentation I've also recorded that I asked for Dr Newby to be contacted as I was placing the ETT breathing tube.

DRIVER: Thank you. So you summoned, called for the on-call consultant. What was the result of the cold light test, the examination for pneumothorax?

NEAME: It was a negative test showing or demonstrating that there was no evidence of a pneumothorax using that test.

MR JUSTICE GOSS: "[Minus sign] VE", negative?

NEAME: Correct.

MR DRIVER: We know from earlier evidence, I think from yourself, certainly at least from some witnesses, that the cold light test would be the initial immediate test done and later a more

thorough examination through an X-ray would almost, by way of routine, be undertaken to double-check --

NEAME: Correct.

DRIVER: -- effectively?

Dr Newby arrived. We'll hear from Dr Newby in due course, but we know from the times recorded on this presentational document that she arrived at 03.36, that is to say, about 13 minutes after your arrival at [Baby I]'s cot side.

So Dr Newby will pick up the narrative of those events in due course, so we won't go over it twice. Can I move you forward in time, please, to a few hours later and go to tile 95 and the events of 05.20 hours on 13 October.

Tile 95, please, Mr Murphy.

MR JUSTICE GOSS: I'm sorry to interrupt, but my pad's gone wrong:

"App connection status: not connected to courtroom."

(Pause)

It sounds as though we've got a bit of a problem here. I'm just wondering whether we could continue but everything must be put up on the screen, Mr Driver, that's referred to. Oh, it's come back again. It's come back again now. Mine has.

How many won't log in, could you raise a hand?

(Pause)

MR DRIVER: In the circumstances, could I ask Mr Murphy to take us back to tile 49 then, please?

Thank you. And the notes behind.

If we go to the bottom of this page, please. After the cold light negative, we see that Dr Newby was contacted as the ET tube was being placed:

"Drugs given as described above..."

NEAME: "... above with ongoing chest compression/CPR until 03.45, as documented in Dr Newby's note."

DRIVER: So we'll refer to Dr Newby's note with Dr Newby. If we could look at the next page, which is beneath, also on this tile, please.

The time, 05.20; is that right?

NEAME: Correct.

DRIVER: Okay. Does that say "currently"?

NEAME: Yes.

DRIVER: Does that refer to the state of play as of 05.20?

NEAME: Yes.

DRIVER: And what was the assistance being given to the baby at that point as documented in your note?

NEAME: [Baby I] was being managed on a ventilator with the settings described as SIMV 22/5, oxygen concentration of 43%, tidal volumes of approximately 5ml per kilogram, equal air entry. [Baby I] was being managed with 150ml per kilogram per day of fluids, which was 10% dextrose; she was no longer being fed. There's a description of a blood transfusion being provided. [Baby I]'s mean arterial pressure, so her measurement of her blood pressure, was 35 to 40 on a cuff blood pressure monitor. I have recorded that she was mottled with normal heart sounds and that she had been started on some antibiotics: ciprofloxacin, teicoplanin and metronidazole.

DRIVER: Taking some of those features in turn, the tidal volume, we are led to understand in other evidence, is a measurement of the air going in and out of the lungs?

NEAME: Yes.

DRIVER: That measurement, is that a satisfactory reading or otherwise?

NEAME: That's a satisfactory reading.

DRIVER: Thank you. Blood pressure?

NEAME: Again, satisfactory and acceptable for a baby of [Baby I]'s gestation.

DRIVER: So looking at it globally, those measurements that you took at 05.20, what sort of picture did they reflect for [Baby I]'s state of health at that snapshot in time?

NEAME: For a baby who's requiring significant respiratory support, she's otherwise stable.

DRIVER: Thank you.

MR JUSTICE GOSS: You did refer, when we just had the break for the replacement of the iPads, to tile 95. So that note appears again in tile 95 in the sequence, but it's more convenient to follow it on --

MR DRIVER: It does indeed. The second page, the page that we are currently looking at --

MR JUSTICE GOSS: The second page that we just looked at, because that's later on in the sequence of events. All right.

MR DRIVER: If we could look at the remainder of this page, please.

Was there a chest X-ray?

NEAME: Yes, that's an X-ray note.

DRIVER: Is it your note?

NEAME: Yes, it is.

DRIVER: Your examination of the chest X-ray?

NEAME: Yes.

DRIVER: What did that inform you of?

NEAME: The breathing tube was placed too far in at that point, so it was withdrawn 1 centimetre from 8.5 centimetres to 7.5 centimetres at [Baby I]'s lips.

DRIVER: Pausing there, when you say it was placed too far in, was it much too far in, slightly too far in or what?

NEAME: So it was further in than the optimal position. There's a risk that if it goes further than where it was, it would only be effectively ventilating one lung due to the anatomy. That's the reason to move it.

DRIVER: So that was corrected. Is that the ET tube that you intubated [Baby I] with --

NEAME: Yes.

DRIVER: -- as per your evidence a few minutes ago?

NEAME: Yes.

DRIVER: Thank you. So that was corrected?

NEAME: Yes.

DRIVER: You then considered the nasogastric tube?

NEAME: Yes, which appeared to be curled in [Baby I]'s oesophagus, so essentially not placed far enough in, it hadn't reached her stomach. Then I've documented that I had made the nurse, Lucy Letby, aware and I have recorded that she had agreed to re-pass the tube.

DRIVER: Let's remind ourselves: intubation, is that a procedure always undertaken by medics, by doctors?

NEAME: In Chester at that time, it would have only been undertaken by a doctor, yes.

DRIVER: But a repositioning of a nasogastric tube could be undertaken by a doctor or a nurse?

NEAME: Nearly always a nurse. Potentially either, yes.

DRIVER: Upon your direction, Nurse Lucy Letby agreed to reposition that tube. Your note seems to have an additional entry at 05.26.

NEAME: Yes:

"Nasogastric tube re-passed with acidic gastric aspirates by Lucy Letby."

DRIVER: Is that an indicator that, once re-passed, it was in the appropriate position?

NEAME: Yes.

DRIVER: Thank you. Mr Murphy, before we leave the X-ray, under the comments section?

NEAME: That says:

"Patchy bilateral air space shadowing. Bowel loops distended. No free air. No pneumatosis. No portal air identified."

DRIVER: Could you explain that to us in layman's terms, please?

NEAME: It suggests that there's some subtle changes in [Baby I]'s lungs, denoted by the air space shadowing. That's a non-specification finding, just suggesting the lungs are not -- well, it's relatively subjective, but the lungs are not as completely well aerated as they might be otherwise.

The next two lines relate to an assessment of the bowel gas pattern on an abdominal X-ray. It suggests that [Baby I]'s bowel loops were distended, but that there was no evidence of any air having leaked out of the bowel into the surrounding abdominal tissue, so no free air and no air leaking into the wall of the bowel and no air leaking into the liver system.

DRIVER: Thank you. Could we then just consider your plan of action as noted towards the foot of the page?

NEAME: To repeat her blood gas test in 1 hour, to review the bloods that had been sent for a full blood count, CRP, urea and electrolytes, and bone profile. To review in the morning for possible transfer as discussed with Dr Newby. Hourly blood pressures, monitoring urine output and keeping nil by mouth.

DRIVER: Please focus momentarily upon the contemplation of the possibility of a transfer (inaudible: coughing) transfer to where and why?

NEAME: So to one of the tertiary neonatal centres and because of the period of instability overnight.

DRIVER: Thank you. For your Lordship's note, those clinical notes are also behind tiles 95 and 96. The 05.26 hours note is behind tile 96.

Thank you, Dr Neame. My Lord, the remainder of Dr Neame's evidence is pertinent to the events recorded on a later sequence of events for [Baby I], which will be presented to the jury this morning and his evidence will be better understood if it's given after.

MR JUSTICE GOSS: Keeping things in sequence?

MR DRIVER: Quite so.

MR JUSTICE GOSS: You understand that?

NEAME: I understand, yes.

MR JUSTICE GOSS: Thank you very much. So that's it for the time being. No, sorry, Mr Myers, do you want to ask questions at this stage?

MR MYERS: Yes. I understand it might have been thought that I might deal with that at the conclusion but perhaps I might deal with these points now.

MR JUSTICE GOSS: Of course. Whatever you wish to do.

Cross-examination by MR MYERS

MR MYERS: Thank you very much.

Dr Neame, just going back, on Friday we went to your notes which you made for 5 September. Just to refresh our minds, [Baby I] was born on 7 August. The first event we come to that we're looking at specifically in this trial is on 30 September. We've just been looking at the second event, which is 13 October. I just want to go back to what you were telling us about relating to 5 September, so about a month or so after [Baby I] was born and several weeks before we come to the first event that we are focusing on.

I have just said that so we can all zero in on what I'm talking about and what you're going to answer questions about.

I'm going to ask Mr Murphy to put up page 13773. It's from your clinical notes, Dr Neame, and we looked at it on Friday. It's something which is additional to the sequence of events, so it'll either come up on the screens or it may in fact be in the additional section under this part of the case, ladies and gentlemen.

Just to re-familiarise with this, these are your notes made at about 9.30 on the morning of 5 September, Dr Neame?

NEAME: Yes.

MYERS: And you're familiar with these, aren't you?

NEAME: Yes.

MYERS: Thank you. I'm not going to read through everything we have in them, but I'm going to ask if we could go to the following page, 13774, following them through. We can see the notes for that morning carry on halfway down the page.

You indicated on Friday that in general you had no concerns for [Baby I] at this point; is that right?

NEAME: Yes.

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MYERS: We can see there, just towards the end of the note, it says -- what is it that's underlined, by the way, the word there? It says "[something] well baby".

NEAME: "Impression."

MYERS: Impression, thank you. Your impression then was that she was a well baby?

NEAME: Yes.

MYERS: So as at about 9.35 on 5 September, she seemed to be a well baby and no particular matters of concern?

NEAME: Correct.

MYERS: Although always with a little neonate like this in her condition, you have to be watchful, don't you?

NEAME: Correct, yes.

MYERS: That's at 9.35. If we carry on down that page, we come to your note that starts at 9 o'clock on the same day.

MR JUSTICE GOSS: 21.00 hours.

MR MYERS: Yes.

MR JUSTICE GOSS: I want to stick to the 24-hour clock.

MR MYERS: I'm grateful. 21.00 hours the same day, so about 12 hours later in fact.

NEAME: Yes.

MYERS: We can see now that you've attended because of a desaturation that's taken place; is that right?

NEAME: Yes.

MYERS: You make the point that, so far as you understood, she'd been generally well today; is that correct?

NEAME: Yes.

MYERS: But there's an increasing frequency in desaturations over the last hour?

NEAME: Yes.

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MYERS: So this is something which has come about unexpectedly in fact; is that correct?

NEAME: Yes.

MYERS: Right. The rest of that note continues as you deal with [Baby I]. If we go down to the bottom of the page, please, we can see under the letters OE, which means "on examination", you have put:

"Alert, active and pink."

That describes the baby, doesn't it?

NEAME: Yes.

MYERS: But you've also noted "very frequent desaturations" and then what's the word under that?

NEAME: It's "nadir", so lowest --

MYERS: At the lowest point?

NEAME: Yes.

MYERS: "... 60% oxygen and also slight bradycardia now."

So slowing of the heart rate?

NEAME: Yes.

MYERS: That's in the region -- is that about 100?

NEAME: Yes.

MYERS: "No apnoeas at this point"?

NEAME: Yes.

MYERS: That's what the bottom bit means, doesn't it?

NEAME: That's right.

MYERS: We're getting the idea that when it has an O above the word that means no apnoeas?

NEAME: Yes.

MYERS: I would just like to carry through what happens for the benefit of the jury, Dr Neame. If we go to page 13775. We can see the conclusion of your note for 21.00. Then we can see -- if

we just scroll down, please, we get into notes now made by Dr Ventress, which start at 22.30 hours.

NEAME: Yes.

MYERS: We see that. We've had evidence read from Dr Ventress and I'm not going to go through all of these, at this point, but I just want to identify, if we look at the bottom part of that page, we can see after the first few lines, it says:

"Twenty minutes after feed at 22.20 had profound desaturation down to 50% sats."

Can you see that, Dr Neame?

NEAME: Yes, I can.

MYERS: Then Dr Ventress sets out the action taken to deal with the problems as she dealt with it, and I'd like to go over the page, please to, 13776, just moving forwards.

The next entry is at 01.00. It says 5 September 15, but in fact that's 6 September 2015, 01.00.

NEAME: Okay.

MYERS: If we just enlarge right next to that, please. We can see now that by about 23.15, [Baby I] has another profound desaturation to 50%. Then there's actions taken to deal with that. But you can see where it says "Profound desaturation to 50%", Dr Neame?

NEAME: Yes.

MYERS: The decision was taken, this is just to keep us apace with what's happening, to intubate [Baby I] at this point. I would like to move next, please, to page 13778 and the lower entry there, please, Mr Murphy.

So we are going through the evening with Dr Ventress dealing with [Baby I] and we can see now, 6 September 2015, 03.40 in the morning, Dr Ventress was crash called to the neonatal unit at 03.26 because [Baby I] had a profound desaturation on the ventilator and started to drop her heart rate. Do you see that, Dr Neame?

NEAME: Yes.

MYERS: Then just to complete what happens, in summary, the problems continued with [Baby I]'s condition and we know that she was transferred to the Liverpool Women's Hospital at 15.41

on 6 September. That's actually under tile 7 on part 1 of the [Baby I] sequence, but we perhaps don't need to go there, I just identify that. [Baby I] went to Liverpool Women's Hospital at 15.41 on 6 September.

I identify all that, Dr Neame, because, I'm not taking issue with you, but as of 9 o'clock on 5 September, she had appeared to be a well baby with no impending problems that you could identify; that's correct, isn't it?

NEAME: That's correct.

MYERS: But she deteriorated significantly overnight, didn't she?

NEAME: She did, yes.

MYERS: And that meant that the following day, by 3 o'clock, a little after 15.00 hours in the afternoon, she'd had to be transferred to Liverpool Women's Hospital, which is a tertiary centre, isn't it?

NEAME: Yes.

MYERS: So that's the 5th and 6 September.

I'd just like to move forward to what you have been telling us now about 13 October, Dr Neame, a couple of points about that. We can move forwards now to event 2. Event 1 was 30 September.

On 13 October, when you went to the unit -- we've just been dealing with this now -- in response to the call, was [Baby I] receiving Neopuff ventilation at that point?

NEAME: Yes, that's my recollection.

MYERS: Right. I don't want you to be at any disadvantage. I'm going to ask Mr Murphy now just to put up the tile 49 we were looking at in case you want to refer to it.

MR JUSTICE GOSS: That's what you said half an hour ago because you actually looked at the note and said she was on Neopuff.

NEAME: Yes.

MR MYERS: There's so many entries to remember, just to assist.

MR JUSTICE GOSS: Well, I know.

MR MYERS: Thank you.

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In fact, it's the tile before this one, I believe, Mr Murphy. Thank you very much. Just go up to the top. There we are.

We can see 04.45 on the morning of 13 October, if we look down:

"On my arrival, Neopuff."

Is that "ventilating in 100% oxygen"?

NEAME: Yes, that's right.

MYERS: So the Neopuff was being used at that point. As far as you can recall, was the Neopuff used up to the point that [Baby I] was ventilated? Is that what would have happened?

NEAME: Yes.

MYERS: The other thing I'd just like to confirm -- you put here that on your arrival, chest compressions were ongoing.

NEAME: Yes.

MYERS: And they continued even after your initial intervention with the jaw thrust; that's correct, isn't it?

NEAME: There would have been a period of reassessment, so --

MYERS: Let's just move down. If we could scroll down the page, please. There we are, thank you.

Chest compressions are happening when you arrived there. When you performed the jaw thrust manoeuvre, they would have stopped, at that point, would they, so you could actually work on [Baby I] and help her; is that right?

NEAME: They would have likely continued while the airway was being positioned and they may have been briefly paused for an assessment of [Baby I]'s heart rate and her general condition following an adjustment in her management.

MYERS: We can see on the section if we look here, one line down, you put "double-handed jaw thrust"?

NEAME: Yes.

MYERS: And if we continue down there, we see at the end of that section it says:

"Therefore CPR continues."

NEAME: So because her heart rate continued to be at a sub-optimal level, the CPR continued. If the intervention had improved her heart rate then the decision would have been made to stop that.

MYERS: All right. And then we have the intubation which you identify is needed. Does intubation then take place?

NEAME: Yes.

MYERS: And CPR continued during that period as well, didn't it?

NEAME: It would have -- I don't recall exactly, but it would usually be briefly paused as the breathing tube is inserted.

MYERS: And then afterwards, did it continue with CPR?

NEAME: Yes.

MYERS: Do you recall how many people were performing CPR on [Baby I]?

NEAME: My recollection is of there -- on my arrival, of there being two people in the room with me, then me as well.

MYERS: Is it possible to say how long CPR took place for? Is that not something you can put a time on very easily now?

NEAME: No, I can't put on time on that.

MR MYERS: All right. Thank you, Dr Neame.

MR DRIVER: I have no re-examination of Dr Neame at this juncture. Does your Lordship have any questions for him?

MR JUSTICE GOSS: No, thank you very much, Dr Neame. Be ready to come back again and continue. Thank you, and obviously, don't talk to anyone about anything to do with the case. Thank you.

(The witness withdrew)

MR DRIVER: My learned friend Mr Astbury is going to call Dr Newby, I believe.

MR ASTBURY: Dr Newby, please, my Lord.

DR ELIZABETH NEWBY (recalled)

Examination-in-chief by MR ASTBURY

MR ASTBURY: For the record, doctor, could you introduce yourself again, please?

NEWBY: Yes. Dr Elizabeth Newby.

ASTBURY: And we've heard of your position at the Countess of Chester Hospital up until, I think, March 2016?

NEWBY: Yes.

ASTBURY: You have come along today to assist us with your recollections of a baby named [Baby I] and through the period of August, September and October of 2015. Have you had the opportunity in preparing your witness statement, or having it prepared for you, looking at the notes in relation to [Baby I] and your treatment of her?

NEWBY: Yes, that's correct.

ASTBURY: We've heard that [Baby I] had more than one stay at the Countess of Chester. Just initially and for the sake of completeness, can we look, please, at your contact with [Baby I] before she left for -- on 6 September, so in August of 2015, her first stay, and in particular, please, J13764.

I think we can see that that's a form we're becoming familiar with, it's a grand round form, correct me if I'm wrong, where the junior doctor visits the baby the day before, completes their assessment, and then makes that available for the consultant the following day, the Wednesday. We can see in the box at the bottom of the page, on 26 August you were the consultant on the grand round?

NEWBY: Yes.

ASTBURY: You've identified a plan, which, correct me if I'm wrong, indicates increasing [Baby I]'s intake of food?

NEWBY: Yes.

ASTBURY: To add fortifier?

NEWBY: Mm-hm.

ASTBURY: What's that last word, please?

NEWBY: I'm not sure, actually.

MR JUSTICE GOSS: "Later"?

NEWBY: "Later", I think, probably, yes.

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MR ASTBURY: So increase first and then add fortifier, presumably?

NEWBY: Mm-hm.

ASTBURY: We've heard CRUS relates to scans of the brain; is that right?

NEWBY: Yes, cranial ultrasound scan.

ASTBURY: You made some more notes. Anything out of the ordinary on the grand round on 26 August?

NEWBY: No, no, no.

ASTBURY: Moving on, please to, 30 August at page 13767. Again, helpfully the handwriting is clear. I'm not going to go through every entry. Anything that stands out as unusual there, please, on the morning of 30 August?

NEWBY: No, not really. It was a routine review on the ward round and it looks as if she was fairly stable, yes.

ASTBURY: Does the note at the bottom continue to confirm that view?

NEWBY: Yes.

ASTBURY: Thank you. Well, we know then that [Baby I] left the Countess of Chester around a week or so later, but returned on 13 September. It's your contact with her after that, please, that I'd like to consider in a bit more detail.

First of all, we can go to the sequence of events chart number 1, Mr Murphy, and deal with 30 September, which is the first date that the jury are concerned with and again look at a grand round form, please, or pro forma, if I can put it that way.

We've heard from Dr Beebe in this regard, whose handwriting appears on the form. She's told us about the examination that took place on the Tuesday. If we can scroll down, please, perhaps you might want to cast your eye over what she has noted, if it assists in your recollection.

NEWBY: Okay.

ASTBURY: Thank you.

(Pause)

ASTBURY: Is that your handwriting in the box?

NEWBY: It's not, actually, no.

ASTBURY: But if you can take us through, can you confirm that indicates that you saw [Baby I] on the Wednesday, the 30th?

NEWBY: Yes. I was the -- I must have been the consultant leading that grand round, yes.

ASTBURY: I think that says "Imms Monday". Could you explain that to us, please?

NEWBY: She would have -- I presume by that point she must have been at least 2 months old so she would have been due her first lot of routine childhood immunisations.

ASTBURY: Okay. Is that -- as it says "Monday", is that next Monday or they were had on the Monday before?

NEWBY: I don't know. I would have -- as it was the plan, I would have thought they were to be given the following Monday.

ASTBURY: All right. Any considerations to be made when deciding whether a baby in [Baby I]'s position is ready for their immunisations?

NEWBY: Yes, we would want them to be stable in order to give them because they can have a little bit of a wobble after.

ASTBURY: Okay. Does the note suggest that you were content for that to continue?

NEWBY: Mm-hm.

ASTBURY: All right. "Establishing feeds"?

NEWBY: Yes.

ASTBURY: "Wean hot cot as appropriate."

So [Baby I] at that point was suffering with low temperatures but was treated in a hot cot accordingly?

NEWBY: Yes, presumably by that stage she was out of an incubator and into a hot cot, yes.

ASTBURY: And "To feed and grow"?

NEWBY: Yes.

ASTBURY: That note, does that assist us with [Baby I]'s condition on 30 September?

NEWBY: Yes, that we were at a stage where it was a matter of establishing feeding and weight gain and she was stable, yes.

ASTBURY: All right. Are they positive signs in the context of a baby with [Baby I]'s history?

NEWBY: Yes, definitely.

ASTBURY: Thank you. If we move on, please, to 4 October. This is not on the sequence of events, but if we can just quickly look at that, it comes between the two dates that we are interested in. J14369, please, Mr Murphy.

The top two-thirds, I think, of the page. It looks a little more like your handwriting, doctor.

NEWBY: Yes, it is.

ASTBURY: So you've recorded [Baby I]'s age and gestation. Is that "prem"?

NEWBY: Yes. Prem, yes:

"Prem. Recurrent abdominal distension. Grade 1 IVH."

From her respiratory point of view, she was self-ventilating in air and --

ASTBURY: Sorry, just slow down.

NEWBY: Right, sorry.

ASTBURY: The first three lines of her history, I think we're getting to know the ropes now.

NEWBY: Okay, sorry.

ASTBURY: That's the history as far as is relevant for the examination. Self-ventilating in air is SVIA?

NEWBY: Yes.

ASTBURY: So not requiring any ventilatory support?

NEWBY: No, nor oxygen, no.

ASTBURY: Okay. Feeds, a combination, is that right, of supplements and expressed breast milk?

NEWBY: Yes. So that's the total volume for the day and then she was being fed three-hourly with expressed breast milk.

ASTBURY: Right, okay. Her weight?

NEWBY: Mm-hm.

ASTBURY: I think there's a note there to say that she was nil by mouth for 24 hours.

NEWBY: Yes.

ASTBURY: Is that -- what does that say after that?

NEWBY: "Last week".

ASTBURY: Last week, okay. "Recently screened for sepsis"; is that right?

NEWBY: Yes.

ASTBURY: And "[question mark] NEC"?

NEWBY: Mm-hm.

ASTBURY: Is that "negative at 36 hours"?

NEWBY: Yes, implying that the blood cultures had been negative at 36 hours, so I'm assuming we stopped the antibiotics. I can't recollect that, but that's how I would interpret that.

