

16 March 2023

Professor Owen Arthurs on Babies J, K, L, M, N, O, & P
Baby P - Sequence of Events

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Thursday, 16 March 2023
(10.30 am)

(In the absence of the jury)

MR JOHNSON: Just before the jury comes in, my Lord, could I offer a word of explanation as to what we're proposing to do?

It's going to be impossible to deal with the sequence of events in the time before Professor Arthurs needs to start. His ETA in the building is 11.30 and I'm proposing, subject to your Lordship's approval, to start his evidence at midday so I can speak to him.

There are a few things I just need to iron out with him and make sure I understand. It won't take very long.

As we see it, in order for Professor Arthurs to deal with [Baby P]'s case, it will be necessary for the jury to have at least an overview of the chronology and for us to prove as part of the presentation, the specific radiographs which Professor Arthurs may or may not refer to. So I have discussed this with Mr Myers and discussed it with the analyst, and what we are proposing to do is just edited highlights of the sequence, then have some time, then call Professor Arthurs to deal with the position compendiously, up to and including [Baby P], and then revert back to the sequence when that's finished and do it in the normal way.

MR JUSTICE GOSS: From scratch again?

MR JOHNSON: From scratch, yes, because we need to prove -- I mean, a lot of it will be shorthand because --

MR JUSTICE GOSS: It's all right, I understand. That's fine. I was just wondering. Okay. That's fine.

I don't see there's any other way of dealing with it.

MR JOHNSON: Part of it is just resetting all our minds to a different case.

MR JUSTICE GOSS: Well, I know. It does become confusing.

Yesterday -- although in fact I wasn't entirely wrong about it because there had been some evidence about it.

MR JOHNSON: There had.

MR JUSTICE GOSS: It is difficult. I'm grateful to Mr Myers for agreeing to it being done in this way. Thank you, Mr Myers.

MR MYERS: I'm grateful for being consulted on it. I leave it with Mr Johnson as to how he deals with it and which slides he goes to, that's not a matter for us, but we understand the process.

It's with that in mind, in fact, that although it may seem to add a little bit, it will be necessary to go back and deal with it in more detail to put everything in its right context.

MR JUSTICE GOSS: I understand that, yes. That's fine.

Thank you very much.

If you could just explain briefly to the jury that that's what is going to happen so they know when you're going through, obviously selectively and quite quickly in relation to the sequence of events this time, that it's going to be gone back over again.

There were some technical issues this morning, that was the delay. I'll just explain that.

Jury in, please.

(In the presence of the jury)

MR JUSTICE GOSS: Good morning, members of the jury. I'm sorry we're a bit late starting, there were some technical issues, but they've been resolved and we're ready to proceed.

You will remember Professor Arthurs is going to give evidence, you've seen him before. He's coming at midday, but Mr Johnson will explain how today is going to pan out.

MR JOHNSON: Yes. Ladies and gentlemen, the immovable object in a sense in today's business is Professor Arthurs, who we're aiming to start at noon.

He's travelling at the moment and is due in the building in about an hour's time. So what's going to happen is we're going to deal with edited highlights of the sequence for [Baby P] now with Claire Tyndall (sic).

The reason for that is because [Baby P]'s case is one of the ones that Professor Arthurs is going to tell you about, so we'd like you to have at least an overview of the chronology of what happened to [Baby P] before Professor Arthurs gives his evidence.

When Professor Arthurs gives his evidence, he will be questioned by us and cross-examined by the defence on all the cases from [Baby J] through to and including [Baby P]. All right?

Just whilst Mrs Tyndall comes in, can I give you a document that will help in due course. It's not going to help you very much immediately, but if I don't give it you now I'll forget to give it to you. It's to go behind divider 7 of jury bundle 1.

(Handed)

I said Claire Tyndall. Claire Hocknell. Good job my carer's here today so he can keep me on the straight and narrow.

I'll just explain what this is. It may be self-evident, but you'll understand that because [Baby P] and [Baby O] are two of triplets, many of the events that you're going to be hearing about run side by side at the same time. So as we go through [Baby P]'s sequence, you'll see, for example, in the left-hand column it says -- in the second row down it says "11". What you'll see in the sequence is that that just says a number of text messages between certain times and it gives you no more detail. But if you go to [Baby O]'s sequence you'll find all those text messages at the tiles that are referred to, so that's the point of it.

It's also a ready reckoner for you to go back to, so if you're at a point in one or other of the lads' sequences, you know where to go in the other one to get the stuff that's going on at the same time. So that's the point of it. There may be a mistake or two in there, we hope not, but it's just as a help, really, rather than evidence as such.

MR JUSTICE GOSS: The table is a working reference document in other words?

MR JOHNSON: It just saves you writing it all down as you go through.

MR JUSTICE GOSS: Like any document that you have, it's a working document for you and it's for whatever purpose you choose to use it. Thank you.

MR JOHNSON: Thank you, my Lord. Claire Hocknell, please.

MRS CLAIRE HOCKNELL (recalled)

Examination-in-chief by MR JOHNSON

MR JOHNSON: Welcome back, Mrs Hocknell. Would you just introduce yourself for the sake of the recording, please?

HOCKNELL: Claire Hocknell.

JOHNSON: Thank you. We are going to deal with the sequence for [Baby P] in full in due course, but as you know, Professor Arthurs is here today and must give his evidence today and there won't be time to deal with this document in detail before he gives evidence, but it's important that the jury has at least an overview of the events concerning [Baby P] before Professor Arthurs gives evidence. So between now and about 11.30, what I want to do is just to deal with some of the key events that happened over the period of [Baby P]'s life.

The sequence itself may well be the longest actually in this case, it's 719 tiles. But I want to deal, if we may, with about 30 or 40 of them if we can.

Just starting at the beginning with tile 2. Do we see there details of [Baby P]'s birth, which, although a minute -- well, I think a minute before in this case, before [Baby O], occurred at the same time --

HOCKNELL: Yes.

JOHNSON: -- as his brother? Thank you.

If we can move on, please, to tile 11, just to give the jury an example of something I've just told them about. Can you just -- if Mr Murphy would click on that tile, please.

This says "non-working day" on the tile, but if we were to cross-reference it with [Baby O]'s sequence, we'd find that on

this particular day there were lots and lots of text communications between Lucy Letby and people that she knew, wouldn't we?

HOCKNELL: Yes.

JOHNSON: They are set out on the tiles on the document that I think you've had a quick look at this morning?

HOCKNELL: Yes.

JOHNSON: If there are any inaccuracies, I take responsibility for the inaccuracies. It's not your document, it's mine.

If we can move on then, please, to tile 18. Do we have there the beginning of the shift, the day shift, on 23 June, which was the shift on which [Baby P]'s brother [Baby O] died at or about 17.47?

HOCKNELL: Yes.

JOHNSON: We see, as always, at tile 18 details of the staff who were on duty during that shift, don't we?

HOCKNELL: Yes.

JOHNSON: Thereafter, as we have already seen, there is a series of tiles between about number 40 and about number 104 which are lots and lots of Facebook or WhatsApp or text messages between Lucy Letby and [Dr A] or other friends of hers?

HOCKNELL: Yes.

JOHNSON: And they are exactly the same material as appears in [Baby O]'s sequence, aren't they?

HOCKNELL: Yes.

JOHNSON: We see on the table what the corresponding numbers of those tiles are?

HOCKNELL: Yes.

JOHNSON: We're not going to deal with those again anyway, even when we go through the full version of this sequence in due course, either later today or tomorrow.

So if we can move on, please, to tile 126. This is the tile marker for the death of [Baby O] at 17.47 in the afternoon of that day shift on 23 June.

HOCKNELL: Yes.

JOHNSON: If we move on, though, do we see at 127 [Dr B]'s arrival on the unit or some swipe data concerning her movements in or around the unit?

HOCKNELL: Yes.

JOHNSON: As we do at 128?

HOCKNELL: Yes.

JOHNSON: And 129?

HOCKNELL: Yes.

JOHNSON: 130 for Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Then we see the first event relating to [Baby P], don't we?

HOCKNELL: Yes.

JOHNSON: So this is about 12 minutes after the death of [Baby O]?

HOCKNELL: Yes.

JOHNSON: At 132 we have Rebecca Morgan, who's a student nurse, noting observations for [Baby P] on the observation sheet, which we will see in due course?

HOCKNELL: Yes.

JOHNSON: At the same time, so this is the time of this collapse, Lucy Letby, at tile 133, making a note on the fluid balance chart?

HOCKNELL: Yes.

JOHNSON: Then in the next tile at 134, we see a request for a septic screen, antibiotics and X-ray being made by Drs Cooke and Gibbs?

HOCKNELL: Yes.

JOHNSON: Can we move on to -- so this is now 6 pm on Thursday, 23 June. If we move on to 173, please. We've moved on 2 hours and 9 minutes. What we see here is, although this is at a time

after the end of the day shift, the tiles, as we will observe, are still edged in blue, aren't they?

HOCKNELL: Yes.

JOHNSON: This is because other evidence establishes that Lucy Letby is still in the unit?

HOCKNELL: Yes.

JOHNSON: Given that Professor Arthurs may refer to this X-ray, if we can just go behind this tile, please, Mr Murphy. I'm not going to go to the full report because we need to do this within a relatively short period of time, but does Dr Wright's report read that that:

"The NG tube [was] in a satisfactory position with its tip in the gastric body. There [were] gas filled bowel loops throughout the abdomen through to the lower rectum, with no evidence of obstruction and no plain film signs of perforation, and no intramural or portal vein gas demonstrated"?

HOCKNELL: Yes.

JOHNSON: If we just look at the X-ray. The jury are quite used to seeing these things now. If we can scroll down, please. There, do we see what is described by the radiologist?

HOCKNELL: Yes.

JOHNSON: Thank you.

Can we then move, please, Mr Murphy, to tile 190.

That's 2 hours and 9 minutes on. We're now 2 hours and 59 minutes on from the collapse or the first incident involving [Baby P]. Do we see here that there is a resumption of text message type communications involving Lucy Letby and [Dr A]?

HOCKNELL: Yes.

JOHNSON: If we look at the sheet that the jury has just been given and that you have, these tiles correspond to tile 324 onwards in the [Baby O] sequence of events?

HOCKNELL: Yes.

JOHNSON: At tile 235 next, please, Mr Murphy, we see that it was at midnight, if we just click on that, and on to -- well, we'll stick with your transposition of what's in the chart: donor-expressed breast milk feeds stopped, and an aspirate of 20ml --

HOCKNELL: Yes.

JOHNSON: -- with a pH of 3?

HOCKNELL: Yes.

JOHNSON: Tile 238 next, please. This is an update to the nursing notes made by [Baby P]'s designated nurse that evening, who was Sophie Ellis. If we can click on that, please.

Do we see there that she recorded that observations have been within normal limits, did have one desat --

MR JUSTICE GOSS: It says "within limits" on here.

MR JOHNSON: Yes. Isn't that what I said?

MR JUSTICE GOSS: You said "normal limits".

MR JOHNSON: Sorry, I beg your pardon.

MR JUSTICE GOSS: It may come to the same thing, but...

MR JOHNSON: No, it's just me unconsciously inserting a word, I'm sorry:

"Observations have been within limits. Did have 1x desat into 80s and 1x brady into high 90s. Self-corrected, no intervention required. Does at times have a low-lying heart rate between high 90s and 110. SHO Henton aware. Plan to put nil by mouth and start 10% dextrose at 90ml/kg/day."

And then information about the cannula site and blood gas.

HOCKNELL: Yes.

JOHNSON: Thank you. So that's 238 and that's at 01.31.

At 249, please, do we come to a further nursing update, this time made at 06.39? We've now got to the end of the shift and Sophie Ellis has recorded:

"Abdo has been soft and non-distended. 25ml of air aspirated by SNP Kate Ward. NGT placed on free drainage."

HOCKNELL: Yes.

JOHNSON: Thank you. We're now in the early morning of Friday, 24 June, so the day after [Baby O] had died.

If we go to 257 next, please. Do we there see, at 257 and 258, the record of the nursing shift handover?

HOCKNELL: Yes.

JOHNSON: And just so that the jury understand, this was the shift on which [Baby P] was to die?

HOCKNELL: Yes.

JOHNSON: If we can go to -- just click on 258, please. We see there that [Baby P] was in nursery 2, as it happens, with his brother, [Baby R].

HOCKNELL: Yes.

JOHNSON: He's just recorded there as NG. His designated nurse was Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Lucy Letby had no other children for whom she was the designated nurse on this shift?

HOCKNELL: No.

JOHNSON: And as a matter of observation, and his case we will come to as the final of the cases, we see that [Baby Q] was in nursery 1?

HOCKNELL: Yes.

JOHNSON: We can go back to the sequence, please, and go to tile 263. Here do we see Lucy Letby's nursing note for this shift?

HOCKNELL: Yes.

JOHNSON: Could you take us through what she recorded at the beginning of the shift, please?

HOCKNELL: "Written in retrospect for care given from 08.00. Emergency equipment checked. Fluids calculated. [Baby P] nursed in an incubator. Observations within normal range. [Baby P] nil by mouth. IV fluids 10% glucose at 90ml/kg running via peripheral line. Line occluding with high pressures. NG tube on free drainage. Trace amount in tube. Abdomen full. Loops visible. Soft to touch."

JOHNSON: We'll compare these nursing notes in due course but that's what she recorded then. That was 263.

Can we go to 286 next, please. It's a record of what was going on at 8 am. I perhaps should have observed that that was a note that she actually made at about 9 pm that day.

HOCKNELL: Yes, 21.18.

JOHNSON: Thank you. Just to chart the progress of [Baby P] through this shift as recorded by Lucy Letby, do we come next to this note, which you've put in -- can we go back to the tile, sorry, Mr Murphy?

From the context, you've put this in at 9.30; is that right?

HOCKNELL: Yes.

JOHNSON: And just for us to understand why you've put it in then, could you read to us -- take us through what Lucy Letby recorded?