ASTBURY: It would appear that you examined [Baby I].

NEWBY: Mm-hm.

ASTBURY: You found her abdomen to be, is that --

NEWBY: "Very soft".

ASTBURY: That's a V, is it?

NEWBY: Yes, "very soft".

ASTBURY: Her bowels had opened?

NEWBY: Yes.

ASTBURY: Resulting in a soft, yellow stool?

NEWBY: Mm-hm.

ASTBURY: And again you've marked "continue" -- what, please, can you tell us, doctor, does that examination tell you about [Baby I]'s condition on 4 October?

NEWBY: She appeared stable and there were no concerns, so we were just going to continue with the current plan.

ASTBURY: Thank you. You didn't, am I right, have any more contact with [Baby I] until the early hours of 13 October 2015?

NEWBY: Yes, that's right.

ASTBURY: Were you the on-call consultant overnight between the 12th and 13 October?

NEWBY: I was.

ASTBURY: And were you called urgently to the NNU in the early hours of the 13th?

NEWBY: I was.

ASTBURY: Thank you. Do you recall what you found when you arrived at the NNU?

NEWBY: So when I arrived, the resuscitation was ongoing.

ASTBURY: Okay. So you came upon a scene where [Baby I] was already being resuscitated?

NEWBY: Yes, yes.

ASTBURY: So those measures had already commenced when you got there?

NEWBY: Yes.

ASTBURY: We'll go to your note in a moment, but do you recall the condition that [Baby I] was in when you arrived?

NEWBY: Well, she was intubated and full CPR was going on.

ASTBURY: Perhaps if we go to your note, please. It's at tile 60, Mr Murphy. We've just heard this morning from Dr Neame, who was, correct me if I'm wrong, present when you arrived and had been treating [Baby I] in the period up to your arrival.

NEWBY: Mm-hm, yes.

ASTBURY: Had you spoken to him before you arrived?

NEWBY: I can't remember. I can't remember who put the call out. It may have been -- I can't remember.

ASTBURY: Okay.

NEWBY: No, sorry.

ASTBURY: We can see there a note says that at 3.36 -- would that be the time you arrived or the time you were called?

NEWBY: It would have been the time I documented in the notes.

ASTBURY: Okay. So you were called urgently to the neonatal unit, as you've told us?

NEWBY: Mm-hm.

ASTBURY: And you've endorsed there that there had been no concerns over the course of the day; is that right?

NEWBY: Yes.

ASTBURY: "Tolerating feeds"?

NEWBY: Mm-hm.

ASTBURY: You were told that [Baby I] had been found blue and apnoeic in her cot and, as a consequence, CPR had been commenced; is that right?

NEWBY: Yes.

ASTBURY: Do you remember -- have any recollection yourself of [Baby I]'s appearance when you arrived?

NEWBY: Um... Other than, as I say, she was intubated and CPR was ongoing, so... Yes.

ASTBURY: All right. Do you remember who was present when you arrived?

NEWBY: Dr Neame was in -- sort of leading the resuscitation and was at the head end, sorting out the respiratory point of view. I don't remember who else was in the room, to be honest. I remember as I arrived on the unit, as I walked down the corridor towards room 2, where [Baby I] was, Lucy Letby was coming out of the room at the time.

ASTBURY: Okay. So as you arrived, she was leaving?

NEWBY: Yes.

ASTBURY: Others were still --

NEWBY: Yes, then I kind of obviously was involved in the resuscitation and concentrating on that rather than who was in the room.

ASTBURY: Of course:

"On my arrival, ETT in place."

NEWBY: Yes.

ASTBURY: The position was checked and is that "bilateral air entry"?

NEWBY: Yes.

ASTBURY: And positive capnograph?

NEWBY: Yes.

ASTBURY: So ventilation's working?

NEWBY: Yes.

ASTBURY: Air is going in and out of [Baby I]'s lungs?

NEWBY: Yes.

ASTBURY: Chest compressions are still ongoing?

NEWBY: Yes.

ASTBURY: And then you've made a note, if we can scroll down a little further, thank you, "Drugs so far".

NEWBY: Yes.

ASTBURY: So would that be what you were told had been administered in the period before your arrival?

NEWBY: Yes. So, sorry, the time -- the time at the top of the notes must have been my time of arrival, 3.36. So prior to my arrival, there'd been one round of adrenaline at 3.31 and then a round of adrenaline at 3.36 and then a bolus of sodium chloride and then other -- we went on to administer other drugs after that.

ASTBURY: In that list there are three doses of adrenaline?

NEWBY: Yes.

ASTBURY: What, if anything, does that tell you about [Baby I]'s condition?

NEWBY: Well, it took quite a degree of resuscitation to -- yes.

ASTBURY: Okay. Is adrenaline a significant drug to find on the medical records in this context?

NEWBY: Yes.

ASTBURY: Why?

NEWBY: Because it implies that she was apnoeic and pulseless, so a full resuscitation, yes.

ASTBURY: Okay. Is this a serious state of affairs?

NEWBY: Yes, definitely.

ASTBURY: Your next entry is 3.45 --

NEWBY: Mm-hm.

ASTBURY: -- after that third dose of adrenaline, that you saw or detected signs of life?

NEWBY: Mm.

ASTBURY: The heart rate was checked and it was greater than 100?

NEWBY: Yes.

ASTBURY: We've heard from Dr Neame that there was a heart rate but it was too low and that's why chest compressions began, but they've increased; is that right?

NEWBY: Yes.

ASTBURY: CPR was stopped. It says:

"Ventilation continued, no ETT [as read]."

NEWBY: Sorry, "via".

ASTBURY: "Via", thank you. I'm glad you corrected that, I couldn't quite work that one out. So via ETT.

How did [Baby I] appear at 3.45?

NEWBY: So she became quite pink and vigorous.

ASTBURY: What do you mean by vigorous?

NEWBY: Well, she was moving, active.

ASTBURY: Okay. What, if anything, does that tell you?

NEWBY: That we were pleased --

ASTBURY: Of course.

NEWBY: -- relieved, but she'd responded well to the resuscitation.

ASTBURY: So 14 minutes from that note of resuscitation, three doses of adrenaline, and after 14 minutes you see that sort of response. How did you assess [Baby I] to be at that point?

NEWBY: I mean, we commented at the time that she was very active -- she seemed quite vigorous and we moved her through to room 1 to continue with ventilation, but, yeah, she seemed quite active and pink, really.

ASTBURY: Okay. Is her vigour an important observation?

NEWBY: Yes. It's difficult to interpret, really, but you know, if it's a very acute event and resuscitation begins immediately and then is successful then hopefully, you know, the baby would recover quite quickly.

ASTBURY: "Transfer to ITU"?

NEWBY: Yes.

ASTBURY: That's room 1?

NEWBY: Yes, it just implies moving her through to room 1, yes.

ASTBURY: She remained there after ventilated (sic)?

NEWBY: Yes.

ASTBURY: There was a screen, a further screen; is that right?

NEWBY: Yes, a septic screen, yes.

ASTBURY: Is that further antibiotics?

NEWBY: Yes, yes.

ASTBURY: And a blood transfusion?

NEWBY: Mm-hm.

ASTBURY: Is that because -- is that a haemoglobin reading you have noted there?

NEWBY: Yes, a haemoglobin of 75.

ASTBURY: Is that low?

NEWBY: Yes.

ASTBURY: Thank you. If we just scroll down, we can see -- is that quite the bottom of the page, Mr Murphy? I think it's still your handwriting, is it?

NEWBY: Yes.

ASTBURY: "Already on cefotaxime"; is that right?

NEWBY: Yes.

ASTBURY: And you've noted additional antibiotics to be introduced/given pending the screen; is that right?

NEWBY: Yes.

ASTBURY: Thank you. A subsequent note from Dr Neame, which we've just looked at, suggests that there was a discussion about transferring [Baby I] to a tertiary centre; do you recall that?

NEWBY: I can't, to be honest, I don't know. I can't, to be honest.

ASTBURY: I won't ask you any more questions about that then. Did you have any more contact with [Baby I] that you recall?

NEWBY: Not that I'm aware of, no.

MR ASTBURY: Thank you, doctor. If you could wait there a moment.

Cross-examination by MR MYERS

MR MYERS: Dr Newby, you've been asked some questions about [Baby I]'s weight and how she appeared to be with respect to that; do you recall that?

NEWBY: Mm-hm.

MYERS: Yes?

NEWBY: Yes.

MYERS: And so I'm going to ask you some questions about weight, if I could.

NEWBY: Okay.

MYERS: Weight with babies.

NEWBY: Gosh, okay.

MYERS: We've seen in the case that taking the weight of the baby and seeing how the baby's doing is something that happens fairly regularly; is that correct?

NEWBY: It is, yes.

MYERS: And is that because weight is an important parameter for measuring growth in a neonate?

NEWBY: Yes, definitely.

MYERS: So when we see the babies here, that's why we see them being weighed as often as we do?

NEWBY: Yes.

MYERS: Just to get the idea, when a baby is being born, it's expected that she or he might lose about 10% of their weight in the first few days, isn't it?

NEWBY: Yes, that's correct.

MYERS: But by about 3/4/5 days, they should start putting weight on if things are working correctly; do you agree?

NEWBY: Yes.

MYERS: As a general guide, and this is a general guide, do you expect babies to put on weight at about 15 to 20 grams a day for each kilogram that they weigh, something like that?

NEWBY: Yes, that would be reasonable.

MR JUSTICE GOSS: Forgive me interrupting, Mr Myers, but just to make sure that we are clear about this, are we referring here to neonates or full-term babies or both?

MR MYERS: Neonates generally at this point.

NEWBY: I think the situation is a little bit different, though, in a term baby who's healthy and just feeds immediately rather than a preterm baby who you might not feed for some time and might be fed intravenously.

MYERS: I'm going to go to look at some of the charts with [Baby I], in fact --

MR JUSTICE GOSS: I think, just to be clear, what you were asking questions about are premature babies and your answers are about premature babies?

NEWBY: Yes.

MR JUSTICE GOSS: That's what I wanted to be clear about.

MR MYERS: I'm grateful for that, my Lord.

We're talking about babies in the sort of position [Baby I] was in?

NEWBY: Okay.

MYERS: Failure to put on weight or put on weight at the appropriate rate may be a matter of concern with a baby; do you agree?

NEWBY: Yes.

MYERS: And it may indicate an underlying health problem of some sort; do you agree with that?

NEWBY: It may do, yes.

MYERS: It may do?

NEWBY: Yes.

MYERS: Now, I'm going to suggest there's two particular ways in which you look at how weight is being gained, but you will tell me if this is right or wrong or needs some fine-tuning. The first is you can actually look to see what the weight gain is for the baby week on week and see that they are gaining weight at an appropriate rate. That's one thing you can do, isn't it?

NEWBY: Yes.

MYERS: The other thing which happens, we're going to look at this in a bit, is you look at the weight of the baby for their age and their gender and you can look at it with the percentage

of other babies that would be at that weight to see how they are doing?

NEWBY: Okay.

MYERS: And we've seen, I'm going to look at this, on the record, reference to centiles.

NEWBY: Mm-hm, yes.

MYERS: I thought a bit about how to ask a question about what a centile means. If we talk about something being at the 50th centile, that means 50% of the population for a similar aged baby of that gender would be below that centile?

NEWBY: Yes.

MYERS: Right. So if we say a baby's weight is at the 50th centile, that means 50% of babies of the same age and gender would be below that?

NEWBY: Yes.

MYERS: Right. So it's possible to plot what centile a baby is on to see how she or he is doing as they go along; is that correct?

NEWBY: Yes.

MYERS: So we understand, there are standard centiles that are measured, aren't there?

NEWBY: Yes.

MYERS: I'm going to say what they are, but they don't all apply in this case with [Baby I], but so we understand. At the bottom is 0.4?

NEWBY: Yes.

MYERS: That would mean if a baby is on the 0.4 centile, only on 0.4% of the population would be below that?

NEWBY: Yes.

MYERS: Then we have the second centile; is that right?

NEWBY: Yes.

MYERS: We go up to the 9th. I know you're nodding. You have to say yes.

NEWBY: Yes, sorry, yes.

MYERS: Then the 25th centile?

NEWBY: Yes.

MYERS: Then the 50th?

NEWBY: Yes.

MYERS: Then when we go above the 50th, we get to the 75th centile?

NEWBY: Yes.

MYERS: The 91st?

NEWBY: Yes.

MYERS: The 98th?

NEWBY: Yes.

MYERS: And then the 99.6th, it seems?

NEWBY: Yes.

MYERS: Is that because there's always a possibility there's some above that?

NEWBY: Yes.

MYERS: All right.

MR JUSTICE GOSS: Is that to reflect the fact that when you get to zero, the first one you do is 0.4?

NEWBY: Yes. It's a normal distribution, so if you took a hundred babies born on the same day, as a normal distribution, they would range in size from the smallest to the biggest.

MR MYERS: Thank you. So just to reiterate, if the baby is weighed and that puts her on the 50th centile, that means 50% of babies of that age and gender will be at or below that weight?

NEWBY: Yes.

MYERS: So it helps us to see, relatively speaking, how a baby is doing?

NEWBY: Yes.

MYERS: I'm going to go through and have a look at some of the information we have on [Baby I] next, some of which you have touched on in your evidence, some of which is in the documents that others put together for the grand rounds in particular, but they're documents you're familiar with.

NEWBY: Okay.

MYERS: So I'm going to ask you (inaudible) the type of document. [Baby I], just to remind us, was born on 7 August 2015 and her weight when she was born was 970 grams and her gestation was 27 weeks.

NEWBY: Yes.

MYERS: I don't know whether from that alone you can help us with what centile she would have sat on at that --

NEWBY: Oh no, I'd have to put it on a chart.

MYERS: I was going to suggest it's about 50%, but we'll try and deal with that after the calculation has been done.

NEWBY: Okay.

MYERS: I would like to look, if we could, now, at 25 August. So this is the first date you were dealing with, around about 25/26 August. I'm going to ask Mr Murphy, please, to put up J13763.

This is the document compiled just prior to your grand round, Dr Newby, and if we can enlarge it, the top half first, and then we'll go down to the area I'm going to ask you about. Thank you.

25 August, this was compiled. I'd like to scroll down next, please. Just enlarge the bottom of the page so we can see where [Baby I] is on fluid and growth. Her weight now is 1.069 kilograms?

NEWBY: Yes.

MYERS: We know she started at 970 grams. That puts her -- we see it's put "9th to 25th centile"; do you see that?

NEWBY: Yes.

MYERS: So if we imagine these charts have the centiles drawn on them, she's between the 9th and the 25th?

NEWBY: Yes.

MYERS: In fact the weight gain isn't marked on this one. We can see, if we look down, there's a line for weight gain, isn't there, in the last week?

NEWBY: Yes.

MYERS: But that hasn't been entered on this occasion.

NEWBY: Mm-hm.

MYERS: Can you see it says in brackets there the target is 15 grams per kilogram per day?

NEWBY: Yes.

MYERS: Which is what we started talking about. Thank you.

Could we next look, please, at 13764, which we looked at in your evidence -- we're moving forwards, Dr Newby. 13764, which is the following page, and just the bottom part of the page, if we could, please.

We can see this is the grand round that you did that day, Dr Newby. When you were asked about the plan, you said it was to increase, amongst other things, the intake of food and to add fortifier?

NEWBY: Yes.

MYERS: Is that right?

NEWBY: Yes.

MYERS: Is that because you'd identified it was important to assist [Baby I] in putting on weight at this point?

NEWBY: Yes.

MYERS: You may not be able to recall, I'm going to take you to something that'll help, but do you recall that her weight was static at this point?

NEWBY: I can't remember to be honest.

MYERS: Let's just look at why I've said that. It's in the nursing notes at 13822, please.

We can see this is a note from MT, who we know is Mel Taylor, one of the nurses on the unit. 26 August 2015, a note made at 16.11. If we just look down a couple of lines up from the bottom, can you see towards the end of the entry:

"Plan from Dr Newby to increase to 180ml/kg day due to static weight"?

NEWBY: Yes.

MYERS: "Does not want to start fortifier at present because of large tummy."

NEWBY: Yes.

MYERS: There are two things there. Does this help us identify that you'd seen the weight was static --

NEWBY: Yes, I must have done, yes.

MYERS: -- and there was a need to give more nutrition, wasn't there?

NEWBY: Yes.

MYERS: You also noted:

"Don't want to start fortifier at present because of large tummy."

A distended abdomen was one of the features of [Baby I] over her time, on and off, at various periods, wasn't it?

NEWBY: It was, yes.

MYERS: I would like to move forwards to 22 September 2015, which is at 14353.

We can see here, this is the notes again in preparation for a grand round and we can see at the top it is dated 26 September 2015, Dr Newby.

NEWBY: Yes.

MYERS: I'd like to go down to where we have fluids and growth, please. We can see the weight has risen a little bit up to 1.545 kilograms, hasn't it?

NEWBY: Yes.

MYERS: But the centile now is on the 9th, isn't it?

NEWBY: Yes.

MYERS: The last one we looked at, [Baby I] was plotted at between the 9th and the 25th, and now, on 22 September, just 3 or 4 weeks later, maybe, she's on the 9th centile?

NEWBY: Yes.

MYERS: So relatively speaking, that's a drop in her weight as against the population, isn't it?

NEWBY: Yes.

MYERS: Because that means 9% of the population would weigh less for her gestation and gender and age?

NEWBY: Yes.

MYERS: If we look at weight gain in the last week, we can see she's gained 6.3 grams per kilogram per day, hasn't she?

NEWBY: Yes.

MYERS: Which is significantly below what the target weight would be, isn't it?

NEWBY: Yes.

MYERS: I would like to move next to 6 October, please, page 14373 -- in fact, sorry, let's look at the one you looked at with us, page 14360, which is 29 September.

29 September, notes for the grand round. Let's go to the fluid and growth section now we know what we're dealing with. Weight, 1.7 kilograms, and still on the 9th centile, isn't she?

NEWBY: Yes.

MYERS: Although slightly better in terms of weight gain on this week because she's put on 14.7 grams a day?

NEWBY: Yes.

MYERS: But still on that 9th centile?

NEWBY: Mm-hm.

MYERS: Can we move to 6 October, please, at 14373. 6 October. Can we enlarge the fluids and growth section of the chart, please, Mr Murphy?

The weight is 1.73, so a slight increase, or 30 grams in fact, from the last one. It says, "Now above 2nd", doesn't it, where it has the centile line?

NEWBY: It does.

MYERS: [Baby I]'s weight, it would appear, in terms of centile, has dropped from 9th to somewhere above 2nd?

NEWBY: Yes.

MYERS: So at this point, there's only in the region of 2% of the population for her age and gender that would be below that; is that correct?

NEWBY: Yes.

MYERS: And the weight gain in the last week is just 30 grams; yes?

NEWBY: Yes.

MYERS: Which is low, really, for a baby that needs feeding up, isn't it?

NEWBY: Yes.

MYERS: That would be a matter of concern, wouldn't it, if a baby isn't putting on weight at this point and is in a condition that she is insofar as feeding is concerned?

NEWBY: Yes, yes.

MYERS: All right. There isn't a grand round note for 13 October 2015, which is the following week, because that's when there's the episode which you've dealt with in evidence. And on the 15th she moved out of the Countess of Chester Hospital, in fact.

But let's go to 20 October, which is the next one of these notes that we have, at 14916, please. We can see 20 October now, which I know is getting ahead of where we are, but I would just like to carry this through. The final event we deal with is on the night of the 22nd into 23 October so far as the charges are concerned.

Can we look where it has the fluids and the growth section again, please. Her weight, we can see, CW, current weight, is 1.83 kilograms, isn't it?

NEWBY: Yes.

MYERS: But in terms of centiles now, her weight is below the 0.4, which is the bottom one, isn't it?

NEWBY: Yes.

MYERS: So that's right down at the bottom of what's recorded in terms of centiles, isn't it?

NEWBY: It is.

MYERS: And so far as weight gain or not weight gain is concerned, that would be a matter of concern if she's gone from the 9th to the 25th down to 0.4 at this point; do you agree?

NEWBY: Yes, yes.

MYERS: Thank you. That's what I wanted to ask about weight.

The next item I'd like to ask you about is just to do with, if you can help us, the monitoring of babies whilst they're on antibiotics.

NEWBY: Okay.

MYERS: Please, if it's an area that doesn't come to mind or you're uncomfortable dealing with, there's no criticism of that, Dr Newby, I'm only asking if you can assist with this.

NEWBY: Okay.

MYERS: I'm going to ask if we could put up, please, tile 14. It's one of the charts that shows the observations that were conducted by the nurses. Tile 14, please. It's in section 2, thank you.

If we could pull out, Mr Murphy, so Dr Newby can see the whole of the document. There we are, thank you.

Are you familiar or were you familiar with charts like these at the time you were at the Countess of Chester, Dr Newby?

NEWBY: I was.

MYERS: We can see the monitoring allows heart rate and respirations to be recorded when it's applied, doesn't it?

NEWBY: Yes.

MYERS: And temperature can be taken as well, but not with the same monitor as the respiration and the heart rate.

NEWBY: Yes.

MYERS: Are you aware of what are described as the sepsis pathway guidelines as to how monitoring should be conducted when a baby was on antibiotics?

NEWBY: I can't recall the precise details off the top of my head, but yes, there would have been a pathway, yes.

MYERS: Let me ask you this and, again, if you can't recall it or you don't know, just say so. It's not critical of you at all.

NEWBY: Yes.

MYERS: But if a baby is on antibiotics, was it the practice, so far as you understood, that the baby should continue to be monitored so far as heart rate and respirations are concerned?

NEWBY: I would expect that to be the case, yes.

MYERS: You say you'd expect it.

NEWBY: Yes.

MYERS: That's what you'd expect as a doctor. Do you recall whether there was guidance at the Countess of Chester that that is what should happen?

NEWBY: I can't remember.

MYERS: You can't remember, all right. But as a general matter, you'd expect that heart rate and respirations would be recorded whilst a baby's on antibiotics?

NEWBY: Yes, because being on antibiotics would imply you were worried about that baby.

MYERS: Yes. We can see looking at the charts here, Dr Newby, that -- just enlarge the top of it now. We're familiar with this chart but I appreciate you won't have looked at this.

NEWBY: Mm-hm.

MYERS: Thank you, Mr Murphy. Can you see we're dealing with the dates the 9th, the 10th and 11 October?

NEWBY: Okay, yes.

MYERS: In fact, we've seen, if we follow along at the top, if you look at the timings from the 11th, it goes 05, 07, all the way through to 21, and then we come back to 09 again --

NEWBY: Yes.

MYERS: -- so we're actually into the 12th there.

NEWBY: Yes.

MYERS: If we carry on going to the right, can you see the last entry is 01?

NEWBY: Yes.

MYERS: Which takes us just into the morning of the 13th.

NEWBY: Yes.

MYERS: Which is the period we're looking at for this event.

I'm just going to ask Mr Murphy next, if he would, please, to put up tile 11. Cefotaxime is an antibiotic, isn't it, Dr Newby?

NEWBY: It is, yes.

MYERS: And it's an antibiotic that [Baby I] was being prescribed. We can see she received that on 12 October at 07.00, didn't she?

NEWBY: Yes.

MYERS: We can see that. Could we look at T21, please? The next dose is 12 October, 16.20. Can you see that, Dr Newby?

NEWBY: Yes.

MYERS: And if we go to tile 40, please. The next dose is at 23.26 on the night of 12 October, isn't it?

NEWBY: Yes.

MYERS: One moment, please.

(Pause)

In fact, if we go to the notes that you've assisted us with this morning that you made on this event, Dr Newby, it's at tile 60. Just go behind this, please, Mr Murphy. These are notes -- you say -- 3.36 actually appears to the time you arrived on the unit so far as you can help us?

NEWBY: It must have been, yes.

MYERS: Thank you, Dr Newby. If we scroll down, please, to the bottom of that page. Can we see in the section where you've got the arrow, you put "Screen antibiotics".

NEWBY: Mm-hm.

MYERS: Does that mean screen for what antibiotics to continue using?

NEWBY: No, to take blood for blood cultures.

MYERS: You make the point "Already on cef". Is that cefotaxime?

NEWBY: It is, yes.

MYERS: Right. So over the period we're dealing with here, [Baby I] was receiving antibiotics, as we've seen; that's right, isn't it?

NEWBY: Yes.

MYERS: Thank you. That's what I wanted to ask you about antibiotics and monitoring.

NEWBY: Okay.

MYERS: There's just one final matter I'd like to ask you about and it was this: you've been asked about the doses of add listen that [Baby I] received and we can see them on the page we're looking at -- well, we can see two of them on this page, can't we, on the top?

NEWBY: Yes.

MYERS: In fact there's a third one. There we are.

Plainly, you're dealing with an emergency situation and therefore you do what you feel you have to do to assist the baby in that situation.

NEWBY: Mm-hm.

MYERS: Again, I make no criticism at all in my question of the medication given, but I ask this: is there a point at which there could be too much adrenaline given to a baby? I don't mean this, I don't mean three doses like this, but is there a point at which it's recognised the dosage of adrenaline becomes so high that that itself can be a risk?

NEWBY: Um... I mean, over the... I don't know what the evidence for that is, to be honest. In a resus situation, it would

be -- it's always reasonable to use an approximate rounded-up weight because you want to administer drugs quickly and to draw up precisely 1.834ml of adrenaline would be, you know, counterproductive, really.

MYERS: My fault for not being clear. We can see there are three doses that were given here.

NEWBY: Yes.

MYERS: Again, no criticism as to that at all.

NEWBY: Right, okay.

MYERS: What I mean is, does there come a point at which the number of doses, as you give more and more doses of 0.2ml, whatever millilitres it is, that that can become in itself counterproductive and a risk to the baby? Not as in this situation, but --

NEWBY: No, no, it would just -- just as a resuscitation continues, the length of time that that -- as the length of time increases, your chances of success are diminishing --

MYERS: Right.

NEWBY: -- so we wouldn't continue forever, you know. There would be a point at which we would say we are unlikely to succeed, this is not in anybody's interests to continue.

MYERS: But as for amounts of adrenaline, there's no particular amount that you identify where in itself that could be counterproductive?

NEWBY: No. No, I think it's length of resuscitation that determines...

MR MYERS: Thank you, Dr Newby.

Re-examination by MR ASTBURY

MR ASTBURY: Two matters, really, doctor, arising. You were asked a number of questions about centiles --

NEWBY: Yes.

ASTBURY: -- and where a particular baby might fall on a centile and in particular where [Baby I] fell on a centile.

Given [Baby I]'s difficulties in her early life, would you expect her weight to have fallen or to have risen during the course of that period?

NEWBY: No, I mean her weight was low and obviously, as we've seen, it had dropped down the centiles, but she had had numerous episodes throughout her life where we had been unable to feed her because of abdominal distension or initially when she was first born and she was ventilated. So we often find that premature babies may grow along the lower centiles because it's a different situation to a term baby that just comes out and feeds.

ASTBURY: Right. So following on from that point, when we looked at your notes earlier this morning and you described [Baby I] as stable as a consequence of those notes, was that a feature that you had in mind when you considered her to be a stable baby?

NEWBY: Yes.

ASTBURY: And would that history of her weight loss and her relative weight in relation to other babies -- would that history explain the cardiac arrest in the early hours of 13 October and what you came upon that morning?

NEWBY: I don't -- no, I don't... Not just poor weight gain in itself.

MR MYERS: I pause to say, no disrespect to Dr Newby, we're going to deal with the experts, but that's an incredibly broad question on its own and we just make that observation and it is really a matter for the experts to deal with, we say, but that's not to be rude to Dr Newby.

MR ASTBURY: It raises the question, what was the point of the question, and it was posed. If that's what it's building up to, with respect, it's a reasonable question to ask, but I won't take it any further.

MR JUSTICE GOSS: Well, I think you would be entitled to ask the question, which I will therefore ask.

MR ASTBURY: Thank you.

MR JUSTICE GOSS: Were there, as far as you knew, at the time, any concerns in relation to weight gain or lack of weight gain in relation to [Baby I] as an issue that needed to be addressed by the treating clinicians?

NEWBY: No, I mean we were all aware that her weight gain was poor, but we were all aware that she'd had numerous episodes

when she hadn't been able to be fed because of episodes of sepsis, abdominal distension and so on. So it wasn't felt to be out of the ordinary that her weight gain was poor given the clinical course that she'd followed. Does that make sense or help?

MR ASTBURY: My Lord, I proceed with caution. That's I think the point I was driving at.

MR JUSTICE GOSS: Well, I don't think you should go any further. As Mr Myers has said, this is a matter that can be asked of expert witnesses. I'm not suggesting that Dr Newby doesn't have an expertise in relation to neonates, but that is -- all right. Do you have any other questions?

MR ASTBURY: Just this: you were shown the observation chart, I'm not going back to it, and asked about whether her heart rate should have continued to be monitored. Would that chart have been accessible to any doctor who was treating [Baby I] at time?

NEWBY: Yes.

ASTBURY: They'd have seen the situation?

NEWBY: Yes, the charts are -- the charts would have been on the end of the cot, yes.

MR ASTBURY: Thank you. I have nothing further.

Questions from THE JUDGE

MR JUSTICE GOSS: Just this: you were shown a lot of the review notes prepared for the grand round at weekly intervals --

NEWBY: Mm-hm.

MR JUSTICE GOSS: -- and you were shown the weight figures. There was another centile figure that was referred to frequently, which I think -- is that the head circumference?

NEWBY: It was, yes.

MR JUSTICE GOSS: Where she seemed to be consistently -- I think the second centile; is that right?

NEWBY: Yes.

MR JUSTICE GOSS: Is that of any significance or not? I'm only asking so it's not a mystery that's been hanging in the air, so to speak.

NEWBY: Babies are usually proportionate for weight, for length, for head circumference and often if -- so birth weight is very much to do with maternal health and placental health rather than the baby itself, really. So a baby that has a good birth weight, mum's had a healthy placenta, the head circumference will often be in proportion to the birth weight. If the placenta has not been healthy, then you might find a baby with a larger head circumference centile than a weight centile because nature always spares the brain.

MR JUSTICE GOSS: Favours the brain?

NEWBY: Favours the brain, yes.

MR JUSTICE GOSS: Nature favours the brain, exactly, because without the brain nothing can happen?

NEWBY: Nothing happens, exactly, yes.

MR JUSTICE GOSS: Right. Thank you. I don't know if anyone wants to ask anything in relation to that. I didn't anticipate you would, but I thought it would address that particular issue.

Thank you very much, Dr Newby. Is Dr Newby required again?

MR ASTBURY: We don't think so, but can we not commit? I am afraid I have gone flat on my laptop --

MR JUSTICE GOSS: Well, on the document that I was provided with a little time ago now, I don't see her name at all, so she obviously has been required for this.

I don't think it's anticipated you will be required to give evidence again, Dr Newby, but I'm saying this to people in your situation: out of an abundance of caution would you please not speak to anyone about anything to do with this case until the trial is over?

NEWBY: Of course, not, no.

MR JUSTICE GOSS: All right?

NEWBY: Yes.

MR JUSTICE GOSS: Thank you very much indeed. Thank you for coming and giving your further evidence. Thank you.

(The witness withdrew)

MR JUSTICE GOSS: That's a convenient moment to have our ten-minute break.

(In the absence of the jury)

MR ASTBURY: We're going to read some evidence next. Can I hand up some bundles, please? They are in event 2 and event 3. There is some overlap but we can navigate --

MR JUSTICE GOSS: Thank you very much.

MR ASTBURY: There are two manuscript amendments in the first bundle, I apologise. They are very minor and I don't think they'll cause any confusion. I think pages 68 and 75 from recollection.

MR JUSTICE GOSS: And you've already corrected?

MR ASTBURY: I have.

MR JUSTICE GOSS: So long as it's been done, that's fine. And you have seen them, Mr Myers?

MR MYERS: Yes, we're grateful, thank you, my Lord.

MR JUSTICE GOSS: Yes. Ten minutes, please.

(12.00 pm)

(A short break)

(12.10 pm)

(In the presence of the jury)

Witness statement of MS EKATERINA CLEGG (read)

MR ASTBURY: My Lord, I'm going to read some evidence next, please, all pertaining to event 2, before we move on to event 3. We are going to take a similar approach as we did with Dr Neame, and where the statement touches on subsequent events we'll return to the statement rather than read it now.

The first statement is Ekaterina Clegg, who has signed a statement dated 7 September 2018, which says as follows:

"I currently work in the accident and emergency department of Arrowe Park Hospital. I have been asked about my recollections and knowledge of a baby called [Baby I], who required resuscitation in the early hours of 13 October 2015 at the Countess of Chester Hospital.

"In 2015 I was training to become a GP. My training included rotating between different departments for a period of 4 months at a time. Between early August and early December 2015, I worked within the paediatric department at the Countess of Chester Hospital. All of my other training was completed at Arrowe Park Hospital.

"On 13 October 2015, I assisted with the resuscitation of [Baby I] following her collapse. I do not recall in any detail what my involvement was but I have seen my name mentioned in the nurse's notes, which refer to me being shouted to assist. My involvement was limited as I did not have the training or experience for treating a baby in intensive care. I only remember using a bag to assist with breaths as a registrar did compressions.

"I can't assist with anything further, I'm afraid. I don't remember which nurses were present during the resuscitation or which room [Baby I] was in at the time. I can't remember the names of doctors or nurses who worked on the unit at the time."

That concludes her statement.

Witness statement of MS LAURA EAGLES (read)

MR ASTBURY: Moving on, my Lord, to Laura Eagles, please, and a statement dated 24 October 2018. She describes herself as a senior neonatal nurse and says as follows:

"I have been spoken to about my recollections of and involvement with a baby called [Baby I] while she was on the neonatal unit at the Countess of Chester during 2015.

"I was asked about 12 October into 13 October 2015. I was on a night shift on that date. Prior to providing this statement, I have had the opportunity to review the nursing notes.

"From those notes and my own recollections, [Baby I] was in special care and was in a cot. She was on four-hourly feeds. She had been very sick off and on, but at that time she was having no interventions other than having her temperature monitored as she was well.

"She always had a big tummy and we always had to note how distended her abdomen was, whether it was bigger or smaller. That was her main concern. She was at that point still on cefotaxime. She had been treated for an infection 6 days prior. I wasn't looking after her on that night, it was Ashleigh Hudson. Caroline Oakley was in charge. I'm only noted in the notes as coming to assist but I didn't make any notes myself.

"Lucy Letby was on duty that night, as was Janet Cox, who is a nursery nurse. I have read what happened. I don't remember the exact chronological order of what happened, but I do remember [Baby I]'s collapse that night.

"I'm sure she was in nursery 2. She may have been further along, but I don't think so. She'd been found pale and with shallow breathing. I was called to assist and I seem to remember pulling the cot into the middle of the room so we had more access to her.

"Dr Clegg was the SHO, but I don't know if she was on the unit already and we just shouted her, or whether she was bleeped. We started Neopuffing her [Baby I] and putting her on a monitor because she wasn't on a monitor and started chest compressions as her heart rate was less than 60 beats per minute, so that was normal practice.

"The registrar was Dr Neame and he was bleeped and came back and took over the airway, which left the nurses free to get drugs and equipment out. I remember us resuscitating her and Dr Newby also being there, but I don't know at what point she was phoned or by whom.

"We moved [Baby I] into nursery 1 once we had stabilised her airway. You can't move babies until you are happy with their airway. Once we had stopped the compressions it was just a quick wheel a few metres round the corner through to nursery 1 to put her on the ventilator. So I do remember most of that not just from reading it.

"I think the notes say that Dr Neame took the airway control off Lucy. I am not sure if I was doing chest compressions, but it's more likely the SHO was doing that and I was getting the resus trolley and getting the drugs out. The resus trolley is kept on nursery 1. You rip the tag off it to open it and take the drugs out.

"I have been told that Ashleigh Hudson recalls going into nursery 1 to assist me with a cannula that night, which is why she was away from [Baby I]. I can't recall that, although it wouldn't be unusual for me to ask for assistance doing that. I have been told it was for a septic screen, but I don't have a personal recollection of that."

My Lord, that concludes what she says about that particular event.

Witness statement of CAROLINE OAKLEY (read)

MR ASTBURY: If I can move on, please, my Lord, to Caroline Oakley at page 67 of the bundle.

As the jury will recall, she's one of the nurses from whom we've heard:

"I have been asked about my involvement with and recollection of the collapses of a baby called [Baby I], who died at the Countess of Chester Hospital on 23 October 2015.

"I had the opportunity to review the relevant notes relating to [Baby I]. The first date I was asked about was 13 October 2015. I was on nights that day. I have to be honest and say I have a minimal recollection of events that night.

"I was in charge and was the shift leader, so was coordinating the unit as a whole. I have checked the Badger computer system and could see we were busy that night as we had an intensive care baby in, who would have been in nursery 1, but that wasn't [Baby I]. From records of that night I can see I was on duty with Lucy Letby, Janet Cox, Ashleigh Hudson and Laura Eagles. Ashleigh was looking after [Baby I] that night. I have no recollection of being asked at any point during that shift to keep an eye on [Baby I] while Ashleigh went and did something else.

"I had the opportunity to also review notes made by Lucy Letby, made on 13 October 2015, after she took over [Baby I]'s care at 03.45 hours from Ashleigh. Having read those notes, I have to say I still don't have any recollection of that night. If I was in charge that night, ideally I wouldn't have looked after babies. Having looked at how busy it was around that time, with there being only five members of staff on that night, I probably did have patients, I would think.

"I do remember an episode, though, where we had problems with the Bloodhound, the locked blood fridge. I couldn't for sure say it was that night, but I do recall we had to use the emergency access button in the end. It probably only gets used once a year. I have been made aware that Ashley makes reference to an issue with the Bloodhound on the night of 13th October but my recollection of that night is still minimal."

That, my Lord, concludes what Nurse Oakley says about 13 October.

Witness statement of DR DAVID HARKNESS (read)

MR ASTBURY: I turn finally at this stage to page 70 of my Lord's bundle and the statement from Dr David Harkness:

"I have been asked about my recollections of [this is dated 17 October 2018] and involvement with a baby called [Baby I] who was in the neonatal unit at the Countess of Chester in 2015.

"I have had the opportunity to read the clinical notes for [Baby I] prior to providing this statement. Before reading the notes and talking to DC Birch, my recollections of [Baby I] were limited but I now do recall more about her, so the statement is based on my clinical notes but also some personal memories of her."

My Lord, it gives details of various incidents over a period of time, which I'm not invited to read. If we can go, please, to page 72. He says this:

"My next entry was on 12 October at 11.15 hours in the morning. At this point we were just finishing off the antibiotics and we'd given her a blood transfusion. Between this date and my previous entry (inaudible: distorted) which was not uncommon. They [meaning babies] will slowly get anaemic over time and will require blood transfusions and I have written 'anaemia of prematurity'. We were now just monitoring her bloods as her blood count was quite low. She was feeding well and handling well and pink with a capillary refill less than 2, heart sounds were fine, tummy was soft, and she had bowel sounds.

"Her CRP had gone from 71 to 21 and now down to 8, so that was really good. There were no concerns at that point.

"I wasn't on duty that night, but I am aware that at 03.36 on 13 October, [Baby I] was found by a nurse to be pale, lifeless and gasping for air. These things can happen but there was no indication that there was anything apart from her slightly large abdomen which had been present a lot of the time, but again, not enough to concern us and with the bloods side issue she was already on antibiotics, so there was nothing prior to that to suggest that anything was going to happen.

"The next entry I made on the notes was later in the day, on 13 October at 16.00 hours. I had gone to review her at that point in time because of how poorly she'd been earlier. I wrote that her blood gases and her ventilation were all acceptable. Her blood pressure had been dropping throughout the day. She'd been put on dopamine, which had improved it. Bowel sounds were there. We'd sent X-rays over to the Alder Hey team to review and then I had discussed it further with them, asking them to let me know their thoughts.

"I had also inserted a long line at that time into her right thigh. I do remember that she was quite a tricky one when it

came to lines and the thigh was quite an unusual place to put one. You tend to put them in the ankles.

"At that stage we were waiting to hear back from the surgeons to find out what they thought, but otherwise I would describe her as sick but stable and still on the ventilator.

"With regards to her earlier collapse, we were thinking along the lines of NEC. In that time her abdomen had got larger and firmer, so that was our running thought. She had never got as far as surgery and I think her parents were quite upset at the fact she had never been seen by the surgeons and not a lot was happening, but to be honest there was never anything on the X-rays or that had been massively convincing that she required surgery. There was nothing definitive in relation to NEC, but it was grumbling on."

My Lord, Dr Harkness then goes on to the evening of the 13th into the 14th, which we'll return to.

MR JUSTICE GOSS: Yes.

MR ASTBURY: My Lord, that concludes the reading and at this stage the evidence in respect of event 2.

MR JUSTICE GOSS: Right. Thank you.

MR JOHNSON: My Lord, we're going to move to event 3 now for [Baby I]. This event happened at the end of the next night shift, so the 13th into 14 October. Can I call Claire Hocknell, please.

MRS CLAIRE HOCKNELL (recalled)

Examination-in-chief by MR JOHNSON

MR JOHNSON: If anyone wants the time, it's about 7 am on the 14th.

Welcome back. Would you, for the sake of the record, identify yourself, please?

HOCKNELL: Claire Hocknell.

JOHNSON: Thank you. Can we start with the sequence of events for the third incident concerning [Baby I]. Does it commence with a series of messages between Ashleigh Hudson and Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Are the first four tiles, so tiles 1 to 4, the same as tiles 208 to 211 of the previous sequence?

HOCKNELL: They're replicated from the previous sequence, yes.

JOHNSON: And just to jog our memories, they concern Ashleigh Hudson picking up her pass or swipe card from Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Thank you. So moving straight to tile 5 then, given that we've had that evidence already, do you then insert one of those pink tiles, making the point that what follows is a detailed account of [Baby I]'s treatment from 19.30 hours on the 13th onwards?

HOCKNELL: Yes.

JOHNSON: The detail that's gone before that time is in the preceding sequence?

HOCKNELL: That's correct, yes.

JOHNSON: Thank you. Can we move then to tile 6, which is the shift handover from the day shift, following [Baby I]'s second collapse, to this night shift on which the third collapse was to happen. Can we start with the staff behind that tile, please?

Does that show Doctors [Dr B] and Saladi as the consultants?

HOCKNELL: Yes.

JOHNSON: The night registrar, Dr Neame?

HOCKNELL: Yes.

JOHNSON: The SHO, Ekaterina Clegg?

HOCKNELL: Yes.

JOHNSON: The shift leader was Caroline Oakley, as she had been the previous night?

HOCKNELL: That's correct.

JOHNSON: Lucy Letby was [Baby I]'s designated nurse --

HOCKNELL: Yes.

JOHNSON: -- as she had become the previous night after the collapse?

HOCKNELL: Yes.

JOHNSON: Laura Eagles was also working that night, as she had been the previous night?

HOCKNELL: Yes.

JOHNSON: The change in personnel was that Joanne Williams was on duty rather than Ashleigh Hudson?

HOCKNELL: Yes.

JOHNSON: And the nursery nurse was still Janet Cox?

HOCKNELL: Yes, that's correct.

JOHNSON: Moving on to number 7, please. This gives us the population location. We'll concentrate on nursery 1, if we may. Do we see there, there were three children, including [Baby I]?

HOCKNELL: Yes.

JOHNSON: [Baby I] was Lucy Letby's designated charge?

HOCKNELL: Yes.

JOHNSON: The other two children in nursery 1 were being looked after by Joanne Williams?

HOCKNELL: That's correct.

JOHNSON: There was a child who appears to have been alone in nursery 4 being looked after by Janet Cox?

HOCKNELL: Yes.

JOHNSON: Two children in nursery 2, including [Baby G], being looked after by Laura Eagles?

HOCKNELL: Yes.

JOHNSON: And there were several other children whose locations cannot be determined from the records?

HOCKNELL: That's correct.

JOHNSON: Two of them were being looked after by Caroline Oakley?

HOCKNELL: Yes.

JOHNSON: One of them was being looked after by Laura Eagles, who was looking after the two children who we know were in nursery 2?

HOCKNELL: Yes.

JOHNSON: And the other three were also being looked after by Janet Cox?

HOCKNELL: Yes.

JOHNSON: So tile 8, please. Is this a retrospective note made by Lucy Letby? The note itself was made at 21.49, referring simply to the fact that she had taken over [Baby I] from 19.45?

HOCKNELL: Yes.

JOHNSON: Tile 9, please. Is that a note made at the end of the previous day shift by Belinda Simcock, referring to a capillary blood gas result?

HOCKNELL: Yes.

JOHNSON: At tiles 10, 11 and 12, is that the standard three at 8 o'clock?

HOCKNELL: Yes.

JOHNSON: All recorded by Lucy Letby?

HOCKNELL: Yes, that's correct.

JOHNSON: At tile 13, is there an outgoing text message sent to Ashleigh Hudson by Lucy Letby?

HOCKNELL: Yes.

JOHNSON: The time of that was 20.30.43. Can you tell us what it said, please?

HOCKNELL: "I've got [Baby I]. On inotropes and gone up with ventilation throughout the day but stable when not handled. They think it's her abdo as some changes on X-ray but Alder Hey Children's Hospital happy for us to keep her for now."

JOHNSON: Are there then three prescriptions for morphine sulphate, metronidazole and sodium chloride?

HOCKNELL: Yes.

JOHNSON: That's tiles 14 to 16. Did Ashleigh Hudson reply to that previous message at 20.45.27?

HOCKNELL: Yes.

JOHNSON: Can you tell us what she said?

HOCKNELL: She replies:

"Thanks for letting me know, Lucy. How are parents?"

JOHNSON: Are the next three tiles the update made on the computer concerning the three prescriptions?

HOCKNELL: Yes.

JOHNSON: Do we then have the standard three at 9 am, tiles 21 to 23?

HOCKNELL: Yes, that's correct.

JOHNSON: At 24 onwards, does the text messaging resume, first with a message from Lucy Letby to Ashleigh Hudson at 21.28?

HOCKNELL: Yes:

"Asking lots of questions but ok."

JOHNSON: Then did Lucy Letby almost immediately send a further message to [Nurse A]?

HOCKNELL: Yes:

"You are in charge tomorrow as they've moved [Nurse D] to the night. 2 Yvonnes are your other 6s doing an early/late."

JOHNSON: Did [Nurse A] respond about 8 minutes later?

HOCKNELL: Yes:

"Great!!!! That's what you get for doing someone a favour. I wasn't even meant to be in tomorrow."

JOHNSON: Did she then follow that?

HOCKNELL: Yes:

"Yippee. Grand round with [Dr B] and Dave. It'll be like stopping children squabble."

JOHNSON: And then a further message.

HOCKNELL: "Who have you got? How's [Baby I]?"

JOHNSON: Did she then send a further one saying:

"Who else in tomorrow"?

HOCKNELL: Yes.

JOHNSON: Then there's a series of responses to those messages from Lucy Letby, all sent within about a minute?

HOCKNELL: Yes:

"Lol, thought you'd be pleased!

"I've got [Baby I]. Not great on. On inotropes, 70% O2. Thinks it's abdo but Alder Hey don't want her at the mo.

"Shelley and Kate Bram."

JOHNSON: That last one may be a response to "Who else in tomorrow?"

HOCKNELL: Yes.

JOHNSON: [Nurse A] then says:

"I was wondering if she has some sort of malrotation that partially twists but not all the time."

HOCKNELL: Yes.

JOHNSON: And did Lucy Letby respond?

HOCKNELL: "Yeah, that's what they are thinking."