HOCKNELL: "Registrar Ukoh arrived to carry out ward round. [Baby P] had an apnoea, brady, desat with mottled appearance requiring facial oxygen and Neopuff for approximately 1 minute. Abdomen becoming distended."

JOHNSON: Yes. The reason that's in is because Dr Ukoh has timed his attendance on a ward round at 9.30; is that right?

HOCKNELL: Yes.

JOHNSON: If we go back to the carousel. That's 286. Could we go to 291, please. We then have the second event for [Baby P]; is that right?

HOCKNELL: Yes.

JOHNSON: This is timed a few minutes after 09.30, some time after or just after 09.35; is that right?

HOCKNELL: Yes.

JOHNSON: To find out what Lucy Letby recorded, do we go to tile 292?

HOCKNELL: Yes.

JOHNSON: If we could click on that and you tell us what she recorded, please.

HOCKNELL: "Shortly after acute deterioration..."

JOHNSON: So that's text that follows along immediately in the nursing note if we were to look at the original from what you just read to us earlier about the attendance of Dr Ukoh?

HOCKNELL: About the ward round.

JOHNSON: So that's 292. If we can go back, please, we'll see that [Dr B]'s notes come next but we're not going to deal with them at this stage.

Can we go to tile 302, please. Do we then have a neonatal unit resuscitation record which, we can see, comes just after a fast bleep that was sent out, no doubt, for assistance?

HOCKNELL: Yes.

JOHNSON: If we can look at what's recorded on the resuscitation record at 09.50, please. This is the start of chest compressions, which is, just putting it into the sequence, 20 minutes after Dr Ukoh's examination of the child?

HOCKNELL: Yes.

JOHNSON: Can we look at the document itself. It is a document of a type that we saw in [Baby O]'s case but, I think we heard from Dr Brearey, had been introduced to the unit for the reasons that he explained. Here we see in column 1:

"09.50, chest compressions started. Adrenaline, 09.55. Sodium bicarbonate, 10.15. Sodium chloride, 10.08."

Scrolling down to the bottom, we'll see later "panc", which may or not be pancuronium, one of the intubation or ventilation drugs.

HOCKNELL: Yes.

JOHNSON: We can already see from this document that chest compressions were started during that day at various subsequent stages as well?

HOCKNELL: Yes.

JOHNSON: Just returning please to the carousel, Mr Murphy; that was tile 302.

Tile 305 next, please, just to give us an idea of what was going on at this stage, just looking at the notes of [Dr B], please. Could you take us through interest [Dr B]'s note?

HOCKNELL: "Dr Ukoh and Senior Nurse Lucy present. Dropping sats and heart rate. Just a few mins earlier had briefly seen [Baby P] and discussion with registrar to do a gas, lactate, ammonia, full blood count and CRP. Shortly after this, [Baby P] deteriorated. Dr Ukoh started to bag. IV access xl was lost as not flushing. Airway maintained with Neopuff bag whilst getting intubation ready. Few attempts at IV access unsuccessful."

JOHNSON: Thank you. These are events at just before 10 am.

The next one, please, tile 332. We're now about 20 minutes or so later at about -- the context you've put it in is at about 10.06 or 10.08; is that right?

HOCKNELL: Yes.

JOHNSON: Again, we return to Lucy Letby's nursing record.

HOCKNELL: "Placed on ventilator. CMV 23/6. Inspiratory time 0.4. Rate 60 in 75% oxygen. 100mcg/kg morphine bolus given."

JOHNSON: Thank you. Going back to the carousel, please, moving on in time to tile 384. We've moved on in time approximately 1 hour and 20 minutes; is that right?

HOCKNELL: Yes.

JOHNSON: And we're at about 11.30 am. Here we have the second necessity for CPR, which we had seen on that handwritten sheet earlier.

HOCKNELL: Yes.

JOHNSON: Can you take us through what Lucy Letby recorded as having happened at approximately 11.30?

HOCKNELL: "CPR for 6 minutes. Loaded with pancuronium. Peripheral access obtained. Observations as charted. Mean cuff blood pressure maintained. Colour and perfusion poor. Mottled and capillary refill 3 to 4 seconds. Nil obtained from NG tube. Abdomen full but soft. Nil urine passed. Meconium passed."

JOHNSON: So that's 384. Moving on to tile 400 next, please.

This is the second X-ray which may be referred to later.

This is at just before noon, 11.57 hours, on 24 June.

Can we see what Dr Wright reported, please? Could you take us through her report?

HOCKNELL: "There is a moderately large right pneumothorax."

JOHNSON: Start with the indication.

HOCKNELL: "Indication: arrest [query] cause. Sepsis-related possibility. Intubated. Noted distended abdomen. Chest: assess for pathology and ETT position. Abdo: assess for pathology.

"Report: there is a moderately large right pneumothorax. Allowing for rotation to the left, there is no evidence of mediastinal shift to indicate tension. ET tube in situ with its tip at T1 level. This could safely be advanced a further 10 to 12 millimetres. Normal cardiac size and cardiothymic contour. The bowel gas pattern is within normal limits with no evidence of obstruction or perforation and no intramural gas to suggest NEC. Report conveyed to the clinical team by phone."

JOHNSON: So that's tile 400. Can we move on to 411, please.

This is the tile that you have inserted for a further event concerning [Baby P]; is that right?

HOCKNELL: Yes.

JOHNSON: I'm not asking Mr Murphy to go to it, but we can see on the screen there that the resuscitation -- there is a manuscript resuscitation record made at this time as well.

HOCKNELL: Yes.

JOHNSON: That's at 412. So that's just a shade before 12.30.

Can we go to 432 next, please. This is about 10 minutes later; is that right?

HOCKNELL: Yes.

JOHNSON: So at 12.40, just looking at the --

HOCKNELL: Yes.

JOHNSON: -- tile to the left of this tile, 432. Can we go to what Lucy Letby recorded, please?

HOCKNELL: "Adrenaline infusion commenced along with dopamine. Needle aspiration for right-sided pneumothorax."

JOHNSON: That's 432. At 434 do we have the third X-ray of the day?

HOCKNELL: Yes.

JOHNSON: We'll deal with that because of the advent of Professor Arthurs.

HOCKNELL: "Indication: for assessment following chest drain insertion to right side for pneumothorax. ET tube and NG tube in satisfactory position. A right-sided chest drain is in situ and it is projecting medially over the upper zone. A shallow, residual right pneumothorax is noted at the costophrenic angle. Otherwise no focal pulmonary pathology."

JOHNSON: Thank you. Just so the jury see it, please, could we click on the image, Mr Murphy? Thank you.

Professor Arthurs may deal with it later.

Back to the carousel, please. On to tile 473.

We've moved on about half an hour in time or so to 13.10. Again, to Lucy Letby's nursing note. Can you tell us what she wrote as having been going on at this time, please?

HOCKNELL: "Dobutamine commenced. Inotropes running via peripheral line in right arm."

JOHNSON: Thank you. That's 13.10, tile 473.

Can we move to 484, please?

MR JUSTICE GOSS: Bit of a symphony of coughs there! Are you all right? Don't worry about it. Everyone's got water who wants water, haven't they? Yes, thank you.

Sorry, Mr Johnson. Can we go back over that again?

MR JOHNSON: Don't apologise to me; I have sympathy.

484, please. We're now almost at 13.30. 13.25, a nursing note made by Lucy Letby.

HOCKNELL: "Some drugs via peripheral line, some via IO access."

JOHNSON: Pausing there, that's the intraosseous access that we heard about in [Baby O]'s case?

HOCKNELL: I think so, yes:

"Morphine discontinued as nil access to run. 10% stopped as [Baby P] receiving over fluid requirements through infusions. Right arm with inotropes is noted to be swelling and digits purple. Trace blood obtained from NG tube. [Baby P] pale."

JOHNSON: That's 484. At 492, did Lucy Letby then send, 5 minutes after that note, a message to [Nurse E], saying:

"Another triplet collapsed"?

HOCKNELL: Yes. And [Nurse E] replied:

"What? Is it okay?"

JOHNSON: Yes. Can we move on to 501 next, please. She then sent a message to [Nurse E] saying:

"No resus."

HOCKNELL: Yes.

JOHNSON: Then at 535, please, we come to a further note relating to events at 15.00 hours?

HOCKNELL: Yes:

"Pigtail chest drain inserted by Registrar [Dr A]."

JOHNSON: The jury know all about this from the case of [Baby H]. It's related to the pneumothorax?

HOCKNELL: Yes.

JOHNSON: That's 535. Can we then go to 544, please. We then come to a yet further event, which you have timed as having occurred at just about 3.10/15.10.

HOCKNELL: I think it's 15.14, but yes.

JOHNSON: 15.14, I beg your pardon. And of course you've gone right, so to speak, to the screen by referring to [Dr A]'s note timed at that point --

HOCKNELL: Yes.

JOHNSON: -- concerning a cardiorespiratory arrest.

HOCKNELL: Yes.

JOHNSON: If we just go to 545, please, just so that we understand what's going on and look at your typed version of his handwriting. As we've said, this is, "Cardiorespiratory arrest, CPR commenced at [that time]", isn't it?

HOCKNELL: Yes.

JOHNSON: At 574, please, do we come to the fourth X-ray of the day reported on by Dr Wright?

HOCKNELL: Yes.

JOHNSON: Can we go to that, please. Can you take us through what's recorded there?

HOCKNELL: "Indication: intubated, cardiac arrest, triplet brother deceased. Report: ET tube and NG tube in satisfactory position. Presumed right chest drain in situ. The pneumothorax has fully resolved and there is no evidence of focal pulmonary pathology. Normal cardiac size and cardiothymic contour."

JOHNSON: Thank you. If we just look at the image, we can see the pigtail drain on the left of the image, so on the right of the child, and various lines and matters to which the radiologist refers?

HOCKNELL: Yes.

JOHNSON: Can we go to 597 next, please. We can see immediately to the right of that tile on the screen, a record of [Baby P]'s death at 16.00 hours. But can we go to -- and we can see, to the left of the screen, [Dr A]'s record of the fact that resuscitation was stopped. Can we go to Lucy Letby's note, please.

HOCKNELL: "Consultant [Dr B] and Registrar [Dr A] present throughout. Consultants Gibbs and Brearey and SHO Burke also assisting at times. Decision made with parents to stop resuscitation efforts at 16.00. [Baby P] given to parents to hold."

JOHNSON: Thank you. Back to the carousel, please. As I've already referred to at 598, the death marking tile.

Then 599, please, which is the final piece of information that I'm going to deal with as part of this exercise. Do we then see a further note made by Lucy Letby?

HOCKNELL: Yes:

"Parents present and updated throughout. Aware of how ill [Baby P] was and that transport team were coming to take him to Liverpool Women's Hospital. Baptism offered and accepted. Parents held [Baby P] as he passed away and have spent time with him and sibling [Baby O] (RIP)."

MR JOHNSON: My Lord, in the time available, I don't think there's anything else that we can usefully do. I think the jury now have an overview of the position with [Baby P].

MR JUSTICE GOSS: Yes. Obviously, that's helpful because it gives you the context of the evidence that you're going to hear from Professor Arthurs relating to [Baby P] and, as you know, he will give evidence in relation to some of the other children as well.

It's going to mean that you've got three-quarters of an hour by way of break now, I'm afraid. Sorry, I am afraid there's nothing else we can do about it. It's entirely up to you where you go, but I wouldn't recommend you stay there for three-quarters of an hour.

Go and get some fresh air if you want. At least it's warmer today outside. I'm conscious that some of you are not in perfect health at the moment by reason of all the upper respiratory tract infections that there are about at the moment. Please yourself, but be ready to be back to start at midday, 12 o'clock, please.

I remind you again, as I've been reminding you constantly: please don't talk about anything to do with this case unless you are all together and each of you can hear what is said by any other juror. Thank you very much indeed.

(In the absence of the jury)

MR JUSTICE GOSS: Mr Astbury.

MR ASTBURY: My Lord, it's not going to fill a lot of the time, I'm afraid, but now may be an opportunity to raise an issue with regard to Dr Arthurs. As my Lord will have appreciated, he's not going to have time or be in a position today to deal with the final baby, being [Baby Q], in our sequence. He has difficulties returning to Manchester after today.

I have raised this with my learned friend Mr Maher for the defence and there is no issue taken with this, but we would apply, please -- and I'm grateful for the necessary notice being waved -- for a live link, please, for Dr Arthurs for that limited part of his evidence, which will be relating to [Baby Q]. We have taken the liberty of speaking to Dr Arthurs in advance.

The date he can appear by a live link, if the application is successful, will be 28 March, which would be the first day of Dr Marnerides' evidence, as we anticipate it to be, so it would fit in with the expert aspect of that particular passage.

Again, I'm grateful, and I hereby seek a live link, please, to that limited extent for Dr Arthurs on that day to deal with that baby.

MR JUSTICE GOSS: On the 28th?

MR ASTBURY: Yes, please.

MR JUSTICE GOSS: Mr Maher, you are dealing with this?

MR MAHER: I checked with Mr Myers. We have no objection to that application.

MR JUSTICE GOSS: That makes good sense. It's discrete, being only one child involved, and it won't cause any difficulty and the jury will see Dr Arthurs today, they've seen him before, so they're familiar with him.

Thank you very much indeed for that.

I dispense with the required written applications for a live link in respect of Professor Arthurs giving evidence on the 28th and I grant the application, it being unopposed and it is clearly appropriate.

MR ASTBURY: Thank you. We will liaise over any images that need to be circulated in advance.

MR JUSTICE GOSS: I'm sure that will be done. It's Tuesday -- it's a week on Tuesday.

All right, thank you very much. You'll be coming back later today, I anticipate, to go back to the beginning again. Thank you.

(The witness withdrew)

MR JUSTICE GOSS: Does anyone want to go down and see...?

MR MYERS: There may not be time in the circumstances to do that. I know there's been a consultation with Ms Letby this morning so we don't anticipate that will be necessary.

MR JUSTICE GOSS: All right, so no one will be coming down.

Thank you very much.

MR MYERS: Not at this point.