JOHNSON: Yes?

HOCKNELL: Then there's a further reply:

"AM hopefully going out tomorrow."

JOHNSON: That's not morning, that's a child's initials?

HOCKNELL: Yes, that's correct.

JOHNSON: Then:

"Three pending."

[Nurse A] then respond:

"Would make sense. Def something wrong. Where's AM going? Neuro at Alder Hey?"

Then:

"Keep those bloody doors locked. I have plans after work and Thursday [laugh out loud]."

Do we then have a nursing note made by Lucy Letby, and is this part of a retrospective note?

HOCKNELL: This is a retrospective note.

JOHNSON: Could you talk us --

HOCKNELL: An update on the computer.

JOHNSON: Thank you.

HOCKNELL: "Emergency equipment checked. Fluids calculated. [Baby I] nursed in an incubator. Ventilated with size 3 ET tube, 8 centimetres at lips. Clear bilateral air entry and chest movement observed. Ventilator settings. SIMV 23/6. Rate 60 beats per minute. Inspiratory time, 0.4. Requiring 60% oxygen to maintain saturations. Other observations within normal range. Minimal spontaneous breaths made by [Baby I] at present. IV fluid 150ml/kg/day. 10% glucose via peripheral line. 20 micrograms/kg/hour morphine and 10 micrograms/kg/minute dobutamine via long line. VIP score zero. Additional peripheral line patent for antibiotics. Nil by mouth. NG tube on free drainage. Nil aspirate obtained. Abdomen appears full but soft. Some bruising/discolouration evident on sternum and right side of chest [query] from chest compressions. [Baby I] pale pink in colour. Capillary refill 2 seconds. Mean blood pressure maintained. [Baby I] appears comfortable. Dislikes handling. Minimal handling observed. Parents offering containment holding. Stiff movements observed. Cares not attended to at present. For blood gas at 23.00. Antibiotics given as prescribed."

JOHNSON: At tile 41, is that a record of a communication or contact that Lucy Letby had with [Baby I]'s parents saying that they are present, they've been updated by herself and Dr Jayaram, aware that [Baby I] is not for transfer at present, and that her X-rays have been discussed with Alder Hey team, questions were answered and reassurance given?

HOCKNELL: Yes.

JOHNSON: Thank you. Was there then a text in from [Nurse A] or a WhatsApp saying:

"What's pending?"

HOCKNELL: Yes.

JOHNSON: Is that followed at tiles 43 to 45 by the standard three?

HOCKNELL: Yes.

JOHNSON: Is there then a medical note made by Dr Neame who will be called to give evidence about that entry?

HOCKNELL: Yes.

JOHNSON: At tiles 47 to 49, are they messages from Lucy Letby to [Nurse A]?

HOCKNELL: Yes:

"PICU for resp assessment.

"A 29 and two 31-week APH."

JOHNSON: Arrowe Park Hospital?

HOCKNELL: I think so, yes:

"Seeing M?"

JOHNSON: Yes. Do we then at 23.00 hours, between tiles 50 and 52, have the standard three --

HOCKNELL: Yes.

JOHNSON: -- as we do at midnight, at tiles 53 to 55?

HOCKNELL: That's correct.

JOHNSON: And at 1 o'clock, tiles 57 to 59?

HOCKNELL: Yes.

JOHNSON: Interspersed with a blood gas records at 00.53?

HOCKNELL: Yes.

JOHNSON: At 60, is there a further nursing note made by Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Is this timed by her as relating to events at 01.00 hours?

HOCKNELL: Yes, and written -- sorry.

JOHNSON: Not at all. Maybe you took the time from the time of the blood gas as well. But as you say, it's made retrospectively at the end of the shift. Could you tell us what it says, please?

HOCKNELL: "Good blood gas at 01.00. No changes to ventilation made. Oxygen 48 to 60%. Temperature elevated, incubator reduced and within normal range along with other observations. Mean BP maintained on 10 micrograms/kg/minute dobutamine. Minimal ET and oral secretions obtained. Urine output 3.8ml/kg/hour. Bowels opened at 07.00: yellow seedy stool. IV fluids as previously. Antibiotics given as prescribed. [Baby I] tolerating handling better. Tone appears improved. Remains pale. Abdomen distended but soft. Nil obtained from NG tube."

JOHNSON: Then at 2 am, tiles 61 to 63, do we have the standard three?

HOCKNELL: Yes.

JOHNSON: The same at 3 and 4 am between tiles 64 and 69?

HOCKNELL: Yes.

JOHNSON: Then at tile 70, was there what we are terming event number 3 for [Baby I]?

HOCKNELL: Yes.

JOHNSON: Is that followed by three further tiles?

HOCKNELL: Yes. There's a number of entries at 05.00.

JOHNSON: I say it's event number 3, it's not event number 3 because that happened at the end of the shift. But at tiles 71 to 73, are there the standard three at 5 am?

HOCKNELL: Yes.

JOHNSON: At 74, is there a nursing note, which relates back to tile 70?

HOCKNELL: Yes.

JOHNSON: So that was my mistake. Did Lucy Letby write this at 5 am:

"Abdomen noted to be more distended and firmer in appearance with area of discolouration spreading on right side. Veins more prominent. Oxygen requirement began to increase. Colour became pale"?

HOCKNELL: Yes.

JOHNSON: Just to make it clear, there are no medical records relating to any observation at this time, are there?

HOCKNELL: No.

JOHNSON: Was there a prescription for metronidazole, which was written or administered at 5.05, tile 75?

HOCKNELL: Yes.

JOHNSON: At 76, at 05.30, did Lucy Letby write:

"Abdo distended ++"?

HOCKNELL: That's correct.

JOHNSON: If we can just see that, please.

HOCKNELL: It's right down at the bottom in the major events column or row, I should say.

JOHNSON: Where is that, please, just to help us?

HOCKNELL: Can I just grab this? There (indicating).

JOHNSON: Yes. So it's:

"Metronidazole, 05.30. Abdo distended ++"?

HOCKNELL: Yes.

JOHNSON: Okay. If we move on to the next tile, please. This is tile 77. Is this a message in from [Nurse A]?

HOCKNELL: Yes:

"Hope the nights been ok. No. Going to Ali's for night as she's off tomorrow. Planned it last week. We said last week our next wine session needs to include you too!! See you in a bit."

JOHNSON: At 78, the time being 05.50, is there a neonatal variable dose infusion prescription and administration chart signed by Lucy Letby together with Dr Neame and Laura Eagles --

HOCKNELL: Yes.

JOHNSON: -- concerning the administration of morphine sulphate?

HOCKNELL: Yes.

JOHNSON: At 79, at about the same time, do we have Dr Neame's medical notes --

HOCKNELL: Yes.

JOHNSON: -- clinical notes? At 80 and 81, do we have the prescription for that morphine together with sodium chloride?

HOCKNELL: Yes.

JOHNSON: And then at 82, do we have the NICU observation chart and intensive care environmental checks at 6 am?

HOCKNELL: Yes.

JOHNSON: Together with, at 83, a record of fluids that were being given and other data taken from [Baby I]?

HOCKNELL: Yes, it's the usual three.

JOHNSON: Thank you. At 85, is there a radiologist's report for an X-ray that was taken at 06.05?

HOCKNELL: Yes.

JOHNSON: At 86 through to 88, was the computer updated with the metronidazole, sodium chloride and morphine sulphate prescriptions?

HOCKNELL: Yes.

JOHNSON: Is there a blood gas record at 89 --

HOCKNELL: Yes.

JOHNSON: -- completed by Lucy Letby at 06.18?

HOCKNELL: Yes, that's correct.

JOHNSON: At 90, is there a further clinical note made by Dr Neame?

HOCKNELL: Yes.

JOHNSON: Followed by prescriptions for teicoplanin and sodium chloride --

HOCKNELL: Yes.

JOHNSON: -- at 90 and 91? Followed further by Dr Neame at 93 --

HOCKNELL: Yes.

JOHNSON: -- concerned with [Baby I]'s situation --

HOCKNELL: Yes.

JOHNSON: -- and discussions he had had?

HOCKNELL: Yes.

JOHNSON: At 94 and 95, was the computer updated with the teicoplanin and sodium chloride?

HOCKNELL: Yes.

JOHNSON: And at 96, is there a further nursing note made by Lucy Letby, made at 08.43, but relating to Dr Neame's interaction with [Baby I]?

HOCKNELL: Yes.

JOHNSON: Could you tell us what that says, please?

HOCKNELL: "Reviewed by Registrar Neame. Ventilation increased to CMV, rate 70, 30/6. Gradually requiring 100% oxygen. Blood gases poor as charted. Clear air entry, slightly reduced on left, chest movement reduced. Nil obtained from NG tube throughout. Continued to decline."

JOHNSON: The next two tiles, 97 and 98, are messages sent by Lucy Letby to [Nurse A]. The previous incoming message from [Nurse A] had been at 05.48, which was tile 77, saying:

"Hope the night's been okay. No, going to Ali's for the night. Planned it last week. We said last week our next wine session needs to include you too!! See you in a bit."

These two appear to be in response to that and how do they read, please?

HOCKNELL: "[Baby I] not good at all."

JOHNSON: And then?

HOCKNELL: "Oh yes, definitely!"

JOHNSON: We then have the standard three at 7 am --

HOCKNELL: Yes.

JOHNSON: -- which correspond to what's recorded as a significant collapse for [Baby I]?

HOCKNELL: Yes.

JOHNSON: The collapse is 102. At 103, is there a further prescription for yet another antibiotic?

HOCKNELL: Yes. I think it was stopped halfway through, though, due to the resuscitation.

JOHNSON: Yes. Then at 104, Dr Neame's further clinical notes relating to [Baby I]'s desaturation and bradycardia --

HOCKNELL: Yes.

JOHNSON: -- and the replacement of an ET tube?

Did Lucy Letby make a note about this at 105, also relating to the same time of 07.00 hours?

HOCKNELL: Yes.

JOHNSON: Could you just tell us what she said, please?

HOCKNELL: "Re-intubated at approx 07.00. Initially responded well. Consultant Jayaram aware and on way to unit. Abdomen firm and distended. Overall colour pale."

JOHNSON: Do you then put into the sequence Dr Neame's notes --

HOCKNELL: Yes.

JOHNSON: -- at 106, which he will deal with?

At 107, a blood gas record?

HOCKNELL: Yes.

JOHNSON: 108 and 109, a continuation of Dr Neame's records concerning the attendance of Dr Jayaram?

HOCKNELL: Yes.

JOHNSON: Then at 110, is that a record of the handover to the day shift on which [Baby I]'s designated nurse was Shelley Tomlins?

HOCKNELL: That's correct.

JOHNSON: 111, is that Lucy Letby's -- sorry, Shelley Tomlins' notes concerning what happened at the beginning of the shift?

HOCKNELL: Yes.

JOHNSON: Just looking at that, does it say that she took over care of [Baby I] for the long day, she'd arrived on the neonatal unit minutes before [Baby I] had arrested, [Baby I] had just been re-tubed when a desaturation and brady concerned, and full resuscitation was required to bring her back?

HOCKNELL: Yes.

JOHNSON: On the respective charts, did Shelley Tomlins make a note of that as well at 112?

HOCKNELL: Yes.

JOHNSON: Then at 113 and 114 do we have some further prescriptions --

HOCKNELL: Yes.

JOHNSON: -- for which Shelley Tomlins and Lucy Letby signed as having administered?

HOCKNELL: Yes.

JOHNSON: At 115, are there more notes from Dr Neame concerning what was going on at that time?

HOCKNELL: That's correct.

JOHNSON: At 116, a prescription for adrenaline --

HOCKNELL: Yes.

JOHNSON: -- at 07.48?

Dr Neame's medical notes relating to that and to sodium bicarbonate at 117 and 118?

HOCKNELL: Yes.

JOHNSON: A further prescription for adrenaline, so a second prescription for adrenaline, at tile 119, at 07.53?

HOCKNELL: That's correct.

JOHNSON: More notes made by Dr Neame concerning its administration and other treatment at 120 and 121?

HOCKNELL: Yes.

JOHNSON: Followed by Dr Jayaram's note at tile 122 concerning his arrival at 07.55?

HOCKNELL: Yes.

JOHNSON: The third prescription for adrenaline, tile 123, which is at 07.56 hours?

HOCKNELL: Yes.

JOHNSON: That was noted up in the medical records by Dr Neame at tile 124?

HOCKNELL: That's correct.

JOHNSON: As was at the next tile, 125, the fact that a spontaneous heart rate was established with [Baby I] at 07.58?

HOCKNELL: That's correct.

JOHNSON: And 07.59, tile 126, Dr Neame handed over the care of [Baby I] to the consultant Dr Jayaram?

HOCKNELL: Yes.

JOHNSON: At 127, do we have Shelley Tomlins' notes?

HOCKNELL: The observation chart, yes.

JOHNSON: Sorry, the observation chart, yes. Followed by the intensive care chart, so two of the standard three, if you like?

HOCKNELL: Yes.

JOHNSON: Followed in due course at 08.03, tile 129, by Dr Wright's report of the radiograph that was taken to establish where the ET and NG tubes were?

HOCKNELL: Yes.

JOHNSON: At 130, do we have a further note made by Lucy Letby concerning the X-ray on which Dr Wright reported on the previous tile?

HOCKNELL: Yes.

JOHNSON: If we can go behind that, please, you can tell us what she noted.

HOCKNELL: "X-rays carried out. Resuscitation commenced as documented in medical notes. Night and day staff members present. Drugs as documented given via peripheral line (ciprofloxacin stopped to allow access, therefore only half dose completed). Morphine increased to 40 micrograms/kg/hour and dobutamine increased to 20 micrograms/kg/min. [Baby I] placed back on to ventilator."

JOHNSON: Is there then a blood pathology sample received at tile 131?

HOCKNELL: Yes.

JOHNSON: You've made a note at tile 132 of the fact that Dr Neame made his notes retrospectively at 08.10?

HOCKNELL: That's correct.

JOHNSON: 133, further blood results?

HOCKNELL: Yes.

JOHNSON: At 134, do we see the beginning of Dr Jayaram's notes --

HOCKNELL: Yes.

JOHNSON: -- which relate to [Baby I]'s deterioration from 05.00 hours that morning?

HOCKNELL: Yes.

JOHNSON: He will deal with those, as he will with 135, which concerns a desaturation at 08.25 that morning.

HOCKNELL: Yes.

JOHNSON: Do we then have one of the standard three at 136 --

HOCKNELL: Yes.

JOHNSON: -- concerning the ventilator settings?

HOCKNELL: Yes.

JOHNSON: At 137 and 138, contemporaneous prescriptions at 08.30 for pancuronium and sodium chloride?

HOCKNELL: That's correct.

JOHNSON: A nursing note made at 139 at 08.30 concerning the administration of that pancuronium?

HOCKNELL: Yes.

JOHNSON: Then at 140, you note that it was at 08.43 that Lucy Letby had made her retrospective notes?

HOCKNELL: Yes.

JOHNSON: At 141, there is a note of Lucy Letby's communications with [Baby I]'s parents?

HOCKNELL: Yes.

JOHNSON: If we look at them, do they read that:

"Parents have been resident on the unit overnight. Mum updated by S/N Williams at approx 04.00 hours. Parents visited following increase in ventilation and were updated. They were asked to attend during resuscitation and held [Baby I]'s hand. Have been fully updated throughout by nursing and medical staff. Anxious. Support given. Aware that [Baby I] may be transferred if stable and appropriate."

HOCKNELL: Yes.

JOHNSON: So far as the pancuronium and sodium chloride were concerned, was the update made in that respect at tiles 142 and 143 at 08.48 that morning?

HOCKNELL: Yes.

JOHNSON: We then have the standard three at 144 to 146?

HOCKNELL: Yes.

JOHNSON: Followed at 147 by a retrospective nursing note made by Shelley Tomlins?

HOCKNELL: Yes.

JOHNSON: Could you just deal with that, please?

HOCKNELL: "[Baby I] stable on ventilator with size 3.0 ETT in situ. 7.5 centimetres at lips (pulled back by 0.5 centimetres by Dr Jayaram). Pressures are 28/5 and rate currently at 40, with increased inspiratory time of 0.5 centimetres. Fluid allowance of 150ml/kg/day. 10% dextrose/morphine and dobutamine currently infusing. Long line in situ in right leg with dobutamine and morphine infusing and two peripheral cannulae in situ with 10% dextrose infusing. Sites are currently satisfactory (previous extravasation burn evident on right arm from resus 13/10/15). Has passed urine and had small bowel movement. Abdomen very large, pale and veiny, with umbilical hernia evident. Area of discolouration noted on right side of abdomen."

JOHNSON: Thank you. Is that followed at 148 by a further blood gas record completed by Shelley Tomlins --

HOCKNELL: Yes.

JOHNSON: -- together with her notes at 149 of having [Baby I]'s parents having been updated by Dr Neame?

HOCKNELL: Yes, and being present on the unit.

JOHNSON: Yes. At 150 is there a message sent at 09.32 by Lucy Letby to Jennifer Jones-Key?

HOCKNELL: Yes:

"Sorry I didn't come and speak to you."

JOHNSON: Is that followed at 153 to 155 at 10 am by the standard three?

HOCKNELL: Yes.

JOHNSON: 154 and 155, do they concern the administration of midazolam to [Baby I]?

HOCKNELL: Yes.

JOHNSON: At 156, was there a further message, this time from Lucy Letby to Ashleigh Hudson?

HOCKNELL: Yes:

"Just to let you know that [Baby I] has deteriorated a lot this morning. Had resus again. Will probably be transferred. Hope you slept last night and you find debrief useful."

JOHNSON: Did Ashleigh Hudson respond to that about 5 minutes later saying:

"Oh gosh! Thank you for keeping me updated, Lucy. I did sleep eventually, and hopefully!"

HOCKNELL: Yes.

JOHNSON: At 158 is there a record of the midazolam having started at 10.25?

HOCKNELL: Yes.

JOHNSON: At 159 to 161, we've got the standard three, completed by Shelley Tomlins?

HOCKNELL: Yes.

JOHNSON: At 162, Dr Harkness' clinical notes concerning the ventilation of [Baby I]?

HOCKNELL: Yes.

JOHNSON: At 163, the end of the dextrose infusion, which [Baby I] was receiving at 11 am?

HOCKNELL: Yes.

JOHNSON: Followed by the hanging or a prescription for total parenteral nutrition --

HOCKNELL: Yes.

JOHNSON: -- at 164? 165, a blood gas record?

HOCKNELL: That's correct.

JOHNSON: At 166 through to 168, the standard three at noon?

HOCKNELL: That's correct.

JOHNSON: At 169, the consultant [Dr B] record concerning a discussion she had had with the surgical consultant at Alder Hey in Liverpool, Mr Hennessey?

HOCKNELL: That's correct.

JOHNSON: Some blood collected for pathology at tile 170?

HOCKNELL: Yes.

JOHNSON: At 171, at 12.20, a note of [Dr B]'s discussions with a Dr Kieran, who was due to call her back concerning the potential transfer of [Baby I] to the tertiary centre?

HOCKNELL: That's correct.

JOHNSON: At about the same time, 172 through to 174, prescriptions for morphine sulphate, metronidazole and sodium chloride?

HOCKNELL: That's correct.

JOHNSON: A blood gas record at 175 at 12.30.

HOCKNELL: Yes.

JOHNSON: A change of the dobutamine infusion at tile 176, the time being 12.45?

HOCKNELL: That's correct.

JOHNSON: Two of the standard three recorded at 177 and 178 at 13.00 hours?

HOCKNELL: Yes.

JOHNSON: And then at 13.10, 179, the observations charts so the third of the standard three in effect, but 10 minutes after the other two?

HOCKNELL: Yes.

MR JOHNSON: That may be a good point, my Lord.

MR JUSTICE GOSS: Yes, certainly. There's obviously some way to go in relation to this.

MR JOHNSON: There is.

MR JUSTICE GOSS: All right. Can you be ready, please, to continue at 2 o'clock? Thank you.

(In the absence of the jury)

MR JOHNSON: We have timetabled for this afternoon Dr Neame, who, as we have seen, as we've been going through, makes quite a few entries, and Dr Jayaram. We're keen, if at all possible, to finish Dr Jayaram because he has an obligation tomorrow, which he will probably have to forego if we don't. But if possible, we would like to accommodate him. We just thought we'd apprise your Lordship of that fact.

MR JUSTICE GOSS: I'll do what I can. I'm happy to curtail the mid-afternoon break just to a few minutes rather than 10. As far as I'm concerned, if we have to sit a little later than 4.30, I don't have a problem, but I won't canvass it yet. We'll wait and see.

I believe that the jury aren't reliant certainly on trains because otherwise --

MR JOHNSON: If they are, they probably can't get one.

MR JUSTICE GOSS: Well, they wouldn't get one today, or I think very unlikely to get one. So let's wait and see. Anyway, we'll have a prompt start at 2 o'clock then, please. Thank you very much.

(1.02 pm)

(The short adjournment)

(2.00 pm)

(In the presence of the jury)

MR JOHNSON: Mrs Hocknell, just going back to the sequence, please, I think we'd got to tile 180, which is a blood gas record at 13.22 on 14 October; is that right?

HOCKNELL: That's right, yes.

JOHNSON: Do we then have the standard three between 181 and 183 at 14.00 hours?

HOCKNELL: Yes.

JOHNSON: And an hour later, between 184 and 186?

HOCKNELL: Yes.

JOHNSON: And yet a further hour later, 187 to 189?

HOCKNELL: That's correct.

JOHNSON: Followed at 190 by Dr Harkness' notes?

HOCKNELL: Yes.

JOHNSON: And at 191, a further blood gas record at 16.01 hours?

HOCKNELL: Yes.

JOHNSON: Together with a blood test collected at 192 at 16.17?

HOCKNELL: Yes.

JOHNSON: Then a crossed-out entry on the dose infusion prescription and administration chart at 193?

HOCKNELL: Yes.

JOHNSON: Then at 194, did Lucy Letby send a message to [Nurse A]?

HOCKNELL: Yes:

"I'm awake. How are things?"

JOHNSON: Did [Nurse A] respond 5 minutes later?

HOCKNELL: Yes:

"[Baby I] a bit better. A do reducing. [I think that's 'abdo'] dobutamine reducing. KCI inf in progress but hopefully stop later. Needs a transfusion, but can't do til dobutamine/KCI down because of access so will be during night. Vent weaned. Surgeons feel a stricture caused by previous NEC, which is why happening intermittently. For 7/7 triple antibiotics. Not to be fed till had contrast studies."

JOHNSON: And do you think it may well be, KCl, potassium chloride, possibly?

HOCKNELL: Possibly, yes.

JOHNSON: Did [Nurse A] then send a further message saying A, which is one of the children, had gone?

HOCKNELL: Yes.

JOHNSON: Followed again by, "Let me know what you want to do at", tile 197?

HOCKNELL: Yes.

JOHNSON: Did Lucy Letby send a further two messages, please?

HOCKNELL: "Oh that's good. Is she staying?"

JOHNSON: And then?

HOCKNELL: "I'd like to keep her, please."

JOHNSON: Yes. This is a reference to [Baby I] --

HOCKNELL: Yes.

JOHNSON: -- on the face of it? And Lucy Letby asking [Nurse A] if, having had her the previous night, she could keep her for the forthcoming night shift?

HOCKNELL: Yes, [Nurse A] replies:

"Yes. Staying for now. Contrast when better. Ok re keeping. I'll give [Nurse D] CM."

JOHNSON: Then did Lucy Letby reply:

"Ok. Thank you."

HOCKNELL: Yes.

JOHNSON: Do we then have the standard three at 202 to 204?

HOCKNELL: Yes.

JOHNSON: Followed by a nursing note update made by Shelley Tomlins concerning communications she'd had with [Baby I]'s parents.

HOCKNELL: Yes.

JOHNSON: Just to put those text messages into context, can you tell us what the update was because it tells us what was going on in the unit at the time?

HOCKNELL: "Mum and dad updated throughout the day about [Baby I]'s progress and plan. Updated that the current management will be: to remain here at Chester for now as surgeons at Alder Hey do not want to investigate her further until she is more stable unless she worsens from a NEC point of view; to remain nil by mouth until contrast studies can take place at Alder Hey, with TPN; that we may need to manually remove air from her bowel if her tummy is to blow up again causing deterioration."

JOHNSON: Was there a further note made by Shelley Tomlins in the nursing notes at about the same time at tile 206?

HOCKNELL: Yes.

JOHNSON: And that just recorded the progress during the day and what had been done --

HOCKNELL: Yes.

JOHNSON: -- to help [Baby I]?

HOCKNELL: Yes.

JOHNSON: Did [Nurse A] then send a further message to Lucy Letby, having told her that she could keep [Baby I] the following shift?

HOCKNELL: Yes. She said:

"I've had to reallocate. Sorry."

JOHNSON: Did Lucy Letby respond:

"Ok. No problem."

HOCKNELL: Yes.

JOHNSON: Then at 6 pm, tiles 209 and 211, do we have two of the standard three?

HOCKNELL: 210, yes.

JOHNSON: I beg your pardon.

HOCKNELL: There's two out of the three there.

JOHNSON: Yes. Followed by Dr Ventress' clinical notes at the same time?

HOCKNELL: Yes.

JOHNSON: And also at 18.00 hours, tile 212, the infusion of dobutamine was stopped?

HOCKNELL: Yes.

JOHNSON: Just taking up the conversation, so at 17.49 [Nurse A] had said, "I've had to re-allocate sorry", and Lucy had replied, "Okay, no problem", 20-odd minutes later did Lucy Letby send a further message?

HOCKNELL: Yes:

"Has something happened?"

JOHNSON: And then at 18.15 was there an infusion of midazolam started?

HOCKNELL: Yes.

JOHNSON: Followed by some nursing notes at 215, made by [Nurse A]?

HOCKNELL: Yes.

JOHNSON: This concerned the drugs or other substances that were being given to [Baby I] and the means by which they were being given, whether through a peripheral line or whatever it was?

HOCKNELL: Yes.

JOHNSON: At 216, the observation chart filled in by Shelley Tomlins at 18.30?

HOCKNELL: Yes.

JOHNSON: And then, putting this back into the context of the request by Lucy Letby to have [Baby I] for another night shift, we have a further message from [Nurse A], sent about 20 minutes after the question from Lucy Letby, "Has something happened?", [Nurse A] responded?

HOCKNELL: "No. Was just asked to reallocate so no one has her for more than 1 night at a time."

JOHNSON: Did Lucy Letby respond:

"Fair enough."

HOCKNELL: Yes.

JOHNSON: [Nurse A] then?

HOCKNELL: "Or 1 shift, not just night."

JOHNSON: Then Lucy Letby:

"Yeah, that's understandable"?

HOCKNELL: Yes.

JOHNSON: At then at 19.00 hours do we have the standard three at 221 to 223?

HOCKNELL: Yes.

JOHNSON: Followed by a blood gas record at 224?

HOCKNELL: Yes.

JOHNSON: Followed by the start of a morphine sulphate infusion at 225 at 19.15 hours?

HOCKNELL: Yes.

JOHNSON: Dr Saladi's medical notes at 226?

HOCKNELL: Yes.

JOHNSON: They concerned a conversation that Dr Saladi had apparently had with a doctor at Liverpool Women's Hospital?

HOCKNELL: Yes.

JOHNSON: Following that, at 227, did Lucy Letby come back on to shift, but the designated nurse for the night shift was [Nurse D]?

HOCKNELL: Yes, that's correct.

JOHNSON: At 228, do we have [Nurse D]'s note concerning events from the beginning of the shift?

HOCKNELL: Yes.

JOHNSON: Followed by the standard three at 229 to 231?

HOCKNELL: Yes.

JOHNSON: Followed by a nursing note recording the fact, if we click on it, please, that at 20.00 hours:

"Air entry creaky, therefore suction given. Moderate amounts obtained from oropharynx and minimal from ET tube but air entry improved"?

HOCKNELL: Yes.

JOHNSON: Do we then have a series of updates made on the computer concerning various drugs that were being administered to [Baby I]?

HOCKNELL: Yes.

JOHNSON: They are 233 through to 237, and many of which, if not all of which, or most of which -- well, all of which I think concern [Baby I]'s collapse at the previous handover from the night shift to the day shift, in other words between about 7 and 8 o'clock on the morning of Wednesday, 14 October?

HOCKNELL: Yes.

JOHNSON: Those were entered on to the computer by Lucy Letby and Shelley Tomlins, who was co-signing in two events, I think, two occasions, for somebody else?

HOCKNELL: Yes.

JOHNSON: Whilst those updates were being made on the computer, did Kate Bissell, one of the other nurses on the unit, send a message to Lucy at tile 234?

HOCKNELL: Yes:

"Hi Lucy, hope you managed to get some sleep today. Hope you all have a better night tonight. Kate."

JOHNSON: Thank you. Then at 9 pm, do we have the standard three?

HOCKNELL: Yes.

JOHNSON: Followed at the same time, from tile 242 onwards, by a series of prescriptions for ciprofloxacin, sodium chloride, morphine sulphate and midazolam?

HOCKNELL: Yes.

JOHNSON: In between those, did Lucy Letby respond to Kate Bissell, "Thanks Kate", at tile 244?

HOCKNELL: Yes.

JOHNSON: At 247 was there a nursing note made by [Nurse D]?

HOCKNELL: Yes.

JOHNSON: And clicking on it, does it read:

"Desaturation to 80s and decreased air entry at 21.17 requiring bagging via Neopuff to improve. Capnograph positive. Air entry improved again. Dr Neame informed"?

HOCKNELL: Yes.

JOHNSON: A few minutes later, tile 248, do we have Dr Neame's clinical notes concerning his involvement at that time?

HOCKNELL: Yes.

JOHNSON: Thank you. At tile 249 did Lucy Letby, who of course was on duty at this stage, send a message to Jennifer Jones-Key at 21.41, asking:

"Everything okay"?

HOCKNELL: Yes.

JOHNSON: At 10 pm, tiles 250 to 252, do we have the standard three?

HOCKNELL: Yes.

JOHNSON: At 253 to 254, prescriptions for metronidazole and sodium chloride?

HOCKNELL: Yes.

JOHNSON: Then Jennifer Jones-Key's response to Lucy Letby at 255?

HOCKNELL: Yes:

"Yeah. Sorry been a mad day, then went to get wedding rings."

JOHNSON: Next tile?

HOCKNELL: "Hope you're okay."

JOHNSON: Did Lucy Letby respond about a quarter of an hour later?

HOCKNELL: "That's okay. Just checking nothing wrong as hadn't heard from you. Wow, that's exciting. Did you bring me the buckets?"

JOHNSON: 258.

HOCKNELL: "Sorry just busy. Yeah, had brought them this morning. [They're] in cardboard box in locker room."

JOHNSON: And two from Lucy Letby?

HOCKNELL: "Ah [great], thanks. Do you want the Oldham badge stuck onto card then card on bucket? Or do you want as much as bucket showing as possible?"

Then:

"Was wondering about using the wooden owls and adding them to bucket with people's name then date, etc, on the card with badge."

JOHNSON: 261, 22.58, is there a blood gas record recorded by [Nurse D]?

HOCKNELL: Yes.

JOHNSON: Together with the standard three between 262 and 264?

HOCKNELL: Yes.

JOHNSON: And then at 265, a nursing note made at 11 pm, 23.00 hours, by [Nurse D], reading:

"Breathing not synchronising with ventilator at around 23.00. Taking deep abdominal breaths. Reviewed by Dr Neame. CBG [presumably capillary blood gas] just before 23.00 good."

HOCKNELL: Yes.

JOHNSON: That coincides at 266 with Dr Neame's notes?

HOCKNELL: Yes.

JOHNSON: And there are two prescriptions shortly thereafter at 267 and 268, timed at 23.21. First for pancuronium, the second for sodium chloride?

HOCKNELL: Yes.

JOHNSON: Followed at the same time by a note made by [Nurse D] for having administered the pancuronium?

HOCKNELL: Yes.

JOHNSON: That's at tile 269. Then at 270, the observation chart recording [Baby I]'s vital signs?

HOCKNELL: Yes.

JOHNSON: 271, a TPN prescription was signed at 23.50?

HOCKNELL: Yes.

JOHNSON: 272. A retrospective nursing note made by [Nurse D]?

HOCKNELL: Yes.

JOHNSON: Could you tell us what that says, please?

HOCKNELL: "Air entry again creaky at midnight. ET suction given but desaturated to 64%. Further suction given. Air entry reduced. Registrar present on unit. Bagged up with Neopuff easily with pressures of 28. Ventilator pressures increased to 20/5. IV antibiotics given as prescribed."

JOHNSON: Did she then continue the note?

HOCKNELL: Yes.

JOHNSON: Which is untimed, but presumably you have timed by reference to other material?

HOCKNELL: Yes.

JOHNSON: Click on that, please. This is all at about midnight on Wednesday the 14th into Thursday, 15 October.

HOCKNELL: "[Baby I] for a blood transfusion. Blood arrived on unit and checked but cannula site then blanching with flush. Pancuronium not long given. Registrar contacted. Attended unit and successfully cannulated into left leg eventually. Documented in notes that blood transfusion can run over 3 hours as had already been out of fridge for almost 1 hour."

JOHNSON: Also at midnight are the fluid chart and the intensive care environmental checks chart?

HOCKNELL: Yes.

JOHNSON: The vital signs are recorded at tile 276 at 00.40?

HOCKNELL: Yes.

JOHNSON: Which corresponds with some red cells and some O negative blood being given to [Baby I] at that time --

HOCKNELL: Yes.

JOHNSON: -- at tile 277?

Also at that same time, 00.40, Dr Neame's record of having inserted a cannula into [Baby I]'s left foot?

HOCKNELL: Yes.

JOHNSON: And the blood that was about to be given to her?

HOCKNELL: Yes.

JOHNSON: At the same time did [Nurse D] make a note of starting that exercise, the blood --

HOCKNELL: Yes.

JOHNSON: -- at tile 279?

At tile 280, did she record the fact that the morphine infusion had been increased?

HOCKNELL: Yes.

JOHNSON: Then at 281, is the infusion prescription chart signed and timed at 00.48 for that morphine sulphate infusion?

HOCKNELL: Yes.

JOHNSON: 282, 00.55, were [Baby I]'s vital signs taken --

HOCKNELL: Yes.

JOHNSON: -- and recorded and 5 minutes later, 283 to 284, the other two of the standard three?

HOCKNELL: Yes.

JOHNSON: At 285 and 286 -- well, 285, first, [Baby I]'s vital signs recorded at 01.10?

HOCKNELL: Yes.

JOHNSON: And again 01.23, tile 286?

HOCKNELL: Yes.

JOHNSON: A blood gas record at tile 287 at 1.37?

HOCKNELL: Yes.

JOHNSON: At 288, [Nurse D]'s notes concerning a deterioration in [Baby I]'s blood gases?

HOCKNELL: Yes.

JOHNSON: Recording the fact that the ventilator rate and pressures were increased because [Baby I] wasn't synchronising with the machine?

HOCKNELL: That's correct.

JOHNSON: At 289, were [Baby I]'s vital signs recorded at 01.50?

HOCKNELL: Yes.

JOHNSON: At 2 am, the other two of the standard three were also recorded at tiles 290 to 291?

HOCKNELL: Yes.

JOHNSON: Then at 292, Dr Neame records an examination at 02.00 hours?

HOCKNELL: Yes.

JOHNSON: Which concerns primarily the use and readings on the ventilator?

HOCKNELL: Yes.

JOHNSON: 293 and 294, prescriptions for pancuronium and sodium chloride?

HOCKNELL: That's correct.

JOHNSON: Those are both at 02.03 that morning.

At 295, [Nurse D]'s note of Dr Neame's review?

HOCKNELL: Yes.

JOHNSON: 296, it says on the chart, "Resus plus re-intubated".

HOCKNELL: Yes.

JOHNSON: Then at 297, further notes made by [Nurse D] --

HOCKNELL: Yes.

JOHNSON: -- concerning changing [Baby I]'s nappy:

"Air entry via her ET tube. Creaky sounds from her chest as she was breathing."

And the fact that the ET tube had to be cleared because there was no colour change on the capnograph.

HOCKNELL: That's correct.

JOHNSON: And the ventilator wasn't recording -- and there was no air entry, essentially?

HOCKNELL: Yes.

JOHNSON: The reasons for that are set out at 298 and 299, which are first [Nurse D]'s notes of the ET tube having to be removed from [Baby I] and her having to be re-intubated by Dr Neame?

HOCKNELL: Yes.

JOHNSON: Dr Neame's notes are at 299; is that right?

HOCKNELL: Yes, that's correct.

JOHNSON: He records trying to -- well, successfully re-intubating [Baby I] but having problems in getting any reading from the capnograph?

HOCKNELL: Yes.

JOHNSON: And that necessitated a third intubation, so a re-re-intubation at about the same time?

HOCKNELL: Yes.

JOHNSON: And those facts are recorded first by [Nurse D] and subsequently by Dr Neame at tiles 300 and 301?

HOCKNELL: Yes.

JOHNSON: At 302, did [Nurse D] record a fourth intubation for [Baby I]?

HOCKNELL: Yes.

JOHNSON: And that fourth effort was recorded by Dr Neame at tile 303?

HOCKNELL: Yes.

JOHNSON: The problems in re-intubating [Baby I] had provoked Dr Saladi's arrival on the unit?

HOCKNELL: Yes.

JOHNSON: At 304, did [Nurse D] make a note of the fact that Dr Saladi had re-intubated [Baby I]?

HOCKNELL: Yes.

JOHNSON: At 305, at a time recorded at 03.17, is there an X-ray, which is reported on by Dr Wright, and primarily concerns the position of the ET tube and the NG tube together with the appearance of the lungs?

HOCKNELL: Yes.

JOHNSON: At 306, did [Nurse D] make a note of what could be seen on the X-ray?

HOCKNELL: Yes.

JOHNSON: At 307, at 03.30, do we have the standard three between tiles 307 and 309?

HOCKNELL: Yes.

JOHNSON: Followed by a blood gas record at 310?

HOCKNELL: Yes.

JOHNSON: Then Dr Saladi's retrospective notes, which he made, at 03.50?

HOCKNELL: Yes.

JOHNSON: Those notes concerned the re-intubation of [Baby I]?

HOCKNELL: Yes.

JOHNSON: Thank you. At 312 did the administration of the red blood cells end and that was at 04.00 hours?

HOCKNELL: Yes.

JOHNSON: Do we then have the standard three at 04.00 hours between 313 and 315?

HOCKNELL: That's correct.

JOHNSON: Followed by Dr Saladi's notes concerning a conversation he'd had with one of the doctors at Arrowe Park, which appears at tile 317?

HOCKNELL: Yes, and it was just that Dr Neame made his notes at 316, sorry.

JOHNSON: I beg your pardon, quite right. So the notes we've previously referred to were made at 4 o'clock by Dr Neame?

HOCKNELL: Yes.

JOHNSON: At 318, did [Nurse D] -- of course the designated nurse -- make a record of what had been going on with [Baby I]?

HOCKNELL: Yes, this is on the computer.

JOHNSON: On the computer, thank you. Then at 319 through to 321, do we have the standard three at 5 am?

HOCKNELL: Yes.

JOHNSON: Followed at 322, the time being 05.20, of the end of the morphine sulphate administration?

HOCKNELL: That's correct.

JOHNSON: And the start of a new one --

HOCKNELL: Yes.

JOHNSON: -- with a new syringe?

At 323, did Jennifer Jones-Key respond to the message sent by Lucy Letby?

HOCKNELL: Yes:

"Sorry had gone to bed. Whichever looks best I don't really mind. Trust you."

JOHNSON: Is that maybe a reference to the owls and the buckets and wedding and did Lucy Letby respond at 324?

HOCKNELL: Yes:

"Ok, cool."

JOHNSON: At 325, were the ventilator pressures recorded on the intensive care chart environmental checks form at 6 am?

HOCKNELL: Yes.

JOHNSON: And then at 6.25 and 6.26, which are tiles 326 and 327, do we have [Nurse D]'s notes of the settings on the ventilator, the fact that they were reduced, and the fact that Dr Saladi presumably had been discussing [Baby I]'s case with a consultant at Arrowe Park?

HOCKNELL: That's correct, yes.

JOHNSON: At 328, is there a further blood gas record?

HOCKNELL: Yes.

JOHNSON: Followed at 329 through to 331 by the standard three --

HOCKNELL: Yes.

JOHNSON: -- recorded at 06.35 am?

HOCKNELL: Yes.

JOHNSON: 332, a prescription for teicoplanin?

HOCKNELL: That's correct.

JOHNSON: Then at 333, 7 am, 07.00 hours, the fluids being administered to [Baby I] were recorded on the appropriate chart?

HOCKNELL: That's correct.

JOHNSON: Together with the environmental checks, so two of the standard three --

HOCKNELL: Yes.

JOHNSON: -- at 7 am?

HOCKNELL: That's correct.

JOHNSON: Further sodium chloride prescribed at tile 335?

HOCKNELL: Yes.

JOHNSON: Then the next event is tile 336, which is the nursing shift handover from the night shift to the day shift?

HOCKNELL: Yes.

JOHNSON: Is that followed immediately, at tiles 337 and 338, by [Nurse D]'s notes concerning the balance of the shift, which hasn't been up to that stage reproduced in any of the tiles at the appropriate moment in the sequence?

HOCKNELL: That's correct, yes.

JOHNSON: At 339 did someone called Liz Acton send Lucy Letby a message saying:

"Are you [hula] tonight."

HOCKNELL: Yes.

JOHNSON: At 340 through to 342, do we have the standard three at 8 am?

HOCKNELL: Yes.

JOHNSON: Followed by [Nurse D]'s final note on the nursing record concerning some of the potassium level in [Baby I]'s blood?

HOCKNELL: Yes.

JOHNSON: The fact that a potassium infusion was to be started and that she, [Nurse D], had handed over [Baby I]'s care to Belinda Simcock?

HOCKNELL: That's correct.

JOHNSON: Is there then a series of further prescriptions at 8.22 and 8.23, tiles 344 to 346, for metronidazole, morphine sulphate and midazolam?

HOCKNELL: Yes.

JOHNSON: And it says "mizazolam". It's probably a typo.

HOCKNELL: It's been corrected there.

JOHNSON: Followed by half an hour later, sodium chloride and ciprofloxacin, all that interspersed with a message from [Nurse E] to Lucy Letby at 08.25 saying:

"Aw, poor family. Have a good sleep. You decided if going hope (sic)?"

HOCKNELL: Yes.

JOHNSON: We have the standard three at 350 to 352 at 9 am?

HOCKNELL: That's correct.

JOHNSON: And then Lucy Letby's response at the same time to [Nurse E] at tile 353?

HOCKNELL: Yes:

"Won't be today as got a few things to do but might go tomorrow."

JOHNSON: Then do we have the infusion of potassium chloride given at 354?

HOCKNELL: Yes.

JOHNSON: Followed by Dr Chang's notes, made 5 minutes later, 09.10, tile 355, concerning what was being done for [Baby I] at that stage?

HOCKNELL: Yes.

JOHNSON: Thank you. Do we then -- as a matter of fact [Baby I] was transferred to Arrowe Park in the early afternoon of that day, wasn't she?

HOCKNELL: Yes.

JOHNSON: Before that happened, and obviously after Lucy Letby had gone off shift, did she respond to the text sent by Liz Acton?

HOCKNELL: Yes:

"Yes, shall I pick you up?"

JOHNSON: Did Liz Acton respond:

"Yes, that'll be fine."

HOCKNELL: Yes and Lucy Letby replies:

"See you at 1945."

JOHNSON: Liz Acton responds:

"Will be ready and waiting."

HOCKNELL: Yes.

JOHNSON: You put in the time that [Baby I] was transferred, I think, as having been at 14.25?

HOCKNELL: Yes.

JOHNSON: Is there then a series of messages between Jennifer Jones-Key and Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Starting at 14.40 hours, tile 361. Jennifer Jones-Key to Lucy Letby:

"Hope [you're] ok. Manic day."

HOCKNELL: Yes. And Lucy Letby replies:

"What's going on? Yes, ta. Just tired."

JOHNSON: Jennifer Jones-Key:

"[Baby I] gone to Arrowe. Two gone upstairs."

HOCKNELL: Lucy Letby replies:

"Thank goodness."

JOHNSON: Jennifer Jones-Key -- this is tile 365:

"Yeah, but parents very worried they are going to not do anything and doesn't sound like they are."

HOCKNELL: Lucy Letby replies:

"Hmm, yeah, I can understand that."

JOHNSON: [Nurse E] sends a message:

"Cool. We'll(?) make sure you're back by Weds."

This is probably a reference to her previous enquiry as to whether Lucy Letby was going home and Lucy Letby having told her that she might go tomorrow.

HOCKNELL: Yes.

JOHNSON: Jennifer Jones-Key responded:

"So sad."

HOCKNELL: And Lucy Letby replies:

"Did they have her christened?"

JOHNSON: Jennifer Jones-Key:

"Yes."

And then did [Nurse A] send Lucy Letby a message saying:

"How was it last night"?

HOCKNELL: Yes, and Lucy Letby replies to [Nurse A] saying:

"[Baby I] has consolidation. Struggled with ventilation. Had resus. Has gone to Arrowe. Otherwise a nice night. Did you have a good night?"

JOHNSON: [Nurse A] responded:

"Damn. Not good. She seemed so much better in the evening."

HOCKNELL: Yes. Lucy Letby replied:

"Complete whiteout and loads of thick secretions. She was christened before transfer today."

JOHNSON: [Nurse A]:

"Bugger. Not sounding good. Had a good and very late night."

HOCKNELL: Yes.

JOHNSON: Did she also say:

"Anything nice planned for days off?"

HOCKNELL: Yes and Lucy Letby replied:

"Did you stay in last night? Thinking about going home for a few days as off till Thursday night."

JOHNSON: And [Nurse A]:

"Sounds a plan. I'd say come other [might be 'over'] for a wine night but I'm away Monday to Thursday with M. Were you involved in resus last night? Poor Matt done 5 nights at Chester and had a full resus every time."

HOCKNELL: Yes. And Lucy Letby replies:

"Hope you have a good time. I got called in to do drugs with [Nurse B]. Thankfully she responded very quickly this time. Yes re Matt. And I like Kate but she can't do anything. It's really not safe."

JOHNSON: Did [Nurse A] respond to that:

"No, she's nice but not much good."

HOCKNELL: That's correct.

JOHNSON: At 381, some social messages between Janet Cox and Lucy Letby between 19.13 and 19.39?

HOCKNELL: Yes.

JOHNSON: Followed by a social message from Minna Lappalainen at tile 382?

HOCKNELL: Yes.

JOHNSON: And in response to the social messages from Janet Cox, did Lucy Letby respond at tile 383?

HOCKNELL: Yes:

"Yes, me too. [Baby I] was christened and transferred to Arrowe."

And the rest of the message is of a social nature.

JOHNSON: And Lucy Letby then responded to Minna Lappalainen, social messages, and got a response from Minna Lappalainen, followed by Lucy Letby sending Minna Lappalainen a message at tile 386 at 21.18, which read?

HOCKNELL: "Found [Baby I] collapsed in cot Mon night and been poorly since. Gone to Arrowe today. Did you have leadership course today?"

JOHNSON: Janet Cox respond to Lucy Letby's message concerning the transfer of [Baby I] to Arrowe Park:

"Poor [Baby I], let's hope she's strong enough to pull through. Have a nice time at home."

HOCKNELL: Yes.