MR JUSTICE GOSS: I shall be ready. If there's any difficulty, Mr Johnson, would you just get a message through to me --

MR JOHNSON: Of course.

MR JUSTICE GOSS: -- via the court clerk or the usher?

Thank you very much indeed.

(11.19 am)

(A short break)

(12.00 pm)

(In the presence of the jury)

PROFESSOR OWEN ARTHURS (recalled)

Examination-in-chief by MR JOHNSON

MR JOHNSON: Welcome back, Professor Arthurs. Just for the sake of the recording, would you identify yourself, please?

ARTHURS: I'm Owen John Arthurs.

JOHNSON: Thank you. You last joined us in February --

ARTHURS: Yes.

JOHNSON: -- it was Friday 13th, when you gave evidence in relation to a number of children up to and including [Baby I].

ARTHURS: Yes.

JOHNSON: What I would like to do now is to bring us up to date from that point, please. So we're going to start, so far as individual cases are concerned, with [Baby J]. But just before I do that, I'd like to ask you a few general questions first of all.

ARTHURS: Yes.

JOHNSON: In each of these cases you have produced at least one report; is that right?

ARTHURS: Yes, that's correct.

JOHNSON: You have also looked at many of the reports of other experts from other disciplines?

ARTHURS: Yes.

JOHNSON: But whilst you have done that, you have confined yourself to your own particular discipline of paediatric radiology?

ARTHURS: Yes.

JOHNSON: Additionally, when you look at an individual case, do you take into account your findings in other individual cases? So if you're looking at case A, do you take into account your findings in cases B, C and D in interpreting the images in case A?

ARTHURS: No. However, I have been asked to write an overview and then try and contextualise those findings, but no each case is taken on its own merits.

JOHNSON: Does it follow that if you have observed similar features in a number of cases, you haven't sought yourself to draw any inference from the fact that there are similarities between more than one case?

ARTHURS: No. The findings on the images are independent.

MR JUSTICE GOSS: And discrete to that baby, that's the point --

ARTHURS: Yes.

MR JUSTICE GOSS: -- and the conclusions you reach?

ARTHURS: The conclusions are discrete to that baby alone, yes.

MR JOHNSON: And based solely on the imaging?

ARTHURS: Yes.

JOHNSON: You have just referred to the fact that you compiled an overarching report, so to speak, in which you contextualised all the children whose cases the jury have considered or are about to consider?

ARTHURS: Yes, that's correct.

JOHNSON: And essentially, you put them into various categories?

ARTHURS: Yes.

JOHNSON: Subsequent to all your reports, did you also review your findings in the light of other material that you received at a later date?

ARTHURS: Yes, that's correct.

JOHNSON: Again, you addressed each of the children's cases individually but in the context of a single report?

ARTHURS: Yes.

JOHNSON: And that was a report that you co-signed on 14 July 2022; is that right?

ARTHURS: That's our joint expert meeting, yes, that's correct.

JOHNSON: Just so that the jury understand the exercise that you undertook, did you divide -- well, you've told us you divided the children into three categories?

ARTHURS: Yes.

JOHNSON: Category A, those in whom the radiographs were normal or only showed mild abnormalities or were non-contributory, as you put it?

ARTHURS: Yes, those are X-rays where either the -- all of the babies in whom either the X-rays were normal or expected findings related to their prematurity, in which case nothing further can be drawn purely from the imaging, yes.

JOHNSON: Was there a second category, those in whom radiographs were abnormal but the abnormalities were in keeping with the patient's clinical history and condition?

ARTHURS: Yes, that's correct.

JOHNSON: And was the final category those in whom the radiographs were abnormal and, as you put it, should be considered in more detail?

ARTHURS: Yes.

JOHNSON: I'm referring here, for your assistance, I hope, to your joint report of 14/7/22 --

ARTHURS: Yes.

JOHNSON: -- and paragraph 4 of that report. Did you express a conclusion as to whether radiographic evidence of air embolus was rare or not?

ARTHURS: Yes: radiographic evidence of air embolus is rare.

JOHNSON: Does that mean that seeing any evidence or radiographic evidence of air embolus is rare or that in cases where air embolus is suspected, seeing anything is rare?

ARTHURS: Both.

JOHNSON: Is the absence of radiographic evidence, evidence of the absence of an air embolus?

ARTHURS: No.

JOHNSON: So if you can't see it on an X-ray, that doesn't mean there wasn't an air embolus?

ARTHURS: That's correct.

JOHNSON: In your experience and from your perspective, what is the cause of most air emboluses?

ARTHURS: Air embolus does occur as a result of the introduction of air during the manipulation of lines and -- so from that perspective they are called iatrogenic, so they are caused by the medical profession in that sense, yes.

JOHNSON: It may be that you've touched on this before; I am still looking at your paragraph 4. Did you express a view as to the timing of radiographs in the context of a case which may at the time or subsequently be suspected to be a case of air embolus?

ARTHURS: Yes. There's a few hypotheticals, I think, in your question. But effectively, if a baby were to have an acute air embolus event, they would need to be resuscitated fully and the event of resuscitation might take so long as to prevent you getting a radiograph. So one of the reasons I think we don't have imaging evidence of acute air embolus is because the imaging of the event isn't the important thing at the time.

JOHNSON: The primary function of the medics is to save the life?

ARTHURS: Yes, absolutely. So if all the air has dissipated within half an hour or something then an X-ray taken an hour later won't show anything.

JOHNSON: In considering those circumstances, is there any guidance, any reliable guidance anywhere as to the exact quantities of air that are needed to induce an air embolus or how long it lasts in the circulation?

ARTHURS: The simple answer to that is no, not really.

JOHNSON: Thank you. Can we move on to individual cases next, please, professor. I'll take this slowly for my own benefit, really, so we don't get confused about who we're talking about.

The first child about whom I would like to ask you is [Baby J]. You wrote your initial report on 19 May 2020 or signed it on 19 May 2020; is that right?

ARTHURS: Yes, that's right.

JOHNSON: [Baby J], just to remind us all, was born on 31 October 2015. At her birth she was 32 weeks and 2 days old. She weighed 1.709 grams.

I would like to start first with --

MR JUSTICE GOSS: 1.709 kilograms or 1,709 grams.

MR JOHNSON: Sorry, quite right.

So far as the material that you reviewed, you were given a report written by Dr Evans and a report written by Dr Bohin, is that right --

ARTHURS: Yes, that's correct.

JOHNSON: -- dated 31 May 2018 and 23 March 2019 respectively.

ARTHURS: Yes.

JOHNSON: Were you also given quite a large number of radiographs of [Baby J], seven in total, I believe?

ARTHURS: Yes, that's correct.

JOHNSON: Starting in time on 31 October 2015, which was the day of her birth?

ARTHURS: Yes.

JOHNSON: And ending with an image, I think taken in Manchester, on 18 December 2015?

ARTHURS: Yes, that's right.

JOHNSON: I may have confused the Manchester element of that, but either Chester or Manchester. We heard she was transferred to Manchester at that time.

The particular event that the jury are concerned with in relation to [Baby J] relates to a collapse on 27 November 2015.

If Mr Murphy would just help me, please, by retrieving her sequence of events so that we can reset our collective memories. It's tile 206, I believe.

If we could go to Dr Gibbs' notes, just to refresh our collective memories as to what he wrote at the time.

There's nothing on that one.

Could you go to the notes themselves, they'll help.

There at 7.35 he has written:

"Two further episodes of sudden desats at 06.56 and 07.24, both associated with clenching of hands, stiff limbs upper and lower and on two occasions eyes deviated to the left [as read]."

I'm sure the ladies and gentlemen of the jury remember this evidence.

MR JUSTICE GOSS: It's "on the second occasion", not "on two occasions". You said "on two occasions".

MR JOHNSON: Yes, sorry.

Now, that's a note made, timed at 7.35. The relevant image, so far as you were concerned, professor, I think was taken at 8.54; is that right?

ARTHURS: Yes, that's correct.

JOHNSON: So in round terms, about an hour and 20 minutes later?

ARTHURS: Yes.

JOHNSON: The image you refer to, what conclusions did you draw from the image in question?

ARTHURS: Only that essentially it was unremarkable. There's a little bit of fluid in the lungs and she clearly has a stoma by that stage. But the bowel gas is unremarkable, so for all intents and purposes, within normal limits.

JOHNSON: So far as categorising [Baby J] into one of your three categories, she was in the first category?

ARTHURS: Well, she had previous imaging which showed that she had an acute bowel obstruction.

JOHNSON: Yes.

ARTHURS: So she was in my second category of children who had abnormal radiographs for which there was an explanation and she underwent what would be normal medical care for that.

JOHNSON: Yes. Thank you. So does it come to this for the avoidance of doubt: your particular discipline doesn't contribute to the issues in her particular case?

ARTHURS: That's correct, yes.

MR JUSTICE GOSS: Sorry, you did say when the X-ray was taken, but I didn't get a note of it, I'm sorry.

MR JOHNSON: It was 8.54. Actually, let's look at it just to remind ourselves. It's tile 226 in the [Baby J] -- because it was unremarkable, I didn't take us to it.

MR JUSTICE GOSS: No, I'm not suggesting -- it's up to you.

I just want to get the timing of it.

MR JOHNSON: Well, there's perhaps no harm in us just giving each individual case mature consideration, my Lord.

I perhaps rushed it a little, which I shouldn't have done.

If we could click on that, Mr Murphy, so we can understand the image that you're talking about.

So that's the image that --

ARTHURS: Yes, that's correct.

JOHNSON: Thank you. So that's [Baby J]'s case.

Can we move on to the case of [Baby K]. I think we can probably take the image down, please.

[Baby K], you recorded -- and again you signed off a report on 19 May 2020; is that right?

ARTHURS: Yes, that's correct.

JOHNSON: You made several supplemental reports, including the most recent one last year?

ARTHURS: Yes.

JOHNSON: You recorded the fact that [Baby K] was born on 17 February 2016 at 02.12?

ARTHURS: Yes.

JOHNSON: That she was 25 week's gestation and weighed 692 grams?

ARTHURS: That's correct.

JOHNSON: That she died 3 days later, on 20 February, at 05.30 hours at 3 days of age. I think you understand, don't you, professor, that the issue so far as [Baby K] is concerned is really a factual issue relating to an incident that happened in nursery 1 in the early hours following her death? And whilst you have looked at images of [Baby K], which are three images taken on 17 February at 06.07, 07.55 and 11.28, does it come to this, that none of them help to illuminate the issues between the prosecution and the defence in her case?

ARTHURS: Yes, that's correct.

JOHNSON: Thank you. Can we move on then, please, to the case of [Baby L]. Your initial report in [Baby L]'s case was signed off on 19 May 2020 and you have made several supplemental statements since; is that right?

ARTHURS: Yes, that's correct.

JOHNSON: [Baby L], to remind us, was one of twins, born with [Baby M] on 8 April 2016. He was 33 weeks plus 2 days and he weighed 1,465 grams at birth.

Again, Professor Arthurs, I think you have received the reports of Dr Evans and Dr Bohin?

ARTHURS: Yes, that's correct.

JOHNSON: You understand from those reports that the issues in [Baby L]'s case concern the administration of insulin?

ARTHURS: Yes.

JOHNSON: So far as radiographs were concerned, there was but a single radiograph taken of [Baby L]; is that right?

ARTHURS: Yes, that's correct.

JOHNSON: That was taken on 10 April 2016 at 02.28 hours in the morning?

ARTHURS: Yes.

JOHNSON: So a couple of days after he was born. And as in the case of [Baby F], can a radiograph help with the issue of alleged malevolent administration of insulin?

ARTHURS: No.

JOHNSON: Can we move on, therefore, please, to the case of [Baby M], [Baby L]'s twin. So far as [Baby M] was concerned, again, you signed off your initial report on 19 May 2020?

ARTHURS: Yes.

JOHNSON: You have provided supplemental statements since that date; is that right?

ARTHURS: Yes, that's correct.

JOHNSON: And you address [Baby M]'s case in your most recent statement of 2022, the date of which I gave before, 14 July?

ARTHURS: Yes, that's right.

JOHNSON: [Baby M], as was [Baby L], was born on 8 April. He too, 33 plus 2, but slightly heavier at 1,703 grams.

So far as the material you reviewed for [Baby M] was concerned, did you receive two reports written by Dr Evans?

ARTHURS: Yes, that's correct.

JOHNSON: And a single report written by Dr Bohin?

ARTHURS: Yes.

JOHNSON: You will understand from that material that the allegation so far as [Baby M] is concerned is that he received intravascular air at about 16.00 hours on 9 April?

ARTHURS: Yes.

JOHNSON: From the point of view of your specialty, did you receive six separate radiographs?

ARTHURS: Yes, I did.

JOHNSON: The two most relevant to the event alleged in this case were the first radiograph, which was dated 9 April at 17.00 hours?

ARTHURS: Yes.

JOHNSON: That's tile 192 of the [Baby M] sequence. The second and other relevant radiograph was dated 9 April, so the same day, this one timed at 19.12?

ARTHURS: Yes.

JOHNSON: And for anybody's note, that is tile 238 of the sequence.

I would like to start, if we could, please, with Mr Murphy's help, by looking at the [Baby M] sequence at tile 193.

Is that the first image that you considered, professor?

ARTHURS: It looks like it. I can't see the time on that particular image. Is it at the bottom, just to confirm?

JOHNSON: Yes, I think it will be.

ARTHURS: Yes. 5 o'clock on 9 April, yes.

JOHNSON: If we look at the second, which if my note is right is 238. No, 237.

In the context of an allegation of air embolus, can we deal with the radiographs one by one, please? What conclusions did you draw so far as the first of those radiographs was concerned?

ARTHURS: Only that the lungs are clear and that the bowel gas pattern is normal. Most of these radiographs were done to check line position, so they don't contribute to what you've just described.

JOHNSON: So far as the second radiograph, taken at 19.12, is concerned, same comments apply?

ARTHURS: Same comment. This shows an umbilical venous catheter, which I'm sure has been described several times in the courtroom already, but this one is too high and this was replaced on the next radiograph, so this just shows standard neonatal care, effectively.

JOHNSON: Therefore were there any radiographic features of these images which could either support or refute the suggestion of an intravascular air embolus?

ARTHURS: No, and they neither support nor refute an air embolus, that's correct.

JOHNSON: For reasons which you set out at the beginning of your evidence?

ARTHURS: Yes.

JOHNSON: Can we move on to next the case of [Baby N], professor. Again, your report was signed off on 19 -- your initial report was signed off on 19 May?

ARTHURS: Yes, that's correct.

JOHNSON: And as with all the other cases we've dealt with today, you have written supplemental statements and indeed addressed this in the context of your most recent report?

ARTHURS: Yes, that's correct.

JOHNSON: Did you record the basic facts, that [Baby N] was born on 2 June 2016 at 13.42?

ARTHURS: Yes.

JOHNSON: That his gestation was 34 weeks and 4 days and that his birth weight was 1,440 grams?

ARTHURS: Yes.

JOHNSON: The particular individual difference between his and other cases is he suffered from haemophilia. So far as the material that you reviewed was concerned, professor, again did you receive two reports from Dr Evans and a single report from Dr Bohin?

ARTHURS: That's correct, yes.

JOHNSON: In conjunction with, on this occasion, four separate radiographs?

ARTHURS: Yes.

JOHNSON: Just to remind the jury, there are three counts relating to [Baby N]. One is in the early hours of 3 June and the other two are on the day shift of 15 June. This is evidence that we heard -- the primary evidence of which we heard of couple of weeks ago. Just dealing with the radiographs in the context of the events that the jury are concerned with, as I've already said, the first incident was on 3 June at 01.00 hours. The closest image in time to that, was that taken on 2 June at 18.03?

ARTHURS: Yes, that's prior to the event, yes.

JOHNSON: Yes. The next image in time, that was taken on 15 June at 09.08?

ARTHURS: That's correct, yes.

JOHNSON: So that's after the second event?

ARTHURS: Yes.

JOHNSON: So there's no imaging at all, does it follow, that could illuminate the issues of the events in the early hours of the morning of 3 June?

ARTHURS: That's correct.

JOHNSON: Thank you. If we go, therefore, to the second incident, which occurred at about the shift handover on the morning of 15 June and we go, with Mr Murphy's assistance, please, to the [Baby N] sequence -- it's the second sequence, it's tile 176 -- we will see the image that you considered.

ARTHURS: Yes, that's correct.

JOHNSON: Was the second image taken later that day at 21.07 hours?

ARTHURS: Yes, that's correct.

JOHNSON: Just to refresh our memories, if we go, with Mr Murphy's help, to tile 421, will we there see what it was you were looking at?

ARTHURS: Yes. Yes, that's correct.

JOHNSON: In terms of anything that you can contribute from the perspective of your specialty, can you give the jury any assistance with the issues in the case, in [Baby N]'s case?

ARTHURS: No.

JOHNSON: One issue that was raised at the time, which I believe you did consider, was the issue of pulmonary haemorrhage.

ARTHURS: Yes, that's right.

JOHNSON: Was there any imaging evidence of pulmonary haemorrhage?

ARTHURS: No. Here, the lungs -- it's difficult to see on the projection, but here the lungs are slightly whiter than they ought to be, but again a very small amount of fluid, as is

common in small premature babies and would account for that. So there isn't any imaging evidence of blood in the lungs.

JOHNSON: Thank you. So far as -- just to make it absolutely clear, I'm sure it is clear anyway, but in terms of any injury to the throat, the oesophagus, anything like that, is there any assistance that can be gleaned from these?

ARTHURS: No. We can't see any injuries ever of the throat or the -- what we could see is complications or were there to be bleeding subsequent to that in the lungs, so all we can say here is that they are absent.

JOHNSON: We move on, therefore, please, to the case of [Baby P] or [Baby P], as he was referred to in the Countess of Chester Hospital at the time.

ARTHURS: [Baby P] or [Baby O]?

JOHNSON: Sorry, you're quite right, it is [Baby O]. Again, did you sign off your report on 19 May 2020?

ARTHURS: That's correct.

JOHNSON: These events are much more recent for the jury's memory.

You recorded the fact that [Baby O] was born on 21 June 2016 at 14.24. He was 33 weeks and 2 days' gestation. He weighed 2,020 grams and died at 17.47 on 23 June.

ARTHURS: Yes.

JOHNSON: So far as the material that you reviewed here was concerned, again did you receive -- well, on this occasion, actually, three separate reports from Dr Evans?

ARTHURS: Yes.

JOHNSON: Did you also receive a report from a paediatric pathologist, Dr Andreas Marnerides?

ARTHURS: Yes, that's correct.

JOHNSON: So far as images were concerned, did you receive three radiographs?

ARTHURS: Yes.

JOHNSON: Was the first dated 21 June at 19.34?

ARTHURS: Yes.

JOHNSON: Were the other two dated 23 June, the day of [Baby O]'s death?

ARTHURS: Yes.

JOHNSON: And in particular, was one -- I think you may not have known at the time, but you now know is timed at about 14.40 hours?

ARTHURS: Yes.

JOHNSON: That's tile 197 if Mr Murphy could help us with that, please. My Lord and the jury will remember it is the image that doesn't actually have a time on it, but we time it from the medical records at the time that coincide with it.

The second image, please, professor, is tile 246, the time of which is 16.46. It's almost an hour precisely before [Baby O]'s death. Did you, also in [Baby O]'s case, look at some after-death imaging that was taken at Alder Hey Hospital in Liverpool?

ARTHURS: Yes, that's correct.

JOHNSON: We'll come to the post-mortem imaging in a moment, but I'd like to deal with an issue from which we can get some help from the in-life imaging. Were you asked to consider the positioning of the ET tube in the two images taken on 23 June?

ARTHURS: Yes, that's right, the endotracheal tube and nasogastric tube, yes.

JOHNSON: I would like you to -- in this context, the date of your report may be relevant so I want to establish this, please. Did you address this specific issue in your report of 19 May 2020?

ARTHURS: Yes, that's right.

JOHNSON: Can you just turn to section 5 of your report, please, and look at the paragraph that you have numbered 2?

Can you tell the jury what your view in writing was on 19 May 2020?

ARTHURS: So I don't comment on the tubes unless they're misplaced or in the wrong place. In reviewing [Baby O]'s X-ray I was trying to work out what the sequence of the X-rays were because I wasn't aware of the timestamp. But in terms of this X-

ray, here he has an endotracheal tube in the middle, which is appropriately sited at this point, timed 16.46.

JOHNSON: So far as the NG tube, the nasogastric tube, did you say specifically in your report that you don't comment on the position of the NG tube except where -- and indeed the ET tube -- they are inappropriately sited --

ARTHURS: Yes, that's right.

JOHNSON: -- or may be relevant to the interpretation of the case?

ARTHURS: Yes.

JOHNSON: And by that, were you saying that these tubes were in the normal position?

ARTHURS: You've seen so many babies with tubes and lines in, so it becomes second nature not to tell people where lines and tubes are unless they become relevant, so in this instance, for example, there is a nasogastric tube down that goes into the stomach. It's very hard to see on this image, but it's there and on specialist equipment we can see and identify those.

JOHNSON: Yes. I think you told us, it may be that some have forgotten, I doubt it, but just to remind anyone who has forgotten that in the context of your interpretation of these images you have much better equipment than we're looking at these images on now?

ARTHURS: Yes. We look at images on high-powered monitors with specialist radiology equipment, usually in the dark because the ambient light changes what you can see, so yes, that's correct.

JOHNSON: So you were expressing the clear view in 2020 that these tubes were in the normal position --

ARTHURS: Yes, that's correct.

JOHNSON: -- in these two images?

ARTHURS: And that view hasn't changed.

JOHNSON: No. Were you asked to reconsider that at a later stage?

ARTHURS: If I was, my view hasn't changed.

JOHNSON: Thank you. Can we just deal with the post-mortem imaging next, please, which --

ARTHURS: Just to say, I think there's also an abdominal X-ray on the same time and the same date.

JOHNSON: Yes.

ARTHURS: Is that possible to show that? Is that on the same tile?

JOHNSON: No, I think it's on a different -- I think it's on a different tile.

ARTHURS: There again...

MR JUSTICE GOSS: 246 is the tile we're on at the moment.

MR JOHNSON: 197 is the other one.

MR JUSTICE GOSS: That's the 14.40 one?

MR JOHNSON: Correct.

Is that the one you want to look at?

ARTHURS: This is 16.49, so it's only 3 minutes -- so essentially it's done at the same time, just with separating the baby into two parts, effectively, as you would perform the X-ray, so they are contemporaneous in that sense.

That shows the nasogastric tube in the right place in the stomach.

JOHNSON: Yes. If we go to -- can we go back to the radiologist's report of the time as well, please. I don't believe that any suggested abnormality is identified in the radiologist's report at the time. It says:

"NG tube in situ close to the cardia. This should be advanced" --

ARTHURS: They suggest moving it by a centimetre or two, yes.

JOHNSON: So moving on to the post-mortem radiographs of [Baby O], I think you received two and then enlarged one of the two; is that right?

ARTHURS: Yes, that's correct.

JOHNSON: With Mr Murphy's help, this has been uploaded to the digital system now, my Lord, it wasn't there earlier.

It's an exact copy of that which appears in Professor Arthurs' report. Can we, with Mr Murphy's help, please, look at that? In the papers it's at page 3679.

This, we know, is an image taken a few days after [Baby O]'s death. What can you see and explain to us, please?

ARTHURS: This is an X-ray taken through the baby from right to left. The line of white at the bottom -- this is the spine. So with the baby lying flat, this is the spine.

Then immediately above the spine there are locules of gas. These are in one of the large vessels of the body, the aorta or the IVC, where the arrow indicates. There is some gas, as you would expect, in the bowel above that and some in the heart here (indicating). So these are the ribs, as you can see, splayed. So with the baby lying flat and an X-ray through the baby, this X-ray shows gas in one of the great vessels.

JOHNSON: And I think you just said gas in the heart as well?

ARTHURS: There's gas in the heart as well, yes.

JOHNSON: That's an image that could be said to have similarities to images we saw in the cases of [Baby A] and [Baby D]?

ARTHURS: Yes, that's correct.

JOHNSON: Would it be fair to characterise it in that way as having similarities to those images?

ARTHURS: Yes, you would say they were similar appearances, yes.

JOHNSON: What conclusions did you draw from these images or this image, I should say?

ARTHURS: I think I've already given evidence about post-mortem gas in neonates being an unusual finding. There are several causes which I have also given evidence about.

So at this point they are unexplained and then I need to go back through [Baby O]'s history to see if there's an explanation for it.

JOHNSON: So going back through the information you were given, in other words the medical reports of Drs Marnerides and Evans, what conclusions, if any, did you draw?

ARTHURS: We see post-mortem gas like this in babies who have sepsis, so infection and things like necrotising enterocolitis. As far as I am aware, [Baby O] didn't have those conditions. We

have seen it in conditions after traumatic events and I understand that [Baby O] had some liver trauma. He also underwent, as far as I'm aware, cardiopulmonary resuscitation and we do see this finding in older children who have undergone resuscitation. So this gas could be explained in [Baby O]'s case either by trauma, if that was felt to be significant, or by resuscitation, if that was felt to be sufficient to move some of the air in the body around.

JOHNSON: What about the suggestion of an air embolus?

ARTHURS: That's an alternative cause, yes.

JOHNSON: Now, in you coming to your conclusions, are you -- it's obvious, probably, from what you've already said, but are you looking at this case in isolation or are you taking a global view to include, for example, [Baby A] and [Baby D]'s cases?

ARTHURS: No, that view is based on [Baby O]'s imaging, [Baby O]'s history and whether or not there's an incident that happened during [Baby O]'s life that could -- that those images could be attributed to, yes.

JOHNSON: If we move away from the gas in one of the great vessels and back to the image, the bowel imaging, did you draw any conclusions so far as the bowel imaging was concerned?

ARTHURS: The bowel imaging in life of [Baby O] shows a lot of gas in his stomach, small and large bowel, yes.

JOHNSON: If we go back with Mr Murphy's help, please, to that imaging.

ARTHURS: I think it was the previous image.

JOHNSON: Thank you. It's the 14.40 image.

ARTHURS: Yes, the one before that one. 14.40.

MR JUSTICE GOSS: Tile 197, I think.

MR JOHNSON: Yes.

ARTHURS: Yes, that's right.

JOHNSON: I think you can have control of the pointer if you want it.

ARTHURS: Yes. For the purposes of this, this is the heart with black lungs either side (indicating), these are normal.

You then have the stomach bubble immediately below the left part of the diaphragm and then all of the loops of bowel you can see here (indicating) contain gas, which is why you can see them. So this is gas throughout the gut, effectively through the stomach, all of the small bowel and a lot of the large bowel.

JOHNSON: What conclusions did you draw from that?

ARTHURS: Just that this is more than would be expected in a normal baby.

JOHNSON: What were the possible causes of that?

ARTHURS: So again, there are gut abnormalities that can cause that, there are infections and things like necrotising enterocolitis. An alternative is that gas has been administered down a nasogastric tube.

JOHNSON: Would it be fair to say that with those possibilities one needs to look beyond the boundaries of your particular expertise to determine which of those alternatives is established?

ARTHURS: Yes, that's entirely reasonable, yes.

JOHNSON: Could we move on then, please, finally at this stage, to the case of [Baby P]. [Baby P], born at the same time as his brother or brothers. The same gestation, obviously, 33 plus 2. His birth weight, 2,066 grams. And as the jury heard just before you came into court, he died the day after his brother, on 24 June at 16.00 hours, as you have recorded it.

ARTHURS: Yes.

JOHNSON: So far as [Baby P] was concerned, did you receive three reports written by Dr Evans?

ARTHURS: Yes.

JOHNSON: And a report written by the pathologist, Dr Andreas Marnerides?

ARTHURS: Yes.