JOHNSON: Was there then a response from Minna Lappalainen to Lucy Letby at 388, tile 388, saying:

"Poor [Baby I]. Wonder what her real issues are. Yes, Laura and I went, was okay."

HOCKNELL: Yes.

JOHNSON: And in response to that?

HOCKNELL: Lucy Letby replies:

"They think stricture from previous NEC. On inotropes, triple antibiotics. Got consolidation too. Resus times 3. Glad course okay. When is assignment due? I hear you are going speed eating! [as read]"

JOHNSON: Then at 390, the final entry in this sequence, is this a retrospective note made by the medical staff at Arrowe Park?

HOCKNELL: Yes.

JOHNSON: Concerning events at 2 o'clock in the morning of Friday, 16 October?

HOCKNELL: Yes.

JOHNSON: We'll just deal with this, please. It says at 00.15:

"Following care and suction, desat and brady. No improvement with Neopuffing. No chest m/m. No air entry heard. CO2 detector doesn't change. ET tube removed. ET blocked with dark pink blood. Saturations and heart rate picked up quickly with mask and Neopuffing. AS taking own breaths. Only PEEP. 5 was provided with good saturations and good effort. Decision made to attach to high flow. Is having good effort. Oral cavity and cord visualised to see any evidence of trauma. No fresh blood or significant crying noted. Attached to HF 5L in 35%. Dr Rath."

And then a plus in brackets:

"During the episode [query] bid from" --

HOCKNELL: That might be "blood".

JOHNSON: "... from lung contusion from previous chest compressions. Parents present throughout. Updated by Dr Rath and myself."

HOCKNELL: Yes.

MR JOHNSON: Thank you. I don't know whether there are any questions for you.

I don't know whether we have the neonatal review to hand or perhaps we can leave that for now and deal with that at the end of this case, please.

(The witness withdrew)

MR DRIVER: May I recall Dr Matthew Neame, please.

DR MATTHEW NEAME (recalled)

Examination-in-chief by MR DRIVER

MR DRIVER: Dr Neame, we're going to return to the treatment that you provided to the patient [Baby I]. We'll go to your night review at 22.05 on 13 October 2015, which Mr Murphy, is behind tile 46 of the sequence of events that we've just been considering. Thank you.

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If we click on to Dr Neame's clinical notes. A night review, Dr Neame. Is that effectively a timetabled review, an examination of the patient?

NEAME: Yes, just starting the shift and making sure I'm aware of what the circumstances are for [Baby I].

DRIVER: Thank you. And considering your notes made at that review, did you check the position of her breathing tube, she still being on a breathing machine?

NEAME: Yes, I can see I did check that.

DRIVER: Did you consider the results of a blood -- a breathing -- a blood test that had been taken at 19.00 hours?

NEAME: Yes, I did.

DRIVER: What were the results that you considered at this point in time?

NEAME: I have recorded there that they were good, I don't know the details from memory.

DRIVER: So what constitutes a good blood gas or breathing blood test?

NEAME: Ensuring that the blood acidity levels are normal, ensuring that the carbon dioxide level in the blood is not unusually elevated, and ensuring that there's no other sources of unusual acidity in the blood and also checking, for example, the blood sugar levels.

DRIVER: Thank you. Her tidal volumes were?

NEAME: 5ml per kilo, again which is a healthy measure.

DRIVER: The next entry below?

NEAME: "... and healthy pressure/volume loops."

That's a visual display of how well the ventilator is working.

DRIVER: So in summary, putting those component parts together, how was the respiratory situation progressing?

NEAME: Stable at that point in time.

DRIVER: Thank you. The next paragraph of entries?

NEAME: That relates to [Baby I]'s fluid management, which was -- she was receiving 150ml per kilogram per day of fluids. Her urine output was normal at 4ml/kg/hour. Her blood pressure was normal at 45 millimetres of mercury. She had a normal concentration of lactate in her blood.

At that time [Baby I] was receiving some medicine to support her blood pressure and circulation at a sort of low/moderate dose. And she had opened her bowels that day and there's a note there saying that her progress has been discussed with the surgeons at some point, with a plan to continue with her current care.

DRIVER: Thank you. The reference below to morphine, was that sedation given to the baby because she was on a breathing machine?

NEAME: Yes.

DRIVER: So respiration stable, fluids positive?

NEAME: Yes, they're the normal objective measures of her fluid status and management.

DRIVER: Thank you. Next, you examined the baby herself, did you?

NEAME: Yes.

DRIVER: How was she?

NEAME: "Settled and pink, good chest wall movement with a good oxygen level. Equal air entry [listening to her chest]."

The next line says "a bit squeaky". You sometimes hear in that ventilated babies. Her heart rate was 155 and her capillary refill time was normal, which is less than 2 seconds. Her heart sounded normal. Her abdomen was distended but soft with some tenderness and her bowel sounds were normal.

DRIVER: Could you expand upon the "a bit squeaky" for us?

NEAME: It's just an extra sound that we sometimes hear listening to a baby's chest instead of the more typical breath sounds that you would hear.

DRIVER: Thank you. So taking an overall view of [Baby I]'s presentation upon examination a little after 22.00 hours on your nightly review, how was she?

NEAME: She was clearly receiving a moderate amount of particularly respiratory support, but she was stable at that point.

DRIVER: Thank you. And so your plan, we can see at the bottom of our screen?

NEAME: To continue with six-hourly blood gas tests if she remained stable. To consider doing a chest X-ray and the blood gas sooner than then if her oxygen requirements increased. Continue with the current level of circulatory support with the dobutamine medicine and to do her blood tests as planned in the morning.

DRIVER: Thank you. If Mr Murphy could take us to tile 70 so we may orientate ourselves. Your clinical notes we've just looked at. At 22.05 on the 13th, we can see that there is an event recorded at 05.00. Could I take you, please, to tile 79. What does this record?

NEAME: It refers to being asked to see [Baby I] due to an increased oxygen requirement and reduced blood oxygen levels on the saturation monitor. On my arrival, [Baby I] was receiving Neopuffing with pressures of 20/5, her oxygen concentration on the Neopuff machine was 100%, but her blood oxygen saturation level was only 77%. There was some evidence of chest wall movement. There was a positive change using the carbon dioxide detector.

DRIVER: Yes.

NEAME: And there was equal air entry on auscultation of [Baby I]'s chest, again with some squeaky sounds.

DRIVER: Pausing there. So equal air entry, chest walls were moving, the capnography was positive. What were her oxygen levels?

NEAME: 77%, which is low.

DRIVER: Thank you. Was there an apparent cause for that at this point?

NEAME: Not at that time, no.

DRIVER: Her heart rate was 180; is that a little high?

NEAME: Yes.

DRIVER: Her capillary refill time?

NEAME: Again, a little elevated, but her blood pressure was still normal at 45.

DRIVER: Did you then examine her body?

NEAME: Yes.

DRIVER: What did you note?

NEAME: I noted that her abdomen was distended and mottled, that there was some tenderness and guarding, and when I examined [Baby I]'s abdomen, I recall her having her eyes open and being uncomfortable when I palpated her abdomen, so it says, "Grimace on palpating abdomen".

DRIVER: Putting those together, what views did you take as to her sensitivity to touch?

NEAME: That her abdomen was uncomfortable and tender at that point.

DRIVER: Thank you. You haven't put it on the note, but can you expand upon the mottling or not from memory?

NEAME: I... I don't recall it clearly, but it is unusual to see and to have recorded abdominal mottling specifically.

DRIVER: Thank you. So did you seek to address the problem by increasing the Neopuff pressure?

NEAME: Yes. I increased the pressure, noted that there was some improvement in the movement of her chest wall and noted an improvement in her oxygen saturation level with that change, therefore I restarted the ventilator, the automatic breathing machine, with some increased pressures and an increased concentration of oxygen.

DRIVER: Thank you. Did you then express an opinion or, in your terminology, state your impression?

NEAME: Yes. So my impression was that the increasing abdominal distension may have caused [Baby I]'s lungs to become squashed, essentially, making it harder for her to breathe, maintain normal oxygen levels. That was my impression.

DRIVER: Thank you. Could you expand upon that process for us, the relationship between a distended tummy and impaired breathing?

NEAME: So normal breathing, respiration, requires muscles in the chest wall and in the diaphragm, the big muscle at the bottom of the lungs, to move up and down. If they are -- particularly if the diaphragm is unable to move down, that can limit expansion of the chest wall and can limit the effectiveness of breathing.

DRIVER: Thank you. Your plan as formulated at this point in time?

NEAME: In addition to increasing the pressures on the ventilator, to repeat -- well, to obtain chest and abdominal X-rays urgently, to do the planned bloods sooner, repeat a blood gas test, and to increase the dose of morphine to make [Baby I] more comfortable.

DRIVER: Thank you. So going back to the beginning of this entry, you were asked to review the patient. Can you remember by whom or in what circumstances?

NEAME: I don't remember the circumstances particularly. I think it was by Lucy Letby.

DRIVER: Thank you. In summary, how did [Baby I] present at this point in time as compared to your night review at 22.05 on 13 October?

NEAME: So she was more unwell, as evidenced by the low oxygen levels and the need for increased breathing support at that point. And the other aspect that stands out from my memory and from the notes is the change in the appearance of her abdomen with the change in the skin and the increased tenderness.

DRIVER: Thank you. Can you remember how you received the request to attend upon the baby, the method of communication?

NEAME: I can't remember, I'm afraid.

DRIVER: Can you remember your interaction with the nurse upon attending, your initial interaction?

NEAME: I don't think I can, I'm afraid.

DRIVER: Thank you very much. Could we then, please, Mr Murphy, go to tile 90?

It's a note written by you at 08.10, but it refers to discussions with Dr Jayaram at an earlier point in time. Does it follow that you felt the need to speak to your on-call consultant Dr Jayaram?

NEAME: Yes. I spoke to him having arranged the X-rays and the blood gas tests, is my memory.

DRIVER: And was in general terms the subject matter of that discussion the readings and the examination that we've just seen your notes for?

NEAME: Yes, with the results of the X-rays as well.

DRIVER: With the additional information of the X-ray results?

NEAME: Yes.

DRIVER: What was the nature and the consequence, if any, of the discussion with the on-call consultant?

NEAME: To discuss the findings from the abdominal X-ray, which included some dilation of the loops of bowel, noted the smaller than expected appearance of [Baby I]'s lungs, and an area of collapse in the right upper zone of [Baby I]'s right lung.

DRIVER: Did that tend to inform your view as to whether the relationship between the distended tummy and the impaired breathing was as you feared a little earlier?

NEAME: Yes, those findings were in keeping with that assessment.

DRIVER: Thank you. So you had -- on the basis of your clinical observations you formed that suspicion and on reviewing an X-ray they were confirmed?

NEAME: Yes, I think the right upper lobe -- so the changes in [Baby I]'s right upper lung are perhaps not related to that but the small appearance of the lungs and the dilated appearance of the bowel loops would be, if that makes sense. So I think the changes in the right upper lung might be different.

DRIVER: I understand. Different and related to it or different and independent to it?

NEAME: Possibly related to being managed on the ventilator or complications of having been unwell from the previous 24 hours.

DRIVER: Thank you. Could you summarise the advice or guidance you received from Dr Jayaram?

NEAME: To continue with the ventilation settings that [Baby I] was receiving, to check again for evidence of a pneumothorax, and to discuss those factors with the surgical team at Alder Hey.

DRIVER: Thank you. Did you have such a discussion with Alder Hey?

NEAME: Yes, I did.

DRIVER: Have you recorded it here?

NEAME: Yes.

DRIVER: Mr Lamont?

NEAME: His registrar, the on-call registrar who was working with Mr Lamont, who was one of the consultants at that time.

DRIVER: Yes. What advice did you get and how did you act on that advice if at all?

NEAME: So they advised that they would look at [Baby I]'s X-rays and contact us with a plan following discussion in the morning with Mr Lamont, the consultant.

DRIVER: Thank you. When you communicated with Alder Hey, I'll just use the hospital term, I'm not sure the identity of the person -- was that by telephone?

NEAME: By phone, yes.

DRIVER: And where would that conversation have taken place?

NEAME: Somewhere on the neonatal unit, I can't remember where.

DRIVER: Would it have been via landline or mobile phone?

NEAME: Landline.

DRIVER: Thank you. I think omitted the preface to this, apologies: was a cold light test performed at this point in time?

NEAME: I don't recall doing it, but I think I recall in the notes that it was negative.

DRIVER: Thank you. Mr Murphy, if we see a little further -- the other direction, please. There we go. Does that record there was a cold light test?

NEAME: Yes, negative cold light examination.

DRIVER: Thank you. The next entry, we can look at it here, but I think it is reproduced on our visual display behind tile 104. Again, if we just look at this for context -- go firstly to tile 102, please, Mr Murphy.

We see what's been recorded as an event between two entries, both of which were recorded at 07.00. Then we go to tile 104. Thank you. We can look at Dr Neame's notes behind there.

Written in retrospect at 08.10. We've just seen this reference to your communication with Dr Jayaram. If we go down until we see at 07.00, thank you, Mr Murphy.

Can you tell us, Dr Neame, what happened with [Baby I] at that point in time?

NEAME: [Baby I] had a significant desaturation with a bradycardia, low heart rate, not improving with management using the Neopuff machine. Therefore a decision was made to replace [Baby I]'s breathing tube to exclude an airway issue as the cause of that episode.

DRIVER: Could you expand, please, upon what airway issue was in your mind at that point in time that caused you to decide to replace the tube?

NEAME: It could be a problem with a misplacement of the tube or it becoming dislodged or it could be a problem with the tube itself becoming blocked with secretions.

DRIVER: Was the quickest and the most expedient way of addressing that simply to remove it?

NEAME: Yes, I think with a period like this, it's important to exclude that as a factor in the presentation.

DRIVER: So it was removed. Did you replace it with a different sized tube or the same sized tube?

NEAME: I don't recall whether it was a 3.5 or 3-millimetre tube that [Baby I] had.

DRIVER: Originally?

NEAME: Originally, yes. But a similar sized tube and then secured and tested in the usual way.

DRIVER: By which you mean you satisfied yourself that it was 8 centimetres at the lips?

NEAME: Yes, and then I checked that there was equal air entry, listening to [Baby I]'s chest, used the capnography tool as well, and requested an X-ray to check the positioning of the tube. Those changes seemed to improve [Baby I]'s saturation levels alongside, again, a further increase in the pressures used on the Neopuff machine, and those resulted in [Baby I]'s oxygen saturations improving to 100%, so she was placed back on the ventilator again with some increased pressures and an oxygen level of 100% on the ventilator.

DRIVER: So did you note an improvement in her saturation levels before you adjusted the ventilation settings or after?

NEAME: I don't recall at the time. I think it refers to a general improvement following the change of tube and the adjustment in her ventilation settings.

DRIVER: Thank you. If we look at the remainder of this note, Mr Murphy. Thank you.

So having noted an improvement, what happened next?

NEAME: Unfortunately, there was a further episode of desaturation with low oxygen levels, this time despite good air entry, good chest wall movement and a negative cold light test. Because of that further episode I called for Dr Jayaram to come to the hospital.

DRIVER: Thank you. Could you please explain the use of the word "despite" in that sentence?

NEAME: So despite confirmation that the breathing tube seemed to be working well, with a good effect on [Baby I]'s chest wall movement, the desaturation seemed to occur despite using the clinical tools we have to rule out a problem with the ventilation system at that time.

DRIVER: And despite a negative cold light test?

NEAME: Yes.

DRIVER: Thus ruling out --

NEAME: As best as we can a pneumothorax.

DRIVER: An air leak?

NEAME: Yes.

DRIVER: Thank you. Next?

NEAME: Then further desaturation, despite using the Neopuff machine and despite generous/good pressures on the Neopuff machine at that point, and even with those interventions, [Baby I] became bradycardic so her heart rate dropped and her oxygen levels dropped to 60%. So then I made a plan to administer muscle relaxant medicine and to give [Baby I] some extra fluid to try and improve her circulation.

DRIVER: What was the purpose of administering the muscle relaxant substance?

NEAME: Due to ongoing concerns about pressure from the abdomen impeding ventilation, a muscle relaxant can help with that process, reduce resistance to ventilation.

DRIVER: Thank you. Could we go to tile 117, please.

MR JUSTICE GOSS: Mr Driver, we're going to have to have a break at some time. I don't know whether that's a convenient point.

MR DRIVER: It is, thank you.

MR JUSTICE GOSS: It is 3 o'clock now.

I think we've got quite a lot of work to do this afternoon because the next witness will have difficulty being here tomorrow, so can we make it a five-minute break, please? If you want longer, you may have longer, but if you are ready to come back in 5 minutes, that would be helpful.

(In the absence of the jury)

MR MYERS: My Lord, just to assist with the timing, it occurs to me just to say this: Dr Jayaram's statement was prepared relatively recently, not making any criticism about that, and he wasn't a witness we had anticipated to deal with. He's not a witness we anticipate having cross-examination for unless the evidence takes a particular turn. I just say that to assist. Depending on how his evidence is, there may be none or little cross-examination in his case.

MR JUSTICE GOSS: All right, thank you very much.

MR MYERS: We won't know until we get there.

MR JUSTICE GOSS: Exactly. I don't know how much longer this --

MR DRIVER: I think we're on schedule to finish at the customary time.

MR JUSTICE GOSS: Good, all right. We'll see how we get on. Thank you very much. We've used up 2 minutes of the 5 minutes, but if anyone wants to have a break, I'll rise just for 3 minutes and I'll be back.

(3.03 pm)

(A short break)

(3.07 pm)

MR DRIVER: Dr Neame, we're in the morning of Wednesday, 14 October. We've just considered entries that you made in relation to events at 7 am, at 7.10 am, and now we are about to look at notes that you made at 08.10 in relation to matters a little earlier.

Please, Mr Murphy, I'm grateful.

So we go down to, I think, 07.45. What happened at 07.45, Dr Neame?

NEAME: At 7.45 [Baby I]'s heart rate went below 60 beats per minute, therefore chest compressions, cardiopulmonary resuscitation was initiated. [Baby I] was administered a bolus of saline fluid. Her chest wall was checked with a cold light to again rule out an air leak, a pneumothorax. She had another dose of a muscle relaxant. At that time the capnography, carbon dioxide test, was positive and she had chest wall movements and equal air entry listening to her chest.

DRIVER: Together, what did those pieces of information tell you, positive capnography and equal chest movement?

NEAME: They suggested that [Baby I] had a stable airway.

DRIVER: So the tube was in the right place?

NEAME: Yes.

DRIVER: Thank you. You told us that you undertook a cold light test. What was the result?

NEAME: That was negative. So no air leak detected.

DRIVER: Yet her heart rate had fallen below 60?

NEAME: Yes.

DRIVER: Which is how low?

NEAME: Well, it's low, dangerously low, and that's why we used chest compressions at that point.

DRIVER: Thank you. If we look down at the remainder of your note, please. CPR was ongoing and adrenaline was used at 07.48, why?

NEAME: It's part of the resuscitation process when there's concerns about the baby's heart rate being too low.

DRIVER: Thank you. Sodium bicarbonate was given. Again, is that part of the same protocol?

NEAME: Part of the resuscitation protocol, yes.

DRIVER: For your Lordship's note, that event is recorded behind tile 118. We'll stay with this page, but behind tiles 120 and 121, did you have cause to give [Baby I] a second dose of adrenaline?

NEAME: Yes, at 07.53.

DRIVER: Is that because the first dose had not succeeded in raising the heart rate to a level that you thought was safe?

NEAME: Correct.

DRIVER: Was there then a requirement for a further dose of adrenaline?

NEAME: Yes, at 07.56.

DRIVER: Did that have the desired effect?

NEAME: Yes, at 07.58 [Baby I] had a spontaneous heart rate, which would have been over 60 at that point.

DRIVER: So in short, were the circumstances such that urgent CPR was required with the resuscitation protocol adopted, but on this occasion it proved successful?

NEAME: Yes.

DRIVER: Dr Jayaram will give evidence shortly, but did he join you and did you effectively hand over principal responsibility to Dr Jayaram at this point in time?

NEAME: Yes.

DRIVER: Thank you. Could we move forward in time, please, Mr Murphy, and go to tile 248, which, as we can all see, takes us to 21.30 hours on 14 October.

So we have just left the morning and we are now well into the night of the same date. Were you called again?

NEAME: Yes, asked to see [Baby I] regarding a period of desaturation, low oxygen levels.

DRIVER: Did you note that by the time you arrived, she had recovered?

NEAME: Yes, and that she was placed back on the ventilator and with the ventilator settings recorded there as well.

DRIVER: Are they exceptional recorded levels of ventilation or are they normal for the circumstances?

NEAME: Well, they're certainly much better than they were over the night before, so she wasn't needing as much pressure or as much supplemental oxygen at that point.

DRIVER: So reduced pressure, reduced supplemental oxygen, and her saturation levels were at this point in time?

NEAME: 100%.

DRIVER: There was a breathing tube in and did all indicators suggest that those were in the right place and, working well?

NEAME: Yes.

DRIVER: You then reviewed some gas, blood gas readings, that had been taken 2.5 hours earlier or thereabouts --

NEAME: Yes, a good gas.

DRIVER: -- 19.00 hours? You recorded them as being good?

NEAME: Yes.

DRIVER: Would that reflect the sort of readings that you explained to us a little earlier in your evidence this afternoon?

NEAME: Yes.

DRIVER: Thank you. You then comment that there was some movement in her legs. What's the significance of that?

NEAME: I don't recall the timeline precisely at this moment, but I think it may have been that [Baby I] was having some medicine to give her some muscle paralysis at that time. So it's a way of measuring the dose of that.

DRIVER: So if so, perhaps she was not receiving sufficient, is that the purpose of that or was that (overspeaking) reaction?

NEAME: It's a way of gauging how much or how much an effect it was having.

DRIVER: Thank you. Keep going down the page, please, Mr Murphy.

Was there a problem with the line, that being an intravenous line?

NEAME: Yes:

"The line has been occluding but now infusing freely."

And then --

DRIVER: Decode that for us.

NEAME: So the pumps that help to infuse fluids and medicines through the lines that we use have pressure sensors on them. If the pressure is too high because the line is occluded or kinked for any reason they'll stop pumping. So from that note, the line had been doing that or the pumps had been alarming, suggesting an occlusion, but at that point they were working well and the medicines and fluids were infusing freely.

DRIVER: Thank you. Did you move the line at that point? Did you reposition the line? Look at the plan.

NEAME: It said "line repositioned". I don't know if that was someone had done it and the team were happier with the functioning of the line or whether it was me that did it. I don't recall, I'm afraid.

DRIVER: Thank you. Could you take us through the remainder of your plan?

NEAME: So it says [Baby I] was more active, then increased morphine back to the previous rate that was a bit higher and consider muscle relaxant medicines. If any increased ventilation requirements, again to consider using muscle relaxant/paralysing medicines and increasing sedation for [Baby I].

DRIVER: Thank you. So to summarise that, at this point in time her respiration was sound, this was precautionary advice should she deteriorate?

NEAME: Yes.

DRIVER: Thank you. Can we please go to tile 278. Now we've moved into 15 October, I think. That would appear to be the entry at 21.30 -- down the bottom, there it is, thank you.

Could you explain or expand upon the entries first at 23.00 and then at 00.40, the following morning?

NEAME: So the 23.00 entry says:

"More active, breathing against vent. Tidal volumes decreasing down to 3-4ml per kilogram."

DRIVER: Thank you. "Breathing against vent"?

NEAME: So if the ventilator's giving scheduled breathing support, if a baby's more active and is breathing in a way that's asynchronous or out of time with the ventilator, that can cause problems, if essentially the baby is trying to breathe out as the ventilator is trying to breathe in, that can be uncomfortable and can impact the ventilation support that you're trying to administer.

DRIVER: So was the plan to sedate her further so as to allow the breathing apparatus to do the work for her?

NEAME: Yes.

DRIVER: Thank you. And to repeat blood gas testing --

NEAME: Yes.

DRIVER: -- in due course. Then at 00.40 on 15 October?

NEAME: It says:

"Cannula reinserted into left foot. Can give blood over 3 hours due to delay incurred whilst obtaining IV access."

So I think that refers to -- well, the insertion of a cannula and then whereas often we'd give blood over 4 hours, if the blood had been waiting to be administered it would be -- my note recommends giving the blood over a slightly shorter time to make sure that the correct dose is given.

DRIVER: Thank you. Mr Murphy, tile 292, please.

So further into the morning of 15th, we're now at 02.00 hours. Did you examine [Baby I] again?

NEAME: Yes. So I've noted [Baby I] continues to breathe regularly, that her tidal volumes are very variable, between 2 and 5ml per kilogram, that [Baby I]'s blood gas is less good, a borderline gas, on her ventilator settings. So her pH, blood acidity, has reduced a bit, suggesting her blood's becoming more acidic, her carbon dioxide is higher than normal, but her other markers in the blood gas are normal at that point.

DRIVER: So does that indicate a deterioration in the quality of her breathing?

NEAME: Yes. The ventilation that we're providing is not working as effectively as it had been.

DRIVER: And so your plan was?

NEAME: Another slightly smaller dose of the muscle relaxant and to increase the -- just on the line that's coming out of the screen -- to increase the rate --

DRIVER: Mr Murphy, could you -- thank you.

NEAME: To increase the rate on the ventilator to 45 and the pressure to increase that to 22 from, I think, 20/5, with a repeat blood gas an hour following those changes.

DRIVER: Thank you. Is the next entry yours?

NEAME: No, I think that's Dr Saladi's.

DRIVER: Thank you. Could we please go, Mr Murphy, to, I think, tile 299.

It is a note of yours at 04.00 hours. Were you called to see [Baby I] again?

NEAME: Yes.

DRIVER: And why?

NEAME: So I was called to see her due to low oxygen levels that weren't improving using the Neopuff machine and not improving using increasing pressures on the Neopuffing machine. At that time the capnography test was negative, suggesting that the tube was either dislodged or blocked, so I removed the breathing tube.

DRIVER: Thank you. And upon removal, how did she respond, if at all?

NEAME: She improved well using the Neopuff machine with her oxygen levels returning to 100%.

DRIVER: Thank you. Keep looking further down the page, please. Thank you.

You then removed that tube. Can you remember why?

NEAME: So I think... Could we scroll up?

DRIVER: Please, a few lines.

NEAME: Yes. Then I replaced the tube. The carbon dioxide test, the capnography, was negative and her air entry was poor, therefore the tube was removed.

DRIVER: Thank you. How did that go, the removal and attempted re-intubation?

NEAME: The procedures at the time went smoothly, but the checks that we do to check that the tube is working effectively were concerning again, so again the capnography was negative and the breathing checks were also concerning as well, so...

DRIVER: Thank you. Why would that be so if it seemed to you that the procedure had gone well?

NEAME: Well, there's the possibility that even though you've seen the tube go through the cords, that it's become dislodged, possibly when removing the instrument that we use to visualise those cords. I mean, in this case I go on to perform another manoeuvre where I've used extra suctioning further down between [Baby I]'s vocal cords and that seemed to improve the situation.

DRIVER: Could you expand on that for us?

NEAME: Another similar attempt to improve the situation by replacing the breathing tube was unsuccessful with a slightly smaller tube there, so that's the:

"3-millimetre ETT passed, again good visualisation of the cords and tube seen passing through the cords."

But again the carbon dioxide test remained negative. At that point we tried suctioning through the breathing tube itself to see if that would improve the situation. Then the note's just running out there.

DRIVER: Mr Murphy, could we go further down the page, please?

NEAME: So then the tube was removed as it wasn't working effectively. Neopuffing was used, so using a mask on [Baby I]'s face, and then despite airway manoeuvres and attempting to reposition the mask and do it that way, the situation was still challenging with [Baby I] having low oxygen levels and low heart rate.

So I again visualised [Baby I]'s cords and then passed a suction catheter through the vocal cords themselves and was able to aspirate some thick secretions.

DRIVER: Thank you. So in summary, the repeated intubations and extubations without progress, did that lead you to conclude that there was likely to be an obstruction?

NEAME: Yes, I think we'd ruled out other possibilities by that point, so...

DRIVER: Yes. Did you manage to remove secretions that would have caused an obstruction?

NEAME: Yes.

DRIVER: And thereafter?

NEAME: Then the capnography became positive. The oxygen saturation improved and --

DRIVER: We might have to -- keep going, Mr Murphy, on the note. Thank you. Yes?

NEAME: And that note also records that, as [Baby I]'s heart rate dropped, we began doing some chest compressions alongside the airway manoeuvres and the breathing support, just to support [Baby I] through that period.

DRIVER: Keep going down the page, Mr Murphy. Pause there. Then ultimately?

NEAME: Ultimately, despite the improvement, listening to [Baby I]'s chest revealed that the air entry was quite variable, with some of those squeaky sounds that can suggest secretions. There were other -- usually secretions -- and that [Baby I] was having, again, low oxygen levels, even with that replaced tube and even putting her back on the ventilator --

DRIVER: Yes.

NEAME: -- and using the Neopuff machine.

DRIVER: Did Dr Saladi attend upon request?

NEAME: He did. I noted that on his arrival, [Baby I]'s oxygen saturations were between 90% and 100%.

DRIVER: Was that an improvement?

NEAME: Certainly an improvement on the presentation in the minutes before that, yes.

DRIVER: And was the air entry bilateral? Was it equal or was it imperfect?

NEAME: Equal, but I guess subjectively reduced from what we might normally expect at that point.

MR ASTBURY: Thank you. I think that might have been your final examination of [Baby I] on that shift. Could you remain there and answer any questions that are asked of you?

Cross-examination by MR MYERS

MR MYERS: Dr Neame, you dealt with various incidents today, so just to be quite clear now, I'm going to ask you first about the events on the morning of 14 October, which is what we've been talking about, your involvement some time after 5 o'clock, and then later on in the morning and into that day and continuing from there. Not very much, just a couple of points.

We know that when you saw [Baby I] in the morning of 14 October -- I'm just getting the time correct -- could we put up, just to be clear? Tile 79, please. It's 05.55.

Can we scroll down a little bit if we could, please. It's just the description of the abdomen I'm going to. There we are in the centre of the page. Do you recall, Dr Neame, you put:

"Abdomen distended and mottled. Tender with"?

NEAME: Guarding.

MYERS: "Eyes open, grimace on palpating."

And you made the observation that it was unusual in your experience to see the abdomen, in particular, mottled in that way; is that right?

NEAME: Yes.

MYERS: Just so we know, we've encountered, and will encounter, mottling on various parts of the body of a baby; that's not uncommon, is it?

NEAME: Mottling of the peripheries is not uncommon as part of the problem with the circulation.

MYERS: As for the mottling on the abdomen, your view is that mottling normally means the circulation isn't as good as it should be for whatever reason; is that right?

NEAME: Yes. It usually starts peripherally and then moves centrally in very severe cases.

MYERS: And the underlying cause of that, there could be different causes, there could be infection in some cases?

NEAME: When it's seen with infection, it usually accompanies other signs suggesting a circulatory problem.

MYERS: Or low oxygen levels?

NEAME: It can do, yes.

MYERS: I picked those two because they're the examples you gave to the police in your statement.

NEAME: Okay.

MYERS: That's what I wanted to ask you about that.

I just want to move forwards now to the events we've been looking at. Travelling through from the event which we are dealing with on 14 October, so our event 3, I'm just going to move to the later evening of the 14th, so after that, and the part you told us about just now into the early morning.

Could we put up tile 248, please? This is about -- it's 21.30 on 14 October. You were called to see [Baby I] because of a period of desaturation; is that correct?

NEAME: Yes.

MYERS: And you note that she'd recovered by the time of your arrival; is that as you recall that?

NEAME: Yes.

MYERS: She was being ventilated at this point, wasn't she?

NEAME: Yes.

MYERS: But would it be right to describe her as stable on the ventilator?

NEAME: Yes.

MYERS: And obviously, it would be important to continue to observe [Baby I] closely, wouldn't it, given her clinical course?

NEAME: Yes.

MYERS: But in general, at that time, if we scroll down, we can see it says, "Good gas at 19.00". Can you see that in the centre of the page?

NEAME: Yes.

MYERS: In general, she was stable on the ventilator, would you agree?

NEAME: Yes.

MYERS: And her respiratory levels were better than they had been?

NEAME: Yes, certainly on the ventilator, yes.

MYERS: On the ventilator, that's right. Thank you.

Now, that's the position at 21.30. So we've moved some way beyond our event 3 and we're into the evening of 14 October. I'd like to move next to tile 292, which is 2 o'clock on 15 October now.

If we go to the notes, please, Mr Murphy.

You've explained to us that at this time, as we look at how she appeared about 4.5 hours later, her blood gas was not so good; is that correct?

NEAME: Yes.

MYERS: Her other blood markers were normal, weren't they?

NEAME: Within the blood gas? So...

MYERS: Let me ask you: what did her respiratory condition seem to be?

NEAME: So I think it... I described a picture of a variable pattern. So instead of having very steady, stable respiratory pattern, I've described how the size of her breaths is varying fairly significantly. The blood gas is not a terrible blood gas, it doesn't suggest that there's an immediate, urgent problem, but it's not as good as I would have anticipated the blood gas to be when I reviewed her earlier on that evening. So it's not a very challenging picture, but it's a less good picture than the one earlier on in the evening.

MYERS: So not as good as what we looked at 21.30?

NEAME: Correct, yes.

MYERS: So at 02.00 not so good. And can we move to tile 299, which is 04.00. We've only just looked at this, so perhaps it's unnecessary to go through every line here. What we have over the course of this period is the series of steps you take to deal with the difficulties that [Baby I] is having in breathing; is that right?

NEAME: Yes.

MYERS: And by this time, her respiratory condition was significantly worse than it had been at 2 o'clock, wasn't it?

NEAME: Yes.

MYERS: And you've described how you went through a series of stages to try to work out what was wrong; is that correct?

NEAME: Yes.

MYERS: That included replacing the tubes that -- the ETT that she had, that's one of the steps, wasn't it?

NEAME: Yes.

MYERS: That you found that even when you did that, there was then still desaturation that took place afterwards, didn't you?

NEAME: Yes.

MYERS: You explained to us that you then ultimately applied suction to her throat area, didn't you?

NEAME: Yes.

MYERS: And there were some secretions that you removed?

NEAME: Yes.

MYERS: But even after that, up to the time we come to Dr Saladi, she then still continued to desaturate; is that correct?

NEAME: I think there was a significant improvement with the removal of the secretions, but she didn't recover to the same position that she was in at 9.30, for example. It was a less good position.

MYERS: A less good position?

NEAME: Despite the, you know, significant improvement from this period here.

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MYERS: Thank you. If we just go to the end of the note, please, are we able to scroll down on to the following page? Thank you, Mr Murphy.

If we look at the end of the note where we came to the conclusion of your evidence, you say -- is that:

"Airways very variable on auscultation"?

What does that stand for at the beginning?

NEAME: "Air entry very variable."

MYERS: Very squeaky?

NEAME: Yes.

MYERS: Especially on the left side?

NEAME: Yes.

MYERS: But you see, it says, "Desaturating when put back on ventilator", doesn't it?

NEAME: Yes.

MYERS: So Neopuffing again?

NEAME: Yes.

MYERS: So actually, even after the suction that had taken place and what have you, she still was desaturating, wasn't she?

NEAME: Yes, it was a -- she required ongoing careful management of her airways and ventilation at that time, yes.

MYERS: Are you aware of how her condition went during the rest of that day?

NEAME: I can't recall that (overspeaking) --

MYERS: Just so we can keep track of it, she was transferred to Arrowe Park round about 15.30 that day. We've got entries in our timeline so I'm not going to ask you to guess at what it says in there, Dr Neame. But in no way, even with your interventions, did [Baby I] begin to get back to where she'd been at 9.30 the night before, did she?

NEAME: Um... So at this entry here, she's in a less good position than she was at 9.30, that's correct.

MYERS: And Arrowe Park is a tertiary centre for a more intensive level of care, isn't it?

NEAME: That's correct.

MR MYERS: Thank you, Dr Neame.

Re-examination by MR DRIVER

MR DRIVER: Just one point of re-examination. As to the secretions that you suctioned out on your later attendance upon [Baby I], are you able to say whether that clinical finding followed on from what happened earlier or whether it was something new and distinct from it?

NEAME: Earlier?

DRIVER: Or are you not able to say?

NEAME: By earlier, which --

DRIVER: The earlier collapse when she'd been very flat and her oxygen levels and her heart rate were low, are you able to distinguish between the subsequent episodes and that or not?

NEAME: I... I don't think so. Any prolonged period of airway compromise or breathing problem may lead to a build-up of secretions, and babies who are less alert and responsive might find it more challenging to clear secretions and manage that.

MR DRIVER: That's the only further question I have for Dr Neame. Does your Lordship have any further questions.

Questions from THE JUDGE

MR JUSTICE GOSS: I just want to be clear what you mean by that answer. Is there any connection between the events that took place previously to her ongoing condition until Dr Saladi arrived with the intermittent desaturations?

NEAME: In my experience, babies who -- the longer a baby has been unwell and receiving breathing support, the more likely it is that they might have problems with secretions. That's my experience, but it may be a question that the expert witnesses might be better suited to answer.

MR JUSTICE GOSS: Right, thank you.

MR DRIVER: We think it unlikely that Dr Neame will be recalled again for any future count on the indictment.

MR JUSTICE GOSS: Right. That completes your evidence in relation to this event and indeed [Baby I]. As you've heard, it's unlikely you'll be required again, but just in case, for some unforeseen reason you are required to come and give further evidence about something else, would you please not talk to anyone about this case until it's all over or about anything to do with this case?

NEAME: Yes.

MR JUSTICE GOSS: Thank you very much indeed, Dr Neame. And thank you for coming back again having been here on Friday last week as well.

(The witness withdrew)

MR DRIVER: My Lord, may I hand over to my learned friend Mr Astbury who's going to call Dr Jayaram, I anticipate?

MR JUSTICE GOSS: Yes.

DR RAVI JAYARAM (recalled)

Examination-in-chief by MR ASTBURY

MR ASTBURY: Could you state your name for the record, please?

JAYARAM: Ravi Jayaram.

ASTBURY: Thank you. We've heard from you before, you've come along this afternoon to assist us with events in the early morning of 14 October 2015.

JAYARAM: That's correct.

ASTBURY: Thank you. And events involving a baby named [Baby I].

JAYARAM: That's correct, yes.

ASTBURY: I think you were night cover, is that right --

JAYARAM: Yes, so --

ASTBURY: -- on the 13th into 14 October?

JAYARAM: Yes. So I was the on-call consultant paediatrician for that night. So obviously I'd not been covering the neonatal unit during the day, but from 4 o'clock would have taken over being responsible for the care of children and babies on the

children's unit and the neonatal unit until the following morning.

ASTBURY: Thank you. As a matter of fact, you'd swapped the shift with Dr Saladi?

JAYARAM: Yes, originally on the rota, as it was printed, Dr Saladi was down to do the Tuesday and I was down to do the Wednesday. We will often swap at short notice if people have, for example, family commitments or other commitments. I can't remember who initiated that swap or when it was made.

ASTBURY: I suspect it matters not. But you were on duty that particular shift?

JAYARAM: Yes.

ASTBURY: All right. You mentioned the handover. Do you have any independent recollections of the shift or is your statement based purely on the notes that you've seen?

JAYARAM: The statement I've written is based purely on the notes and I actually don't have any independent recollection of the events whatsoever on this occasion.

ASTBURY: We'll run through the notes in an attempt to assist you. Before we do that, can I ask you this. You mentioned the handover. You told us before that it would be your routine, if any specific concerns were raised about a baby, to go and see the baby at the start of that shift after the handover.

JAYARAM: Yes, that's correct. At the handover every child on the unit, every baby on the unit is discussed and issues pertinent to problems that might arise over the next few hours are discussed. Most babies at that stage will have a plan for any problems that might be anticipated or that are ongoing and usually the on-call consultant, if that child is acutely unstable, will go over, having been handed over to, just to check on things. And I certainly don't recall at the time of the handover, although there had been events the night before, any specific concerns that needed urgent attention at that point being discussed.

ASTBURY: Okay. You don't remember it and, you can confirm for us, I'm sure, that there's nothing in the notes to suggest that you went to see --

JAYARAM: No.

ASTBURY: -- [Baby I] --

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JAYARAM: No.

ASTBURY: -- at teatime --

JAYARAM: No.

ASTBURY: -- on 13 October? Is it your routine to call the registrar or duty between 10 and 11 in the evening?

JAYARAM: So what we would do is -- obviously if there were unstable or poorly children or if it was very busy we would stay until things were settled and under control on call and then go home. As a matter of routine we phone in every night, the consultant on call phones in every night between 10.30 and 11 o'clock, to speak to the registrar on call, who's the most senior doctor in-house. And the registrar can update with any issues that might have arisen, either with regards to children who have been admitted or children who are already in or any children that they have acute concerns about or children where plans for management aren't clear.

I would have called in at around between 10.30 and 11 that night. Again I don't recall the conversation but from the notes, I note that Dr Neame had reviewed at just after 10 o'clock and hadn't documented any acute concerns, so I suspect that at that time he hadn't discussed anything specific that he was concerned about acutely at that point.

ASTBURY: We just heard from Dr Neame in quite a bit of detail so we don't need to worry too much, but just insofar as it assists and informs your evidence, you were able to confirm, were you, yes or no, that at 10.05 Dr Neame had examined [Baby I] and had had no acute concerns?

JAYARAM: That's my interpretation of what Dr Neame had documented in the notes, yes.

ASTBURY: Now, if we can put tile 79 up, please, Mr Murphy. Again, simply as it informs you as to your involvement with [Baby I], is it right that from the notes you were able to see -- if we go to the note, please -- and as I say we have heard in detail from Dr Neame so we don't need to go through the whole note, but were you able to confirm that at 05.55 Dr Neame was called to see [Baby I] because she had a significant deterioration in her respiratory status?

JAYARAM: I can confirm that as far as I can see from the notes, yes.

ASTBURY: Thank you. I think we've been through the detail, but as far as you are concerned, his query at that stage was whether

the respiratory deterioration had been caused by her abdominal distension?

JAYARAM: I think that was what he was thinking and, again, my interpretation from having read through the notes is that until this point in the night, [Baby I] had been relatively stable. It sounds like -- it's described that it was quite an acute deterioration. And in terms of trying to work through why, he'd observed that the abdominal distension was quite significant.

ASTBURY: Okay. We've seen that an X-ray was taken. Did you, when you eventually came in, as you did, look at that X-ray that was taken (overspeaking) --

JAYARAM: I did see the X-ray later on, yes.

ASTBURY: We'll come back to that then in the timeline, if we may, because I think the next event -- and if we can go to tile 90, please, Mr Murphy. As things developed that morning, as the note indicates, at 06.20 am, Dr Neame updated you by phone and discussed with you, did he, the X-ray findings as he had seen them?

JAYARAM: Well, he discussed the X-ray findings and also what had happened clinically as well that was described at 5.55.

ASTBURY: I think one of the things you advised him was to exclude a pneumothorax?

JAYARAM: Yes. So you may remember from a previous testimony, I discussed in this situation when a child becomes acutely unwell there's a concept of the 4Hs and the 4Ts. We have to think what's caused this. Is it due to hypoxia? So is the primary problem lack of oxygen. Is it hypovolaemia, so is there not enough fluid in the circulation. Is it hypothermia? And there wasn't an issue with temperature. Is it related to low sugars or any electrolyte imbalances, which there didn't seem to be, and there's the Ts as well.

So in this situation, thinking through, knowing that there had been a respiratory deterioration in association with a distended abdomen, the thinking was: is the distended abdomen actually contributing to the difficulties in ventilation? And that can happen for a number of reasons. The first reason is mechanical. If the abdomen is very distended it pushes upwards on the diaphragm. The diaphragm is the muscle that separates everything in the chest from the abdomen and in breathing, the diaphragm goes up and down. If the abdomen is very distended it's harder for the diaphragm to move and it can compress the lungs.

When an abdomen is distended, it also pushes on the inferior vena cava, which is the main blood vessel that carries blood back to the heart and it can reduce the amount of blood that gets carried back to the heart, which in turn has an effect on the heart's ability to pump blood around the body.

We also had to think, is there a lung problem as well? And in a ventilated baby acutely -- with an acute deterioration, a pneumothorax also has to be considered.

So at that time I felt it was important, before thinking about anything else, to exclude a pneumothorax, which can be done with a cold light, but also in view of this unexplained unusual abdominal distension, to speak with the surgical team at Alder Hey.

ASTBURY: Okay. I think that's also on his note. And before we leave the note, if we go to the second substantial paragraph, Dr Neame carried out the cold light test:

"Negative cold light examination."

Can you see that, doctor?

JAYARAM: Yes.

ASTBURY: So that's one potential cause, certainly on a triage level, excluded?

JAYARAM: Yes.

ASTBURY: If we move on, please, to the note at 104 -- sorry, if we go down to the same note. In fact, at 7 o'clock were you made aware of another significant desaturation, which did not improve with bagging on Neopuff?

JAYARAM: Yes. So in that situation -- so Matthew called me after dealing with this particular episode. In spite of bagging with the Neopuff, [Baby I] didn't pick up. So again, thinking through why isn't an appropriate intervention having an effect, the first thing to do is to think, is there an issue with the tube? And he re-intubated.

The capnography was positive, which means it's in the right place, carbon dioxide is coming out. And actually, with the tube replacement, things seemed to improve, although [Baby I] was needing quite high-pressure ventilation in order to get the lungs to move. We can see there it says 35/5. The bottom number 5 is the background pressure, the PEEP, which helps to splint the lungs open, and the top pressure is the pressure given with each breath. That's higher than it had been and it is quite a

high pressure, which suggests that the lungs -- it was difficult to inflate the lungs.

ASTBURY: If we look at the last paragraph that we can see on Dr Neame's note, despite, is this right, changing the tube, [Baby I] desaturated again despite the record being:

"Good air entry, chest wall movement and negative cold light"?

Do you see that entry?

JAYARAM: Yes, absolutely.

ASTBURY: So on the face of it, the ETT is doing its job, air going in and out --

JAYARAM: Yes.

ASTBURY: -- carbon dioxide importantly coming out but still desaturating?

JAYARAM: Yes, and at that point we hadn't done a blood gas but the fact that the baby is desaturating and not able to oxygenate at this point is of concern. That would suggest that the degree of abdominal distension, knowing that the tube is in the right place, knowing that there's no evidence of a pneumothorax, the degree of abdominal distension is probably causing such compression to the lungs that even though we could see the chest moving and gas was going in and out, there was probably an issue being caused with blood flowing through the lungs as well. So it's a combination of things here, really, in retrospect. We've got massive abdominal distension, we've got a situation where we know the tube is in, and Matthew has documented that the chest wall is moving, so gas is going in and out of the lungs, but in spite of this, in 100% oxygen, we can't get good saturations.

And what happens usually in that situation is that because the lungs are so stiff, the resistance to blood flow through the lungs increases because the lungs are stiff and then you get into a vicious circle because the oxygen levels being low mean that the lungs get stiffer. It's a situation called persistent pulmonary hypertension.

That's probably the most likely thing at this point and it's difficult to treat because actually the ideal thing here would be to try and understand why the abdomen was so distended and I don't understand why that was and it's very difficult to do anything medically rather than surgically about that as well.

ASTBURY: So that's the situation that you were faced with and why is it that you decided to go in at 7.10?