JOHNSON: The imaging that you considered, was there a radiograph dated on his birth day, 21 June?

ARTHURS: Yes, that's right.

JOHNSON: Was there an abdominal radiograph dated 23 June at 20.09 --

ARTHURS: Yes, that's correct.

JOHNSON: -- which the jury have seen this morning, but if we could just have a quick reminder, please, with Mr Murphy's help from [Baby P]'s SoE at tile 173.

The next image is taken the next day at 11.57, which is tile 400.

Then a further image taken at 15.36 that afternoon, which is tile 574.

ARTHURS: Yes.

JOHNSON: As a matter of fact, I've taken things slightly out of order because in your report there is an image that you record as showing no time and date, which is tile 434.

So this comes between the images at 11.57 and 15.36. If we could go, with apologies for my error, to 434, please. It doesn't really help us with --

ARTHURS: No, that's right.

JOHNSON: Were you also given some post-mortem or two post-mortem radiographs from Alder Hey?

ARTHURS: Yes, that's correct.

JOHNSON: Can we go to your opinion, please, so far as [Baby P] was concerned. Perhaps if we can return to what, in your view, is the best image that shows the bowel dilation, please. I don't know, was it --

ARTHURS: It was 23 June, timed 20.09.

JOHNSON: Thank you. That was, for Mr Murphy's help, 173.

Again, could you talk us through, perhaps by using the cursor as well, to explain what it is you're referring to?

ARTHURS: This is the second radiograph of [Baby P]. The first on his birth date, which was a chest X-ray, which was normal.

This shows, hopefully much clearer now you can see, a nasogastric tube here (indicating) going into the stomach. The stomach is dilated. These (indicating) are loops of small bowel and then this (indicating) is large bowel, so going all the way down. So this is gas throughout the gut. Very similar to the appearances of [Baby O].

JOHNSON: What conclusions did you draw?

ARTHURS: This degree of gas is quite unusual in a baby like this.

It doesn't show obstruction, it doesn't show necrotising enterocolitis, and there is a nasogastric tube in situ.

JOHNSON: It may be obvious from the evidence you've already given, but what are the potential causes of this degree of dilation?

ARTHURS: I think they're the same causes that we described in [Baby O]. So infection, necrotising enterocolitis, those sorts of things can cause this. There are obstruction to the bowel that you can be born with. We know that neither [Baby O] nor [Baby P] suffered from those, so you are left with other causes such as administering air via a nasogastric tube.

JOHNSON: And you say we know they didn't suffer from them, is that because of the findings at the post-mortem examination?

ARTHURS: That's correct, yes.

MR JOHNSON: Thank you. My Lord, those are all the questions I have at this stage. It may be a good moment.

MR JUSTICE GOSS: Yes. Mr Myers, I think it's better to have the break now --

MR MYERS: Yes.

MR JUSTICE GOSS: -- rather than have a short --

MR MYERS: I agree. If I can reassure Professor Arthurs, I won't be a great length of time, but I certainly wouldn't manage it within 6 minutes.

MR JUSTICE GOSS: You're not going to manage it in 10 minutes?

MR MYERS: No, I don't think so.

MR JUSTICE GOSS: We'll break off. Can we resume again at 1.55, please, which is an hour. That's not inconvenient for you?

ARTHURS: No, that's fine, thank you, my Lord.

MR JUSTICE GOSS: 1.55, please, Professor Arthurs.

Thank you very much.

(12.54 pm)

(The short adjournment)

(1.55 pm)

Cross-examination by MR MYERS

MR MYERS: Professor Arthurs, I'm not going to cover the ground where there's no issue or nothing further to deal with with regard to the babies you've answered questions about already.

ARTHURS: Thank you.

MYERS: There's one brief matter I'd like to raise with regard to [Baby M] and then we'll turn to [Baby O] and [Baby P] or [Surname of Babies O, P & R] as they're known.

[Baby M], we recall, is an allegation of an air embolus. That's the way the case is put. Your analysis of the radiographs that were available, the first point is this, they showed no significant abnormalities, did they?

ARTHURS: That's correct.

MYERS: Just to remind us, the allegation is that a deterioration that takes place at about 16.00 hours was precipitated by or caused by an air embolus being introduced.

The chest X-ray which you were provided with is timed at 17.00 hours, isn't it?

ARTHURS: Yes, that's correct.

MYERS: To remind ourselves, that's at tile 193 in the [Baby M] sequence. If we could have a look at the image. We'll keep that there, thank you very much.

You've looked at this and there is no indication of anything that is an air embolus on the image you've looked at; that's correct, isn't it?

ARTHURS: That's correct, yes.

MYERS: And you've explained that from a radiographic perspective, from where you are, that's a neutral finding on this issue; is that a fair way of putting it?

ARTHURS: That's reasonable, yes.

MYERS: The absence of it doesn't go to show whether there was or there wasn't an air embolus --

ARTHURS: That's correct, yes.

MYERS: -- when we're looking at whatever happened at 16.00?

In assessing beyond that, and any significance that applies to whether or not an air embolus is seen on the radiograph, is that -- the significance of that will depend on a view of all the circumstances in the case, for instance not just your perspective but all the features we know about what is alleged to have happened or what did take place?

ARTHURS: Yes, that's reasonable.

MYERS: And weighing up all of those globally, we'd be in a position to assess what significance there is or there isn't to the absence of an air embolus?

ARTHURS: On the imaging, yes.

MYERS: On the imaging, yes.

ARTHURS: Yes.

MYERS: But I want to us to be clear: the neutral position you occupy, understandably, is in your position looking solely at the radiographic evidence?

ARTHURS: Yes.

MYERS: Thank you. There are no other abnormalities associated with the images you saw for [Baby M], are there?

ARTHURS: That's correct.

MYERS: If we pause there, on this image, when we look at the area of the bowel, is that gas then which is in the bowel area on that?

ARTHURS: Yes, all of the central part of the abdomen -- so you can see -- so again, the heart at the top, two normal lungs either side. There's a nasogastric tube in, which comes down to the stomach. The liver sits here (indicating) under the right hemi-diaphragm. So all of this is normal bowel gas within the bowel, that's correct.

MYERS: We've seen various images but that's one where that's identified as normal?

ARTHURS: Yes.

MYERS: Thank you. We can take that down, please, Mr Murphy.

Turning next then, Professor Arthurs, to [Baby O]. You've been able to assist us with imaging that comes in life, ante-mortem; is that correct?

ARTHURS: Yes, that's right.

MYERS: And also you've been able to give us your observations on the post-mortem images that you have?

ARTHURS: Yes.

MYERS: Again, helping us keep this organised, the ante-mortem or the in-life imaging is or may be relevant to the question of bowel distension --

ARTHURS: Yes.

MYERS: -- and what we can tell from that? And the post-mortem imaging is relevant to the question of gas in one or other of the great vessels?

ARTHURS: Yes, that's correct.

MYERS: I'm going to ask then if we could put up from the [Baby O] sequence, please, tile 197, Mr Murphy. Just to remind us all, ladies and gentlemen, tile 197 is the radiograph from 14.40 hours on 23 June.

If we could go behind that, please, to have a look at the image and also Dr Wright's commentary.

We have the image there and if we scroll down to remind ourselves what Dr Wright says and enlarge that, please. We've got:

"NG tube in a satisfactory position in the gastric body, normal cardiac size and cardiothymic contour. Slightly increased lung density bilaterally, consistent with mild RDS [respiratory distress syndrome]."

And it said:

"Moderate gaseous distension of bowel loops throughout the abdomen. No free peritoneal air to indicate perforation or intramural gas to indicate NEC. Non-specific, but NEC or mid-gut volvulus cannot be excluded."

I am not going to suggest anything about NEC or mid-gut volvulus. That is not why I have gone to that.

Where Dr Wright describes this as "moderate gaseous distension of the bowel", do you agree with that?

ARTHURS: If we can go back to the image.

MYERS: Yes, sure.

ARTHURS: Yes, that's a reasonable way of assessing the level of bowel distension.

MYERS: We'll come through possible explanations shortly, but is it right that from the radiograph alone we can't say how the gas that is present there came to be present?

ARTHURS: Yes.

MYERS: You're aware, when you come to assess this, that one explanation that is presented is that air has been introduced exogenously via the NGT into the system?

ARTHURS: Yes, that's one of the hypotheses, that's right.

MYERS: So when you consider that, that explanation alongside what you have here, that's something where you say, "Well, that would be consistent, that is possible"?

ARTHURS: Yes, that's correct.

MYERS: But that isn't the only possible explanation, is it?

ARTHURS: No, that's right.

MYERS: Would it be fair to say that, so far as the distension is concerned, it could be described as slightly abnormal? We get degrees of abdominal distension in this case. Would this be in the kind of slightly abnormal bracket? In other words a little bit more than you might just expect in the ordinary course of events?

ARTHURS: Yes. Obviously looking at bowels and how distended they are is a subjective thing that we tend to apply our clinical experience to and say whether things are mild, moderately or severely distended. So yes, I think it's reasonable to say that this would fit into the slightly abnormal category and has been described there as being moderately distended.

MYERS: We've got one explanation which is the suggestion gas had been introduced exogenously. I'm refreshing my memory from the

joint report of 14 July 2022. But is what we see there something that is relatively common, a distension like that, a presentation like that?

ARTHURS: Yes, if there are underlying clinical causes for it, yes, that's right.

MYERS: Is it the case that sometimes it might be encountered but no apparent cause is found, you may encounter images like this and there's no apparent cause?

ARTHURS: Yes, that's right.

MYERS: I'm going to put to one side then for the moment excessive air introduced exogenously; that's one.

ARTHURS: Yes.

MYERS: There's also the possibility that there is no apparent cause identified; that's another possibility?

ARTHURS: Yes.

MYERS: Is a further possibility air introduced by way of breathing support where air has had the opportunity to go down the oesophagus and into the stomach and the gut in that way?

ARTHURS: Yes. I think what you're referring to are things like CPAP belly.

MYERS: Yes.

ARTHURS: That was referred to by some of the other clinicians.

Yes, that's possible where air inadvertently goes down into the stomach rather than into the lungs. That is a possibility.

MYERS: I think in fact when you were here on the last occasion, I have just checked, it was 3 February 2022, that is something you were asked questions about you and you dealt with on that occasion?

ARTHURS: That's right. There are a number of causes for this presentation and that could potentially be one of them.

MYERS: And CPAP belly -- it's called CPAP belly, but that describes the distension in the area of the abdomen from air that has gone in through the mouth or nose and down into the intestine that way?

ARTHURS: Yes, that's right.

MYERS: That's possible with CPAP or Neopuff or Optiflow?

ARTHURS: I'm not sure about that. I think it's called CPAP belly because you require the pressure of the CPAP machine to generate it. As far as I am aware, [Baby O] wasn't on CPAP at this stage.

MYERS: No.

ARTHURS: His chest X-rays show he wasn't intubated and ventilated, so CPAP belly wouldn't be a good -- well, it wouldn't make any sense to suggest that that would cause this degree of abdominal distension in [Baby O] at this particular time.

MYERS: Dealing with the principle of CPAP belly, I think on the last occasion again we discussed the issue of a Neopuff mask being used on a baby and air being forced in by Neopuff.

ARTHURS: That's a form of resuscitation, yes.

MYERS: That's right.

ARTHURS: So that's a possible cause.

MYERS: Is the basic principle anything that can involve putting the air in through the mouth or the nose can find its way down into the gut?

ARTHURS: So possible, yes. Likely, no. Because there are lots of babies who are resuscitated regularly on the unit, there are lots of babies on CPAP, intubated and ventilated. So many of the babies on the unit will have some form of ventilatory support at any one time and not all of them look like this.

MYERS: This isn't said in any way disrespectfully, Professor Arthurs, but do you have general clinical experience in the use of CPAP or Optiflow?

ARTHURS: Yes.

MYERS: And do you use that with babies?

ARTHURS: So we scan babies on a neonatal unit who are undergoing those conditions on a daily, if not weekly, basis, yes.

MYERS: So looking at possibilities for distension like this, you have dealt with the allegation, that is possible.

ARTHURS: Yes.

MYERS: We've looked at the fact that in fact sometimes there may be no cause identified and this is encountered nevertheless. And also CPAP belly can also be a cause or this can come under the title of CPAP belly?

ARTHURS: Yes.

MYERS: Which in your opinion is most likely to be associated with CPAP?

ARTHURS: Yes.

MYERS: Right. And also potentiality support by way of Neopuff, for example, in the course of a resuscitation or if the Neopuff is used for whatever other reason?

ARTHURS: Yes. So during the resuscitation I would say that that might be possible.

MYERS: Thank you. I'm going to move next then to your opinions on the post-mortem imaging. We're familiar with the image that we've seen. I don't have the reference, but would it assist you for it to be put up?

ARTHURS: Up to you.

MYERS: I didn't actually have the reference. [Baby O] 3, thank you, Mr Johnson.

ARTHURS: Yes, this image.

MYERS: That's right. Just so we know precisely what we're talking about.

So far as the post-mortem imaging is concerned, Professor Arthurs, again the specific cause of what we see can't be assessed purely from the radiographic imaging, can it?

ARTHURS: Yes, that's correct.

MYERS: It's quite warm in here. I see that.

The air that we have, is it in one or other of what's called the great vessels that travel down just above the spine?

ARTHURS: That's true. Both of them lie next to each other, so if you were to take an image from the side you wouldn't be able to tell in which precise vessel that would be, hence the term, "They're in the great vessels".

MYERS: Again, as for causes, we've been here before with this, but I am just going to repeat it seeing as we are going over this?

ARTHURS: Yes, that's right.

MYERS: There is the possibility of air being introduced exogenously?

ARTHURS: Yes.

MYERS: Either accidentally or deliberately?

ARTHURS: Yes.

MYERS: There is the possibility of post-mortem gas. You performed your study with that and we have the figure of 25% of cases that you'd gone through where that was a possibility --

ARTHURS: Yes.

MYERS: -- usually associated with some form of trauma?

ARTHURS: Yes.