JAYARAM: So usually in this situation, whenever a registrar calls me at night or any time out of hours, I always ask them, are you -- the first thing I ask is, are you calling for advice or would you like me to come in? If they want me to come in the next question I will always ask is, do you want me ASAP, do you want me -- shall we make a plan and institute those interventions and then I will come in to see how things have worked? Or what I might do, sometimes, even if the registrar says you don't need to rush in, I will decide to come in anyway.

Now again, I can't remember my thought processes that morning, but I would, retrospectively looking at the timings of things, have said -- thought and had my discussion with Matthew that we would have been happy with things that we discussed as potential manoeuvres to try and improve things.

The other thing that comes into account here is it was 7.10 in the morning and I would have been coming to work to do the rest of the day, so sometimes in this situation -- and again I am always guided by the information given by the resident doctor, I make a judgement to actually get ready for the day rather than come in straightaway.

ASTBURY: Right --

JAYARAM: Now again, I came in later so I can only assume, because I can't remember any of these events, that the discussion that I had with Matthew Neame at the time was that he was happy to go with the advice and then for me to come in and review.

ASTBURY: Okay. Let's just see, check the rest of the note doesn't assist with that. I didn't mean to deliberately stop it there, but if we can just check the rest of the note.

JAYARAM: So what I wasn't clear of reading this next section, and I'll discuss this in detail, is whether this description of how [Baby I] was in the final paragraph was how she was from 7.10/7.15 to 7.45 or whether there'd been an improvement and she acutely deteriorated and --

ASTBURY: Interrupting you for a moment, I think it indicates at the bottom that a plan was made to administer --

JAYARAM: Yes.

ASTBURY: -- I can't make out what it says.

JAYARAM: It's suxamethonium, which is a muscle relaxant, and a bolus of normal saline, which is basically to try and bolster up the circulation.

ASTBURY: Go to tile 115, please, Mr Murphy. It's right, I think, that you arrived at the hospital at 7.59 approximately but --

JAYARAM: Yes, some time between 7.55 and 7.59.

ASTBURY: I think events rather overtook you. We can see at 7.45 --

JAYARAM: Yes.

ASTBURY: -- as you note in your statement, [Baby I]'s heart rate fell below 60, and as a consequence, and we've heard this before, CPR had to be initiated?

JAYARAM: Yes.

ASTBURY: We can see there the situation with which Dr Neame was confronted, he has told us about it, and we can see, a little bit further down the paragraph, the fact that he began effectively what we've heard is a resuscitation protocol --

JAYARAM: Yes.

ASTBURY: -- involving the administration of adrenaline, sodium bicarbonate, and in fact more than one administration of adrenaline in this case.

JAYARAM: That's correct. And in this situation, although the heart rate was still present, at a heart rate below 60, the heart is not going to be pumping effectively, and the interventions performed by Dr Neame were absolutely, in my mind, the right ones to do, and spontaneous heart rate was re-established, so successful as well.

ASTBURY: Well, I think it's spontaneous heart rate at 07.58?

JAYARAM: Yes.

ASTBURY: So if that's right, resuscitation for about 13 minutes, would you agree, from that note?

JAYARAM: Yes.

ASTBURY: Then we can see that you arrived at 7.59 and the situation was then handed over, in effect, to you?

JAYARAM: Yes.

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ASTBURY: All right. You've made your own note at tile 122, written slightly in retrospect at 8.20 --

JAYARAM: Yes.

ASTBURY: -- about 20 minutes after you arrived. You've summarised there the deterioration began at 5 am as far as you were aware.

JAYARAM: Yes. So what I've said, if I talk through what I've written --

ASTBURY: Please.

JAYARAM: -- and obviously this is a summary of what had happened before I was there. On a blood gas, it was clear that there was evidence of a respiratory acidosis, so an increased carbon dioxide level in the blood, which suggests that the ability to get gas in and out of the lungs mechanically wasn't as effective as it should have been.

ASTBURY: Right.

JAYARAM: Increased FiO2 meant [Baby I] was needing increasing amounts of oxygen to maintain her saturations. And her pH, her body's acid/base status was more acidic than it should have been. I commented on the X-ray that had been done, that there was no evidence of pneumothorax, but there was quite marked distension of the bowel --

ASTBURY: I'm going to ask you to pause there and ask you if you can identify the X-ray for us. If we can go to tile 85, please. It's the X-ray taken at 6.05 so after your conversation with Dr Neame.

JAYARAM: You can see, if you start --

ASTBURY: First of all, are you able to confirm that's the X-ray that you'll have looked at? It's 06.05 on --

JAYARAM: Yes, that is the one that Dr Neame discussed and that I looked at when I came in.

ASTBURY: Thank you. Now, you mention no evidence of a pneumothorax?

JAYARAM: No.

ASTBURY: So that was excluded in your differential diagnosis?

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JAYARAM: Yes, absolutely.

ASTBURY: But you mentioned dilation?

JAYARAM: So if we work from the top upwards, I can see that the endotracheal tube, which is ventilating through is in the trachea --

ASTBURY: Pausing there, we have added a mouse since you were last here.

JAYARAM: Okay, brilliant. So the endotracheal tube, which is there, which is what is attached to the ventilator, is in the right place. There'd been a comment about an unusual area here (indicating). I think actually that is just the scapula, the shoulder blade, behind. I don't think that's evidence of lung collapse.

The lung fields are a little bit streaky but they are not whited out and there's definitely no evidence of a pneumothorax --

ASTBURY: What do you mean by streaky?

JAYARAM: Streaky -- can you see those sort of white shadows? That's what you'd often see in babies who are born prematurely, who have got what we call evolving chronic lung disease and are still needing oxygen. So that's not an abnormal finding, if that makes sense --

ASTBURY: For a baby in this position --

JAYARAM: Yes, for this situation.

What struck me was looking at the abdominal part of the X-ray. Basically on an X-ray anything that is gaseous is more black. Now, the bowel always has gas in but you can see these big loops that are seen of bowel. Very, very distended bowel. And what's happening -- this bowel is pushing up on the diaphragm. So the diaphragm is where I'm moving the mouse now. What they're doing is they're pushing the diaphragm up to a point -- if I count the posterior rib spaces, 1, 2, 3, 4, 5, 6, you'd normally have about seven to eight posterior rib spaces visible on an X-ray, and that suggests that the diaphragm is pushed up and the lungs weren't able to inflate as much as they could.

However, the fact that there's air in the lungs suggests -- and the chest was moving -- there was definitely some gas moving in and out of lungs.

ASTBURY: So that's the concept of the movement --

JAYARAM: Yes.

ASTBURY: -- and the capnograph?

JAYARAM: Yes.

ASTBURY: When you talk about loops, it's those areas, dark areas, we can see --

JAYARAM: Yes. So the bowel wall are these white lines (indicating). And often you'd see a stomach bubble -- so the stomach's here (indicating) -- but you wouldn't see dilatation of the rest of the bowel to this extent.

ASTBURY: So that's what caused you to make the note that you did. Obviously we can go back to the note, please. 122.

JAYARAM: Following that, what I'd suggested is decreasing the PEEP, that's one of the things I suggested over the phone.

I'll try and explain it as simply as I can. As I mentioned, the PEEP is the lower number on the ventilator setting, which was 5 centimetres, which is fairly standard for a baby of [Baby I]'s gestation. PEEP helps to keep the lungs open. So at the end of a breath out, at the end of an expiration, there's a tendency for the alveoli, the air sacs, to collapse down and it helps to keep them open. If you don't have PEEP on, effectively you are obstructing the airway with your endotracheal tube and the airways are more likely to collapse down. So PEEP is important.

PEEP in itself can cause trouble because if your PEEP is too high it can cause retention of carbon dioxide. If you like, you're blowing so hard into the lungs it's actually hard to breathe out again. And the other problem with PEEP is that it can increase the pressure in the whole of the thorax, in the whole of the chest.

We had a situation here where we knew, because of the fact that the abdomen was distended and was pushing on the diaphragms, that we had a number of conflicting things to think about. We obviously had to try to ventilate better in order to get rid of carbon dioxide. But we also needed to give enough PEEP to stop the lungs from collapsing down. And we had a situation where the lungs were already compressed anyway.

Now the rationale for decreasing PEEP is that the gap between the peak pressure, that you give a breath, and the PEEP is what's called the tidal volume. And if you increase the tidal volume you blow off more carbon dioxide. So if you -- you're basically making the baby take deeper breaths, effectively, and

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if you reduce the tidal volume, you may increase the carbon dioxide --

ASTBURY: So the tidal volume is the amount of gas that's coming in and going out (overspeaking) --

JAYARAM: It's the amount of gas that goes in and out per breath.

ASTBURY: (Overspeaking) --

JAYARAM: The other rationale for reducing the PEEP is we have a situation here where we know that the intra-abdominal pressure is higher than it should be and is potentially impairing blood flow going back to the heart which then affects the contractility of the heart and how it can pump blood around the body.

So another potential advantage of decreasing the PEEP, it would decrease slightly the intrathoracic pressure. For blood to flow there would have to be a pressure gradient between the abdomen and the thorax but the main reason for reducing it was more around the carbon dioxide as well when I discussed this over the phone.

We also discussed increasing the dobutamine. Now dobutamine --

ASTBURY: I am going to ask you to pause there. I think it says:

"But no improvement."

JAYARAM: No improvement, but that's in retrospect --

ASTBURY: (Overspeaking).

JAYARAM: -- we didn't know that at the time I discussed it over the phone. I wrote this at 8.20.

We also discussed over the phone increasing the dobutamine. So dobutamine is an infusion of a medication that is designed to help to improve blood pressure. It does that by improving myocardial contractility, so how strongly the heart can contract. It can sometimes have an effect the other way by making the peripheral blood vessels dilate a bit more, so you could potentially offset the increase in your myocardial contractility by reducing the blood pressure by making the peripheral vessels dilate. But in this situation we knew that we had stiff lungs. And in order to try and get blood from the right side of the heart to flow to the lungs to pick up oxygen to go back to the left side of the heart to go round the body, we had to try and make sure that the resistance to blood flow in the lungs, so the pulmonary resistance or pulmonary blood

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pressure was lower than the systemic blood pressure because if the pulmonary blood pressure is higher than your body's blood pressure, blood will preferentially go through the holes in the heart and a thing called the ductus and bypass the lungs. I suspect that's what was happening in a situation where in 100% oxygen we couldn't achieve saturations.

So the rationale for increasing the dobutamine was really, in the context of these lungs being hard to ventilate and resistance to blood flow in them, to try to get a way of getting the systemic blood pressure high enough that blood would preferentially flow through the lungs and therefore pick up the oxygen that was going into the lungs, go back into the heart, and then oxygenated blood would pump around the body.

ASTBURY: So that increases the saturations (overspeaking).

JAYARAM: That's what should happen then, ideally.

ASTBURY: Right, okay.

JAYARAM: Then obviously there was the deterioration shortly before 7, Matthew re-intubated, seemed to stabilise.

Again, the idea between -- the idea about giving increased sedation, so increasing the morphine and using a muscle relaxant, is if the baby is breathing spontaneously, particularly with high-pressure ventilation in lungs that are very difficult to ventilate, there's a good chance that the baby could be breathing out against the ventilator -- we colloquially call it fighting the ventilator, but that's probably exaggerating what they do.

And the idea between -- the idea of sedating and giving the baby a muscle relaxant is it takes that out of the equation -- and particularly with high-pressure ventilation, it's important to do that because the higher pressure your ventilation is the higher the risk of complications such as pneumothoraces.

ASTBURY: So it sedates the baby and allows the machine to take over?

JAYARAM: Yes.

ASTBURY: All right.

JAYARAM: Well, I mean the baby -- well, yeah, it allows the machine to work more effectively than it might do otherwise.

ASTBURY: I'm sorry (overspeaking) you've also then recorded that at 7.30 there was a further desaturation and bradycardia?

JAYARAM: Yes.

ASTBURY: And then --

JAYARAM: And obviously there's resuscitation as per Dr Neame.

ASTBURY: You arrived at 7.55 (overspeaking) you have then recorded that heart rate was 1.50; is that right?

JAYARAM: Yes.

ASTBURY: So correct me if I'm wrong we've heard, that's an acceptable level?

JAYARAM: Absolutely. In a baby of this age who's just had an episode as described that is actually encouraging because it shows the electrical activity of the heart is working normally because it's a sinus rhythm.

ASTBURY: What's sinus rhythm?

JAYARAM: Sinus rhythm -- if you look at the ECG trace, it means the electrical conducting system of the heart is working as it should, the normal logical way the pacemaker should work.

ASTBURY: You have then recorded the pressure as 30/5. I can't read the next entry.

JAYARAM: It says "Inspiratory time 0.4". That means that at a rate of 60 breaths a minute the breathing in bit was 0.4 of a second, but still in 100% oxygen.

ASTBURY: Rate 60 -- (overspeaking) --

JAYARAM: That's how many breaths per minute were being given and the oxygen was 100% at the time I arrived.

And I commented when I listened with a stethoscope that the chest perhaps sounded quieter on the left-hand side and I think there was a repeat X-ray performed.

ASTBURY: I'm just going to check that, I've sorry. If it was, I've missed it and I apologise. If we carry on with your note.

JAYARAM: So at the time I arrived, [Baby I] was stable. Then looking at my notes, it seemed that at 8.25 she had another acute deterioration of her saturations. So we took her off the ventilator, hand ventilated her with Neopuff, and her saturations picked up, not above 90, but picked up to 89%. It was clear that in spite of the higher rate of morphine and the

dose she'd had of suxamethonium, she was still breathing against the ventilator.

Suxamethonium is a very short-acting muscle relaxant, but at the time she'd had it, it seemed to have made a difference, so we took a decision to start her on vecuronium, which is another muscle relaxant that we can give and works longer term.

Then I've documented that I updated [Baby I]'s parents and then at that point I would have gone to the morning handover, or the team covering neonates would have come to the neonatal unit and I would have handed over care and summarised events to the day team.

ASTBURY: That shift, I think you said, would have started at 8.30?

JAYARAM: People usually arrive at about 8.30. So handover is usually 8.30.

ASTBURY: Then that concluded your involvement with [Baby I] on that particular shift?

JAYARAM: That's correct.

ASTBURY: I'm very helpfully told if we go to tile 129, that's timed at 8.03 (overspeaking) --

JAYARAM: So that's the X-ray I was referring to. Looking at this X-ray, again there's nothing to suggest a pneumothorax, the endotracheal tube is in a good position, there's ongoing quite significant abdominal distension. And the area I could hear on the left that was quite -- it's, I suspect, probably related to the fact that the lungs are compressed and we weren't moving a huge amount of air in and out. There's a suggestion maybe there's a little bit of haziness, but I don't think there's anything significant there.

ASTBURY: Okay.

JAYARAM: So I couldn't see an underlying lung cause for the events that happened.

ASTBURY: Is there a difference between it being streaky and hazy?

JAYARAM: They're interchangeable words.

ASTBURY: Okay. That's the X-ray that was taken at 8.03 that you --

JAYARAM: And that's the one I referred to.

MR ASTBURY: Thank you. I have no more questions. Thank you, doctor.

If you could wait there for a moment. Please.

MR MYERS: We have no questions, thank you very much.

MR ASTBURY: Does my Lord have any questions?

MR JUSTICE GOSS: No, I don't, thank you very much.

MR ASTBURY: I think we will be seeing Dr Jayaram again.

MR JUSTICE GOSS: Please don't talk to anyone about anything to do with this case. We'll be seeing you again on another day. Thank you very much.

(The witness withdrew)

MR JOHNSON: I deliberately didn't deal with the NNU review because I knew we'd be pushing very close to the wire today. I can deal with it now if your Lordship wants.

MR JUSTICE GOSS: Shall we get it out of the way and then it's done? There's some more reading to do after that, isn't there? We won't start the bundle of reading this afternoon, but let's just do the neonatal review because it can be done quite quickly, I suspect.

MR JOHNSON: It can, yes.

The jury already has it, I hope. It's the penultimate document in the white file.

MRS KATE TYNDALL (recalled)

Examination-in-chief by MR JOHNSON

MR JOHNSON: Welcome back, would you identify yourself for the record, please?

TYNDALL: Kate Tyndall. Analyst.

JOHNSON: Thank you. The document should be headed "NNU Review schedule, Event 13, [Baby I]".

TYNDALL: Yes.

JOHNSON: It follows the conventions we've already established with all the other documents; is that right?

TYNDALL: Correct.

JOHNSON: Thank you. So looking at page 2 of 10, can we there see the population of the neonatal unit at the beginning of the night shift of the 13th into 14 October?

TYNDALL: Yes.

MR JUSTICE GOSS: Hang on. I don't think I've got it yet. It should be -- if you still have the separators in the last document -- before the last separator, event 3. It's a total of 10 pages. We're now on page 2, which is the layout of the unit with who's where.

MR JOHNSON: If we can go straight to page 3, first of all, which sets out the beginning of the shift; is that right?

TYNDALL: Yes, that's correct.

JOHNSON: As always, any entry relating to [Baby I] or any child who's subject of a specific allegation is set out in yellow-shaded boxes?

TYNDALL: Yes.

JOHNSON: The blue text is referable to Lucy Letby --

TYNDALL: Yes.

JOHNSON: -- actions or records made by Lucy Letby.

So we see from -- of course, this is an event that the evidence suggests started at about 5 am --

TYNDALL: Yes.

JOHNSON: -- or thereabouts on the 14th?

So we see that at the beginning of the shift --

(Pause)

JUROR: I'm so sorry, I thought I'd turned it off.

MR JOHNSON: It's usually me, don't worry.

JUROR: Sorry about that. I apologise.

MR JUSTICE GOSS: That's all right.

MR JOHNSON: We see on the first page, don't we, the first entry -- this has all the Lucy Letby entries from the whole shift in, doesn't it?

TYNDALL: Yes.

JOHNSON: As do all these documents?

TYNDALL: Yes.

JOHNSON: We see the first entry made by Lucy Letby and (inaudible) [Baby I], line 1, was at 19.45, and we can see there that there are lots of [Baby I] entries, all made by Lucy Letby apart from Dr Neame's note at 22.05?

TYNDALL: Yes.

JOHNSON: He's just been telling us about that this afternoon. On to page 2. We can see fewer entries made in relation to [Baby I], but, as before, every entry made by Lucy Letby?

TYNDALL: Yes.

JOHNSON: Every entry relating to [Baby I], that is.

TYNDALL: Yes.

JOHNSON: We can see that she was also making entries for children AM and CM?

TYNDALL: Correct.

JOHNSON: And if one cared to look back to the population distribution chart at page 2, one would see that they were the other two children in nursery 1 at the time?

TYNDALL: Yes.

JOHNSON: Page 5. Sorry, have I missed out a page?

TYNDALL: No.

JOHNSON: Page 5. The first event of note is at 5 am, where it says "Event"; is that right?

TYNDALL: Yes.

JOHNSON: That time, of course, is taken from Lucy Letby's own note, isn't it?

TYNDALL: Yes.

JOHNSON: Not from the medical records. But we see that Lucy Letby made entries on the observation chart and on the intensive care chart?

TYNDALL: Yes.

JOHNSON: So just to make it clear, 107, it says under the record type column, which is the fifth column in from the left --

TYNDALL: Yes.

JOHNSON: -- it says:

"Intensive care charts (both)".

TYNDALL: Yes.

JOHNSON: So are those two plus the observation charts, in other words respiration, temperature and -- fluids? No. I can't remember. It's the yellow and white one.

TYNDALL: Yes.

JOHNSON: Heart rate, thank you. Those are what I keep referring to as the "standard three". So you've just amalgamated two of them because in fact they're the same chart?

TYNDALL: Yes, they (overspeaking) one page, yes.

JOHNSON: Thank you. You then put in the nursing note at 108, which refers to:

"Abdomen firm +, distended +, discolouration."

TYNDALL: Yes.

JOHNSON: But if we turn over, we see that at 118, Lucy Letby gave medication to [Baby I]?

TYNDALL: Yes.

JOHNSON: At 128, she made further records on the chart?

TYNDALL: Yes.

JOHNSON: At 131, she made an entry on the infusion charts, when an infusion was started for [Baby I], and that coincides almost

exactly with the next line, 132, which is Dr Neame's examination at 05.55?

TYNDALL: Yes.

JOHNSON: Other medication was given to [Baby I] and entries made in the charts between 135 and 138?

TYNDALL: Yes.

JOHNSON: At the bottom of the page, we have the X-ray at 06.05, which Dr Jayaram has just referred to, together with an update of the administration history of an e-prescription made on the computer?

TYNDALL: Yes.

JOHNSON: Moving over the page, we see rather more entries concerning [Baby I].

TYNDALL: Yes.

JOHNSON: Before the black line at 165, we see that two of the entries are made by Dr Neame in the clinical medical records. They are lines 154 and 157.

TYNDALL: Yes.

JOHNSON: The balance of the [Baby I] entries were all made by Lucy Letby?

TYNDALL: Yes.

JOHNSON: And at the same time as the event, we see at 166 a further medication recorded by Lucy Letby, together with her colleagues, Shelley Tomlins and Caroline Oakley?

TYNDALL: Yes.

JOHNSON: That coincides, so far as the time is concerned, with a further note from Dr Neame, about which he's just given evidence.

TYNDALL: Yes.

JOHNSON: And also a nursing note concerning the re-intubation of [Baby I] at line 168?

TYNDALL: Yes.

JOHNSON: Thereafter, there are many entries for [Baby I] at the bottom of the page, between 175 and 187?

TYNDALL: Yes.

JOHNSON: Some made by Lucy Letby in conjunction with Shelley Tomlins?

TYNDALL: Yes.

JOHNSON: Many made by Dr Neame and one by Dr Jayaram?

TYNDALL: Yes.

JOHNSON: And then some blood gas records and other nursing notes concerning the handover at the end of the shift by Shelley Tomlins at 177 and 178?

TYNDALL: Yes.

JOHNSON: That picture continues over the page between lines 188 and 194?

TYNDALL: Yes.

JOHNSON: Between 204 and 211, this is after the shift has changed and therefore we have different personnel so far as the nurses are concerned making notes, but also Dr Ekaterina Clegg and Dr Jayaram?

TYNDALL: Yes.

JOHNSON: Lucy Letby's final nursing notes, when she made them, the times are entered in there at 216 and 221?

TYNDALL: Yes.

JOHNSON: And thereafter, the [Baby I] entries are made by Shelley Tomlins and Yvonne Farmer?

TYNDALL: Yes.

JOHNSON: And on the final page, there are notes made relating to other children on the ward, which no doubt are included because of the parameters of the conventions that you have applied to all these documents?

TYNDALL: Correct.

MR JOHNSON: Thank you very much. I don't know whether there are no questions.

MR MYERS: There are none, thank you.

MR JUSTICE GOSS: I think there's one final -- I think the only difference between end of shift and start of shift is the babies whose location is unconfirmed -- it's that JF was discharged at 21.30; is that right?

TYNDALL: Yes.

MR JOHNSON: There's also one in nursery 1, I think.

TYNDALL: No.

MR JOHNSON: Sorry, I'm looking at the end of the previous shift. Yes, you're quite right.

TYNDALL: Yes, that baby was discharged.

MR JUSTICE GOSS: So wherever JF was, they were discharged during the course of this time?

TYNDALL: Yes.

MR JOHNSON: Yes. Perhaps the fact that they were well enough to be discharged is reflected by the fact it's fairly difficult to find any reference to them in the review --

TYNDALL: Yes.

JOHNSON: -- other than in the population.

MR JUSTICE GOSS: So they were there but not requiring any attention, in other words?

TYNDALL: Correct, yes.

MR JUSTICE GOSS: All right.

MR JOHNSON: Thank you very much.

MR JUSTICE GOSS: Good. Thank you very much indeed. There you are. We will continue tomorrow morning at 10.30, please, when the next evidence is some more statements to be read in relation to this event. Thank you very much.

Please remember: no research about anyone or anything to do with this case and no communication by any means with anyone about anything to do with this case. Thank you very much.

(4.29 pm)

(The court adjourned until 10.30 am on Thursday, 2 February 2023)