MYERS: That's where we are with that.

As it happens, sepsis and NEC can be causes. So no one is under any misapprehension I'm not suggesting that, but I'm just making sure we deal with this comprehensively.

Trauma can be a cause?

ARTHURS: Yes.

MYERS: And also resuscitation, if resuscitation has taken place?

ARTHURS: Yes. I don't think resuscitation causes this gas but resuscitation moves gas around the body, so it can be seen in the (inaudible: coughing), that's correct.

MYERS: And I can recall on the last occasion you raised a paper that was authored by you together with Barber and others --

ARTHURS: Yes.

MYERS: -- in which one of the principal findings was the association between post-mortem gas changes and resuscitation having taken place.

ARTHURS: That's right.

MYERS: So from amongst those causes, all of those are possibilities in this case?

ARTHURS: Yes.

MYERS: The extent to which we can determine which one it is would involve looking at all the clinical circumstances that are relevant?

ARTHURS: Yes.

MYERS: When you did come to consider the question of air embolus on this occasion, one matter that you did identify, just one of the issues, was there was no central vascular access to [Baby O] at the time this took place; is that correct?

ARTHURS: That's true. He doesn't have an umbilical venous catheter on the ante-mortem or the post-mortem radiographs, that's correct.

MYERS: But as it happens if there is peripheral access that's conceivably a route in; is that correct?

ARTHURS: Yes, it's a conceivable route.

MYERS: But when we look at the radiographic features in this case, certainly the question of whether it is air from outside arises, because that's the allegation, trauma, you've identified what happened with the liver, and/or resuscitation.

ARTHURS: Yes.

MYERS: I would like to turn next, please, Professor Arthurs, to [Baby P]. Again, the allegation, principal allegation we're dealing with in this context, again, is air being put down the NGT. We're just coming to this case now so we're not as familiar with the facts but we have sufficient to deal with your evidence.

As we've done before, I'm going to ask Mr Murphy if we could put up the relevant tile for what we're looking at, which is 173, Mr Murphy. This is a radiographic image taken at 20.09 on 23 June. For the benefit of the rest of us in court, Professor Arthurs, and our bearings, I'm not going to go there immediately, ladies and gentlemen, but just to assist you and the court with where this fits in with the sequence of events, the first what's described as [Baby P] event is round about 18.00 on the 23rd. We'll come to this in more detail in the evidence, so a couple of hours before this.

The next identified relevant or potentially relevant [Baby P] event is at 9.35 the following morning, so a little over 13 hours after this image. I'm not going to question you about those, it's just so we can place this image in that sequence.

If one were to try to characterise how this bowel gas presents, Professor Arthurs, would it be reasonable to say that it's a degree of bowel dilation that could be within normal limits or considered to be mild dilation?

ARTHURS: I'd probably go a bit further, I'd probably call it moderate dilation. You can see gas in the stomach.

This is gas in the small bowel but here there's also gas all the way in the large bowel. So that's quite unusual in a baby of this age and gestation.

MYERS: And if we look down, is that gas (overspeaking) rectum?

ARTHURS: That's clearly the rectum and then the colon just proximal to that, yes.

MYERS: Again, going through where this can take us so far as you are concerned, Professor Arthurs, the starting point is, from the radiograph alone, it's not possible to determine how or why this gas comes to be there; is that correct?

ARTHURS: That's correct.

MYERS: One possibility in effect you have been asked to consider or directed to consider is whether exogenous introduction of air is a possibility.

ARTHURS: Yes.

MYERS: And it is, it's a possibility?

ARTHURS: Yes.

MYERS: It doesn't mean it has happened, but it's a possibility?

ARTHURS: Yes.

MYERS: Are we in the position again that when we come to consider the range of other possibilities, first of all this may be dilatation for which there is no cause that can readily be identified?

ARTHURS: Yes, that's possible.

MYERS: That's possible. Because I'm going to suggest that, as we have seen, sometimes babies' stomachs dilate or their abdomens dilate just in the course of their treatment; is that correct?

ARTHURS: Yes, it's possible.

MYERS: CPAP belly, if it applies, can be a cause of this, if it applies?

ARTHURS: Yes, if it applies.

MYERS: When we look at the image here, it may just be the way it looks to us as we assess it. But is there more of the gas in the bowel than there is in the stomach, if that makes sense? I may not have put that very well so I am going to rephrase what I mean.

Certainly to my unpractised eye, I am not giving evidence, you are, but the stomach looks more -- doesn't look as dark as the bowel area does.

ARTHURS: So you can't use darkness or the greyscale to indicate how much air there is because several of the bowel loops will overlap each other. You're looking at a two-dimensional picture of a three-dimensional structure. There's one stomach but there's several loops of bowel, so in fact there's probably as much air in the stomach here as there is that has then passed out of the stomach and gone through all of the other bowel loops. That's not based on the greyness of the image.

MYERS: That's why I ask you, because it's your practised eye that we rely upon.

Are you able to say, and please say if you can't, how long it would take for this volume or quantity of air to collect in the abdomen and the stomach?

ARTHURS: No, I don't think you can say that in [Baby P]'s particular case. We do do studies where we give contrast into the stomach and then track how long it takes to go through.

I would have thought in the matter of half an hour to an hour and a half, something like that, is probably the rate at which the baby will empty their stomach and the bowel down to the bottom.

MYERS: Right.

ARTHURS: So I mean, it's in that order.

MYERS: That was what I was going to ask you next. As to how long it would take to get there, I suppose that's really a matter of whatever it is that has caused it to get there, to some extent?

ARTHURS: Yes, absolutely. And you have to remember that X-rays are a snapshot in time --

MYERS: Yes.

ARTHURS: -- so if something had been given an hour previously we are seeing what's happened an hour subsequent to that as a particular snapshot in time, like I say, which will then continue that process for the next couple of hours.

So you've got one opportunity to try and work out what would that have looked like at that particular moment in time, if that makes sense.

MYERS: Thank you. Then following on from that, just picking up on what you said, if you have this disposition of air in the bowel, in your assessment, from what you were aware of, that might take an hour to an hour and a half to track through, is that what you think?

ARTHURS: Something around that kind of time period, yes.

MYERS: Is that based upon studies of babies who are in hospital and you've been able to track how the air has passed through the bowel?

ARTHURS: So we don't track how long it takes for air to pass through the bowel in normal babies, but we do do studies where we administer contrast into the stomach or we administer contrast into the bowel and we know subsequent to that, so that can take anywhere from a few minutes. Typically it would take slightly longer to go through a normal baby with a normal gut, so that's why I put the figure at somewhere between half an hour to maybe 90 minutes, something like that.

MYERS: And of course we're talking here air or gas rather than fluid, aren't we?

ARTHURS: Yes, that's correct.

MYERS: So to summarise then in terms of relevant or potentially relevant possible explanations, air being introduced exogenously is one of them?

ARTHURS: Yes.

MYERS: CPAP belly, if it applies on the facts at all, is one of them?

ARTHURS: Yes.

MYERS: Sometimes it's the case that a cause is not identified but it just so happens this is how the baby is at this point?

ARTHURS: Yes.

MYERS: The next radiographic image we have in the case of [Baby P] is from the following morning, in fact, at 11.57 on 24 June. That's at tile 400, so I wonder if we could put that up, please, and pop behind there.

ARTHURS: Yes.

MYERS: If we just scroll down, please, just to see the commentary or the assessment from Dr Wright that accompanies this. Bearing in mind now we are at 11.57 the following morning, I'm going to go through this.

There is a moderately large right pneumothorax -- I'll come back to in that a moment.

I am really reading forwards just to what it says about the bowel gas pattern. We can see two or three lines up from the -- at the bottom of the main body of the text:

"The bowel gas pattern is within normal limits with no evidence of obstruction or perforation and no intramural gas to suggest NEC."

ARTHURS: Yes.

MYERS: And do you in general or in particular agree with that?

ARTHURS: Yes, that's a reasonable conclusion, yes.

MYERS: Thank you. Let's scroll back to the image then. The commentary had referred to a pneumothorax having been identified.

ARTHURS: Yes, that's correct.

MYERS: Pausing there, we encountered pneumothorax in the case of [Baby H] where there'd been, it seemed, three of them, or a series of them in any event, and then the chest drains that followed and everything that went with that.

Could you explain to us, looking at this image at 11.57, where the pneumothorax is?

ARTHURS: Yes. If you could magnify the image just at for the chest. There's an endotracheal tube down here (indicating). This is the right lung (indicating). So the heart is on the left here and you can see the ribs going across. What you can see, so ignore the ECG lead, which is this circle and the white line -- what you can see is the edge of the lung is here (indicating), if you can follow the pattern of my cursor, when it should be right up to the edge of the chest. So that space between, the lung has been collapsed slightly because there's now air in that space around the lung. So that's called a pneumothorax.

MYERS: Right. We know, this is 11.57, I'm going to ask Mr Murphy, please, to put up the neonatal resuscitation record, which is at tile 302. Just pop behind there.

We have various sources of information for when CPR has taken place from the notes, Professor Arthurs, but just working with this and insofar as this is accurate, it's got down that chest compressions started in the first instance recorded at 09.50. Can you see that?

It's the top row, "Chest compressions started", in the body of the table?

ARTHURS: Yes. 9.50, yes.

MYERS: There's three episodes of chest compressions but the second episode is recorded here as 11.30 and it seems that they stopped at 11.36.

ARTHURS: Yes.

MYERS: All right. We can take that down, please, Mr Murphy.

The radiograph that we looked at with the pneumothorax on it is timed at 11.57; that's right, isn't it?

ARTHURS: Yes, that's correct.

MYERS: Weighing that up, was it your opinion, Professor Arthurs, that the pneumothorax that is identified would be in keeping with vigorous resuscitation?

ARTHURS: I think that's possible. But there is an alternative, which is also that the baby's ventilated at this stage, so ventilation and the pressure that goes through into the lungs

from that, I think the ventilation could also have caused the pneumothorax.

MYERS: So it could be from ventilation?

ARTHURS: Yes.

MYERS: It could be from resuscitation?

ARTHURS: Yes.

MYERS: It could be a combination of the two working together?

ARTHURS: I think it's probably more likely to be the ventilation in retrospect.

MYERS: Just so we know, but you'll recognise this, I have taken that from your report of 21 January 2020.

ARTHURS: Yes, that's correct.

MYERS: Paragraph 7, section 7.8, where you say in summary:

"In my opinion the pneumothorax in this case would be in keeping with vigorous resuscitation."

ARTHURS: Yes, that's right.

MYERS: But an alternative, in your view, is the process of ventilation?

ARTHURS: Yes, that's correct.

MR MYERS: Thank you, Professor Arthurs.

Re-examination by MR JOHNSON

MR JOHNSON: One thing we've noticed in particular, recently, is that most of, if not all, of the images that are taken in life are taken front-on.

ARTHURS: Yes.

JOHNSON: Whereas the three images that you have dealt with specifically in the course of your evidence overall, one of which is the image of [Baby O], which you've dealt with today, which demonstrates what you have called locules of gas in one of the great vessels --

ARTHURS: Yes, that's right.

JOHNSON: -- are taken side-on?

ARTHURS: Yes.

JOHNSON: Is there a connection between side-on radiographs and post-mortem radiographs or is it just a coincidence that in this case all the side-on radiographs are post-mortem radiographs?

ARTHURS: I don't think it's a coincidence. It is normal to view most babies from the front during life because it's a much easier way of identifying some of the significant abnormalities that we've seen, tube placements, pneumothoraces and things like that. In every one of the cases where we've looked at post-mortem radiographs, there have been front-on radiographs and lateral radiographs. The difficulty with front-on radiographs in post-mortem is that there is gas in the heart, there is gas in the bowel, which of course in the sense of radiographing the baby like that obscures any of the gas behind. So it's just the case that the gas that you see in the great vessels is most obviously demonstrated on the side-on radiographs. It doesn't say -- it doesn't mean it's not there on the frontal, it's just trying to make it as easy as possible to demonstrate to the court.

JOHNSON: Yes, well, you have anticipated my next question. If we can go to [Baby M]'s radiograph at tile 193, please. You were reminded -- this was what you described as a neutral radiograph in terms of determining whether there's any evidence to support or refute the suggestion that there was an air embolus.

ARTHURS: Yes, that's correct.

JOHNSON: We've seen where the great vessels lie in terms of a lateral radiograph. Where do they lie in terms of this frontal radiograph?

ARTHURS: The easiest way to think is they lie on both sides of the spinal cord or they're vertebral bodies; one lies on the left hand and one lies on the right. The one on the right is the UVC -- the inferior vena cava, which is where you particularly see the umbilical venous catheter. The one on the right would be the aorta. So you can't see them because they typically have blood in life, therefore there's no gas within them and so you can't see them. You can only infer where they are because of normal anatomy or whether there is a line in situ.

JOHNSON: Yes. So in terms of determining whether or not there is air in either or both the great vessels, which is the better view, the front view or the side view?

ARTHURS: I'm not sure that's a question that I can answer.

I don't think it matters which view you take. I think you are unlikely to see air in the great vessels in life irrespective of the view you take.

JOHNSON: Yes, all right. Can we go to [Baby P]'s sequence, please, Mr Murphy. Tile 173.

You were asked a series of questions, Professor Arthurs, about how long gas would take to pass through from the stomach through the bowel.

ARTHURS: Yes.

JOHNSON: Did your answers necessarily assume that the gas had arisen naturally? In other words, not under pressure by somebody inserting it through an NGT.

ARTHURS: Yes. It's a description of the normal emptying of the stomach in a baby, yes.

JOHNSON: So would the normal rules apply if somebody overinflated the stomach with gas and the pressure of that gas then drove gas through the bowel?

ARTHURS: I'm not sure. I think it would be speculative to say what would happen in that instance. But were that to happen, you would see gas in the stomach and then gas throughout the bowel all the way down to the colon, so yes.

JOHNSON: Is that what we see here?

ARTHURS: That is what we see here.

MR JOHNSON: Thank you. Does your Lordship have any questions?

Questions from THE JUDGE

MR JUSTICE GOSS: It's just one answer you gave a few minutes ago. Irrespective of the view you take, you're unlikely to see air in the great vessels?

ARTHURS: In life.

MR JUSTICE GOSS: In life.

ARTHURS: Yes.

MR JUSTICE GOSS: Does that mean that looking at any of the radiographs that we have of a baby in life we will not see air in any of the images, even if there was air there?

ARTHURS: Essentially, yes. That's because -- I mean, these are newborn babies, their heart is beating at 100 or 120 times a minute, they're pumping all the blood around their bodies very quickly. So to have a snapshot where you have a locule of air in a particular location is almost going to be impossible to image. So the amount of air you would have to have around the system to see it on an X-ray is quite significant and that's the reason why we don't see it, almost ever, on an X-ray.

MR JUSTICE GOSS: I don't know whether you know the answer to this question or not: if you had a sufficient volume to view it in an X-ray, would that baby be alive?

ARTHURS: Typically not. Most of the illustrations we have of air embolus in newborn babies in the literature are of those babies who have died of a massive air embolus. If it happens that you have the X-ray sufficiently close to when the incident occurred, it's possible you could see that.

The main take-home message I think from the X-rays is that if you don't see air, it doesn't mean there wasn't an air embolus. They are not things we come across very commonly in paediatric radiology.

MR JUSTICE GOSS: Thank you. That's all I wanted to ask.

MR JOHNSON: So if somebody asked you the question, "Where's the air gone", is that in effect the answer, you wouldn't expect to see it?

ARTHURS: You don't expect to see it.

MR JOHNSON: No. Thank you.

MR MYERS: Or I suppose, equally, there was no air there in the first place?

MR JUSTICE GOSS: Well, exactly, yes.

ARTHURS: That is also correct, yes.

MR JUSTICE GOSS: That's the point. That's as I understood what you're saying, isn't it?

ARTHURS: Yes.

MR JUSTICE GOSS: And hence where you started was, "It's neutral", essentially?

ARTHURS: It's neutral. So it doesn't help prove it was not there, it doesn't help prove it was there and has gone.

I think it doesn't prove any of those things.

MR JUSTICE GOSS: Thank you, Professor Arthurs. That completes your evidence today. Thank you for coming and giving to us. You'll be required one more time, I think you're aware of that, but I have today indicated that there's no need for you to attend physically in person here, you can give your evidence over a link --

ARTHURS: Thank you.

MR JUSTICE GOSS: -- from wherever is convenient for you at the time you're required to give evidence. I suspect you may have --

ARTHURS: Multiple times.

MR JUSTICE GOSS: -- either given evidence or conducted meetings over links before. We're familiar with it because we've seen witnesses from Australia giving evidence from links and things but you won't be quite as far away as that.

ARTHURS: That's right.

MR JUSTICE GOSS: Thank you very much indeed.

(The witness withdrew)

MR JOHNSON: We're going to return to the sequence.

MR JUSTICE GOSS: Right. We're going to do a rewind now and go back to the sequence of events, starting from the beginning. We're not going to complete this this afternoon, are we?

MR JOHNSON: I doubt it.

MR JUSTICE GOSS: Right. What we'll do then, Mr Johnson, is we'll do 25 minutes or so, then we'll have a break, and then we'll do some more for however long I consider appropriate. But of course, we're not sitting tomorrow, as you know, and we will then be continuing on Monday.

MRS CLAIRE HOCKNELL (continued)

Examination-in-chief by MR JOHNSON (continued)

MR JOHNSON: Welcome back, Mrs Hocknell. Just for the record, would you please identify yourself?

HOCKNELL: Claire Hocknell.

JOHNSON: Thank you. We're going to start at the beginning, please, of the sequence for [Baby P]. I think you've put a tile in. It may help for the jury to have that comparator table open just to see where things fit in.

You have put the antenatal history in at tile number 1. Then at tile 2, the circumstances surrounding [Baby P]'s birth, who of course was the first of the triplets.

HOCKNELL: Yes.

JOHNSON: His Apgar scores are recorded as 5 at a minute 1, 7 at 5 minutes, and then 8 at 10 minutes.

HOCKNELL: Yes.

JOHNSON: Tile 3 records [Baby O]'s birth and tile 4 [Baby R]'s birth --

HOCKNELL: Yes.

JOHNSON: -- albeit he is not named in the sequence?

HOCKNELL: Yes.

JOHNSON: At tile 5, [Baby P] was admitted, with his siblings, to the neonatal unit.

Tile 6 times his admission as being 14.45 at the hands of Belinda Simcock.

HOCKNELL: Yes.

JOHNSON: At tile 7, an untimed entry made by [Dr A] concerning the admission and the circumstances of his condition at that time?

HOCKNELL: Yes.

JOHNSON: [Dr A] will be coming so we'll leave that for him if we may, as we will with tile 8, which is probably just a continuation of the same entry, is it?

HOCKNELL: Yes.

JOHNSON: Thank you. As indeed --

HOCKNELL: And 9.

JOHNSON: -- is tile 9; is that right?

HOCKNELL: Yes.

JOHNSON: Tile 10, as we can see from our table, corresponds to tiles 11 and 12 in the [Baby O] sequence.

Tile 11 corresponds to approximately 60 tiles in the [Baby O] sequence and it has -- it covers a time during which there were lots and lots of messages going to and from Lucy Letby.

HOCKNELL: Yes.

JOHNSON: Tile 12 is a repetition of the fact that [Baby P] was admitted to the NNU at 14.45 on 21 June and records the fact that from this point on, you have put in, in effect, a compendious detailed account of his treatment on the unit?

HOCKNELL: Yes.

JOHNSON: We then have at tile 13 some door swipe data for [Nurse C], which corresponds to tile 101 in [Baby O]'s sequence.

HOCKNELL: Yes.

JOHNSON: Then we have two text messages which don't appear in [Baby O]'s sequence; is that right?

HOCKNELL: Yes.

JOHNSON: We'll deal with these. We don't deal with any of the material that's simply a repetition of what we've already seen.

At 07.06 in the morning on 23 June, did [Nurse E] send a message to Lucy Letby saying:

"Hope first day back OK"?

With an emoji?

HOCKNELL: Yes.

JOHNSON: Did she respond?

HOCKNELL: She replied, "Thank you".

JOHNSON: Do we then see the arrival of Melanie Taylor at tile 16, which corresponds to tile 103 of the [Baby O] sequence?

HOCKNELL: Yes.

JOHNSON: Then we have, at tiles 17 and 18, the shift personnel together with the population distribution chart, which we've already seen in [Baby O]'s sequence at tile 106.

HOCKNELL: Yes.

JOHNSON: So moving on then, please, down to tile 29, so from 19 to 29, do we have a lot of material that also appears, so far as at least the texting and the door swipe entry data is concerned, in [Baby O]'s sequence?

HOCKNELL: Yes.

JOHNSON: But just pausing for a second at 22 and 24, these are the observation charts and a nursing note and the neonatal fluid balance chart specific to [Baby P]; is that correct?

HOCKNELL: Yes, that's correct.

JOHNSON: These are at the same time as the corresponding charts for [Baby O], which are tiles 114 to 115?

HOCKNELL: Right, yes.

JOHNSON: In [Baby O]'s sequence they are signed by Rebecca Morgan, but in [Baby P]'s sequence at the same time these three sets of forms are signed by Lucy Letby?

HOCKNELL: Yes.

JOHNSON: So if one were to do a comparison, one would have two children in the -- siblings in the same room, observations being recorded at the same time, in [Baby O]'s case by Rebecca Morgan, in [Baby P]'s case by Lucy Letby?

HOCKNELL: That's correct, yes.

JOHNSON: Thereafter, as I've said, the text messages or the WhatsApp messages between 25 and 27 replicate that which we've already seen in [Baby O]'s sequence?

HOCKNELL: Yes.

JOHNSON: We have door swipe data between 28 and 32 relating to Drs [Dr B], Cooke, Gibbs and Ukoh and Nurse Christopher Booth?

HOCKNELL: Yes.

JOHNSON: Then at tile 33 we have the continuation of the conversation between Lucy Letby and [Nurse E]?

HOCKNELL: Yes.

JOHNSON: Lucy Letby's message to [Nurse E] at 33 is a reference back to Rebecca Morgan; is that right?

HOCKNELL: Yes.

JOHNSON: And corresponds, I think, to tile 116 in [Baby O]'s sequence. And we then have a message from [Dr A] saying he's at clinic at tile 36?

HOCKNELL: Yes.

JOHNSON: Moving on, do we have further door swipe data for Dr Bhowmik, that's at 37, Lucy Letby at 38 and Melanie Taylor at 39?

HOCKNELL: Yes.

JOHNSON: We then see, if we look at the chart that we gave the jury or the table that we gave the jury this morning, 40 to 57, which are all on a single page for you, I think, correspond to data in [Baby O]'s chart --

HOCKNELL: Yes.

JOHNSON: -- at 123 to 140?

Over your page, 59 and 60 correspond to 142 and 143 in [Baby O]'s; is that right?

HOCKNELL: Yes.

JOHNSON: We then have door swipe data for Lucy Letby at tile 61, followed a minute later by, at 62 and 63, observations and the fluid balance chart for [Baby P], signed and co-signed by Lucy Letby and Rebecca Morgan?

HOCKNELL: Yes.

JOHNSON: At 64, also timed at 10.00 hours, is there a fairly long note from Dr Cooke relating to her examination of [Baby P]?

HOCKNELL: Yes.

JOHNSON: Just clicking on the tile, just to put this into context if we may, does that record amongst other things in the second line, "No nursing concerns", and then in the third line, "Observations normal"?

HOCKNELL: Yes.

JOHNSON: A bit further down does it say, "Abdomen appears full but SNT"?

HOCKNELL: Yes, "Soft, not tender".

JOHNSON: "Not distended, active bowel sounds"?

HOCKNELL: Yes.

JOHNSON: On your page at the bottom of the page, between 65 and 70, do we have a series of texts which appear in [Baby O]'s sequence between 145 and 150?

HOCKNELL: Yes.

JOHNSON: Over your page, 71 to 79, is there a further sequence of text messages between Lucy Letby and [Dr A] that run between tiles 151 and 161 in [Baby O]'s sequence?

HOCKNELL: Yes.

JOHNSON: At 80, is there a cranial ultrasound scan reviewed by [Dr B] for [Baby P] at -- it's untimed, but I think you've put it in there for what reason? Can you help us with that?

HOCKNELL: There are a number of records that relate to the cranial ultrasound scan being done.

MR JUSTICE GOSS: Sorry, I can't hear a word, I'm sorry.

HOCKNELL: There are a number of records that relate to the ultrasound scan having taken place in the morning, so I've grouped those together.

MR JOHNSON: Do they include Lucy Letby's note at tile 81, which says:

"Cranial ultrasound scan performed this morning, no abnormality detected"?

HOCKNELL: Yes.

JOHNSON: And Lucy Letby's note at 82 saying:

"Parents and sibling visited this morning. Carried out [Baby P]'s cares and had cuddles. Pleased with progress"?

HOCKNELL: Yes.

JOHNSON: There is then, at 83, door swipe data for Lucy Letby, which corresponds to tile 162 in [Baby O]'s sequence?

HOCKNELL: Yes.

JOHNSON: Tiles 84 and 85 are vital signs together with the fluid balance chart, timed at midday?

HOCKNELL: Yes.

JOHNSON: Signed by Rebecca Morgan and co-signed, at least so far as the fluid balance chart is concerned, by Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Door swipe data for Dr Brearey, tile 86, timed at 12.36?

HOCKNELL: Yes.

JOHNSON: Then what appear to be, two-hourly now, observations at 14.00 hours at tiles 87 and 88?

HOCKNELL: Yes.

JOHNSON: Again, signed and co-signed by the student, Rebecca Morgan, and Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Over to 89, please, also at 14.00 hours, did you here insert the part of Lucy Letby's nursing note which corresponds to this time?

HOCKNELL: Yes.

JOHNSON: Can we just deal with what she wrote, please?

HOCKNELL: "Continues with two-hourly feeds. Expressed breast milk/donor-expressed breast milk via NG tube. Minimal aspirates obtained. Abdomen appears full but soft and non-distended. Urine and meconium passed. Alert and active. Handling well."

JOHNSON: Thank you. Then 90 down to 98 is a series of messages which appears also in [Baby O]'s sequence; is that right?

HOCKNELL: Yes.

JOHNSON: At 99 is a bilirubin entry?

HOCKNELL: Yes.

JOHNSON: If we can look at this, please. There's no name recorded against this particular entry. It's timed at 14.23. Just look at the chart, please. I think we need to scroll down a bit. Are you taking the times from what's in manuscript at the bottom of the page?

HOCKNELL: Yes.

JOHNSON: Thank you. Going back to the sequence then, please, Mr Murphy. Is there a series of social messaging and a reference going from Lucy Letby to [Dr A] saying, "Go eat your cheese roll", between 14.29 and 14.37?

HOCKNELL: Yes.

JOHNSON: And again, those correspond to entries in [Baby O]'s chart at tiles 185 and 190?

HOCKNELL: Yes.

JOHNSON: There's some further door swipe entry data at tile 104, which corresponds to 193 in [Baby O]'s sequence; is that right?

HOCKNELL: Yes.

JOHNSON: Followed by two black tiles at 105 and 106 for the [Baby O] events at 14.40 and 15.50?

HOCKNELL: Yes.

JOHNSON: And they, in [Baby O]'s sequence, are tiles 198 and 213.

At 107, 15.54, do we have the movement of Dr Barrett into the maternity ward?

HOCKNELL: Yes.

JOHNSON: Followed, at 16.00 hours, by Lucy Letby and Rebecca Morgan co-signing an entry relating to the giving of 15ml of expressed breast milk to [Baby P] at 16.00 hours?

HOCKNELL: Yes.

JOHNSON: Then there is a whole series of door swipe data entries between 109 and 125; is that right?

HOCKNELL: Yes.

JOHNSON: Followed at 126 by the marker timing the death of [Baby O], timed at 17.47?

HOCKNELL: Yes.

JOHNSON: Following [Baby O]'s death at tile 126, we then have four door swipe entry data tiles dealing with -- three of them with [Dr B] and the fourth, at 17.59, with Lucy Letby passing through the entrance doors of the neonatal unit; is that right?

HOCKNELL: Yes.

JOHNSON: Do we then have, at 131, the tile marking an event relating to [Baby P]?

HOCKNELL: Yes.

JOHNSON: Whether or not that's the precise time, the jury will have to consider perhaps in the light of what follows.

At 132 do we have vital signs noted by Rebecca Morgan on the normal chart at 18.00 hours?

HOCKNELL: Yes.

JOHNSON: Followed by Lucy Letby's record on the neonatal fluid balance chart?

HOCKNELL: Yes.

JOHNSON: Just looking at that, if we can, please, at the chart itself, this is 18.00 hours. In the right-hand side of the -- half of the page, do we see the note at 18.00, EBM for expressed breast milk, the route NG tube, the amount 15ml. The running total for the day is zeroed off at midnight; is that right?

HOCKNELL: Sorry? The total 121, yes.

JOHNSON: 121 is from midnight to that point.

HOCKNELL: Yes, sorry.

JOHNSON: Do we see, under the aspirates column, there's no entry at all?

HOCKNELL: No.

JOHNSON: And we see that in the preceding two feeds, so these are two-hourly, so 16.00 hours and 14.00 hours, there had been trace aspirates?

HOCKNELL: Yes.

JOHNSON: Do we also see, looking at the bottom of the page, that -- I'm slightly losing track. I think it'd be 10 am, so if we can find the 10 am column, and scroll down back, thank you.

We see at 10, 12 and 14.00 hours, and indeed 16.00 hours, there is Rebecca Morgan and Lucy Letby signing and co-signing respectively.

HOCKNELL: Yes.

JOHNSON: And we see throughout that period trace aspirates, don't we?

HOCKNELL: Yes.

JOHNSON: With the possible exception of whatever -- I think it says "small vomit" at 12.

HOCKNELL: Yes.

JOHNSON: With "mec", presumably meconium, and "passed urine".

Then do we see, in the 18.00 hours column, the initials of Rebecca Morgan do not appear?

HOCKNELL: That's correct.

JOHNSON: And there is no record of whether there were trace aspirates or anything else indeed?

HOCKNELL: That's correct.

JOHNSON: So that's what Lucy Letby recorded in the neonatal fluid balance chart at that time. Can we look in the next tile, 134, at what Dr Gibbs recorded? He records -- it's actually a record, I think, made by Dr Cooke who was, of course, junior to Dr Gibbs. But does that record a review by Dr Gibbs?

HOCKNELL: Yes.

JOHNSON: "Active on handling. Capillary refill under 2 seconds. Normal respiratory pattern. Chest sounds clear. Abdomen full. Mildly distended. No tenderness. No masses. Bowel sounds active. Mild erythema at the base of umbilicus. No swelling or exudate. Femorals present. Heart sounds normal."

And then the plan?

HOCKNELL: Yes.

JOHNSON: Can you just help us in that context with why at 131 we have a tile saying "[Baby P] event"?

HOCKNELL: The plan at this point is to do an abdominal X-ray as part of Dr Gibbs' review. My understanding is that would be on the basis of the mild distension that he'd recorded at that time.

JOHNSON: Okay. So that's an answer for why the tile is in at 131?

HOCKNELL: Yes.

JOHNSON: So no one should read anything more into it than that?

HOCKNELL: No.

JOHNSON: Then going back to the carousel, please, Mr Murphy, do we then have a series of door swipe data between 18.01 and 18.33 between tiles 135 and 144? Almost all relate to [Dr B], but there's one for Samantha O'Brien and one for Dr Cooke.

HOCKNELL: Yes.

JOHNSON: If we go to 145 next, please, did Dr Bhowmik then order a septic screen?

HOCKNELL: Yes.

JOHNSON: If we go to that to establish -- this, like so many others, has the results albeit they weren't available at the time; is that right?

HOCKNELL: Yes.

JOHNSON: So you have put in the result that came back from the lab, no doubt after [Baby P] had died, but there was no bacterial growth after 5 days' intubation in the lab?

HOCKNELL: Yes.

JOHNSON: Thank you. Back to the carousel, please, tile 146.

Just get Lucy Letby's record, please. Could you tell us what she recorded?

HOCKNELL: "Septic screen carried out this evening by Consultant Gibbs in view of sibling's deterioration. Difficulty obtaining IV access. Secured after numerous attempts."

JOHNSON: Thank you. So that was a note made, as we can see, at 20.24 albeit it must refer or it clearly does refer to Dr Bhowmik's timed entry at 145?

HOCKNELL: Yes.

JOHNSON: Do we then have, again, further door swipe data between 146 and 157, the times being 18.46 to 19.30, and the movements relating to Drs Barrett, [Dr B], Brearey, Cooke and indeed Lucy Letby?

HOCKNELL: Yes.

JOHNSON: At 158, have you recorded the shift handover to the night shift, where [Baby P]'s designated nurse changed from Lucy Letby to Sophie Ellis?

HOCKNELL: Yes.

JOHNSON: Then do we have a further series of door swipe data in the succeeding five tiles, between 159 and 163, relating to Drs Cooke, [Dr B], Bhowmik and Gibbs?

HOCKNELL: Yes.

JOHNSON: At 164 through to 167, do we have prescriptions for sodium chloride and caffeine together with those matters being entered on to the computer system by Lucy Letby and Sophie Ellis?

HOCKNELL: Yes.

JOHNSON: In other words, Lucy Letby had been the designated nurse during the day, Sophie Ellis was to be the designated nurse overnight?

HOCKNELL: Yes.

JOHNSON: Thank you. Did Lucy Letby record at tile 168 -- just click on it, please -- that there had been a delay in giving caffeine due to workload?

HOCKNELL: Yes.

JOHNSON: Then at 169 do we have Sophie Ellis' note recording the fact that she took over the care of [Baby P]?

HOCKNELL: Yes.

JOHNSON: Just to give us a little bit more detail, if we can click on that, please. Does she record that [Baby P] had been put on to Philips monitoring and an apnoea alarm because he had been put on to caffeine?

HOCKNELL: Yes.

MR JOHNSON: Thank you. My Lord, I think that is the time at which you were proposing to have the break.

MR JUSTICE GOSS: Yes, that's fine. Thank you very much.

That's convenient. We'll have a ten-minute break.

(3.00 pm)

(A short break)

(3.10 pm)

MR JOHNSON: Mrs Hocknell, we'd just dealt with Lucy Letby's note relating to the giving of caffeine and Sophie Ellis' note concerning her taking over [Baby P]'s care at tile 169.

We then move on to 170 and 171, which are the vital signs together with the fluid balance chart; is that right?

HOCKNELL: Yes.

JOHNSON: Can we just look at the fluid balance chart, please. If we can expand the right-hand half of it, please, from midday onwards, Mr Murphy, if that's possible. Is it possible to take in the -- yes, thank you.

Just to get our bearings, we saw that the 6 pm, the 18.00 hours entry, when we last looked at this, was the one that has no record at all in the aspirates column; is that right?

HOCKNELL: Yes.

JOHNSON: So counting back from that through the day shift where Lucy Letby had been the designated nurse, we see that there were trace aspirates all day, essentially?

HOCKNELL: Yes.

JOHNSON: Then at the 8 o'clock feed when Sophie Ellis, who was the night nurse went to feed [Baby P] for the first time, she retrieved 14ml of aspirate from [Baby P], having just taken him over from Lucy Letby; is that right?

HOCKNELL: Yes.

JOHNSON: Moving on to tile 172. Do we have Sophie Ellis' note relating to that event?

HOCKNELL: Yes.

JOHNSON: Can we see what that says, please?

HOCKNELL: "Feeding on 90ml/kg/day of donor-expressed breast milk by NGT. 15ml, 2x12. 14ml part-digested milk aspirate gained at 20.00 feed. Nurse in charge informed. Place on to tummy (monitoring in situ). Continued with feed."

JOHNSON: Part-digested, if we just go back to the chart again, please, on the previous tile. If we look at what she's written there, can we expand it, please? We see the pH is very acidic and this is a part-digested milk feed.

HOCKNELL: Yes.

JOHNSON: Thank you. Moving back then, please, to the tiles. At 173 do we then have the results of an abdominal X-ray which had been requested at 18.00 hours?

HOCKNELL: Yes.

JOHNSON: So requested at the point at which you put that tile in at 131. We've already dealt with this and we have just heard the evidence of Dr Arthurs about the degree of dilation.

At 174 and 175 is there then door swipe data for Drs Gibbs and Cooke?

HOCKNELL: Yes.

JOHNSON: At 176, did Lucy Letby make a note on the nursing notes computer?

HOCKNELL: Yes.

JOHNSON: I think we did deal with this this morning, possibly, but can we have a recap given that we now have it in the context of what was actually going on in a bit more detail with [Baby P]. Can you tell us what it says?

HOCKNELL: The remainder of the summary of notes is:

"For IV cefotaxime and flucloxacillin. Requires blood gas."

JOHNSON: At 177, did Lucy Letby make a note concerning her contact with the family?

HOCKNELL: Yes.

JOHNSON: This relates principally, of course, to [Baby O], who had died about 3 hours earlier or so?

HOCKNELL: Yes.

JOHNSON: Returning to the carousel then, please, 178. Is that a blood gas record entered by Sophie Ellis?

HOCKNELL: Yes.

JOHNSON: Followed at 179 by a prescription for sucrose which, we have heard more than once, is for pain relief --

HOCKNELL: Yes.

JOHNSON: -- or for soothing?

At 180, some door swipe data for Dr Cooke?

HOCKNELL: Yes.

JOHNSON: And then at 181 and 182, blood tests ordered together with the results?

HOCKNELL: Yes.

JOHNSON: At 183 we then have a message from [Dr A], asking Lucy Letby if she's okay.

HOCKNELL: Yes.

JOHNSON: Followed at 184 through to 189 by prescriptions for and entries in relation to them on the computer for flucloxacillin and cefotaxime and sodium chloride?

HOCKNELL: Yes.

JOHNSON: At 190, do we have a note sent by Lucy Letby to [Dr A], which also appears at tile 324 of [Baby O]'s sequence and which we've already dealt with in evidence?

HOCKNELL: Yes.

JOHNSON: That applies down to, on your page, line 200 at the bottom, and then continuing on, as we can see from the schedule that the jury has, right the way through to tile 230.

HOCKNELL: Yes.

JOHNSON: Thank you. If we can resume at 230, please. There you have recorded the fact that a lot of that material, if not all of that material, is in the other sequence?

HOCKNELL: Yes.

JOHNSON: Sorry, no, in fact you've recorded the fact that, I think, there's then -- it's my mistake this, I'm sorry.

From this point on there is further communication between Lucy Letby and various people which can be found at 377 onwards of the [Baby O] sequence?

HOCKNELL: Yes.

JOHNSON: We're not going to go through all that. If we resume with the observations at 22.00 hours then, please. The vital signs together with the fluid balance chart at 231 and 232?

HOCKNELL: Yes.

JOHNSON: The record of dextrose being administered at tile 233?

HOCKNELL: Yes.

JOHNSON: Then the vital signs and the fluid balance chart recorded at 234 and 235 at midnight?

HOCKNELL: Yes.

JOHNSON: Together with, at 236, Sophie Ellis' record of what happened at midnight. If we turn to that, please, to 236. It's relating to the midnight feed; is that right?

HOCKNELL: Yes.

JOHNSON: She records a "20ml part-digested milk aspirate had been obtained, the abdomen was full but soft, and Registrar Mayberry had been informed".

HOCKNELL: Yes.

JOHNSON: So a 20ml aspirate of part-digested milk at midnight.

Could we go back to tile 172, to the 8 o'clock feed? A 14ml-part digested milk aspirate at 8 o'clock; is that right?

HOCKNELL: Yes.

JOHNSON: Just to remind us, if we click on the feeding chart, please.

HOCKNELL: I think that will be behind tile 235.

JOHNSON: Yes, thank you. We see that feeds were continuing at 22.00 and 24.00?

HOCKNELL: Yes.

JOHNSON: Thank you.

HOCKNELL: I think the feeds were actually stopped at midnight.

JOHNSON: Yes, thank you. So resuming then, please.

At 237, the neonatal fluid balance chart records the administration of dextrose?

HOCKNELL: Yes.

JOHNSON: At 238, we have further nursing notes from Sophie Ellis?

HOCKNELL: Yes, this is when she made her update on the computer.

JOHNSON: Those nursing notes continue at 239; is that right?

HOCKNELL: Yes.

JOHNSON: At 240 and 241, at 02.00 hours, the observations, the vital signs together with the neonatal fluid balance chart, which is now recording the administration of dextrose; is that right?

HOCKNELL: Yes.

JOHNSON: The fluid balance chart is repeated at 03.00 hours at tile 242?

HOCKNELL: Yes.

JOHNSON: 04.00 hours, the neonatal fluid balance chart is 244 together with the vital signs at 243?

HOCKNELL: Yes.

JOHNSON: And then at 05.00 hours, at 245, the fluid balance chart data recorded again by Sophie Ellis?

HOCKNELL: Yes.

JOHNSON: At 246, 06.00 hours, the observations are recorded by Sophie Ellis?

HOCKNELL: Yes.

JOHNSON: At 06.00, 247, the neonatal fluid balance chart; is that right?

HOCKNELL: Yes.

JOHNSON: At 248, a further note made by Sophie Ellis concerning her contact with [Baby P]'s parents, followed at 249 by her nursing note concerning the condition of [Baby P] at the end of the shift; is that right?

HOCKNELL: Yes.

JOHNSON: Let's see how [Baby P] was doing at the end of the shift:

"Abdomen has been soft and non-distended. 25ml of air aspirated by Kate Ward. NGT placed on free drainage."

HOCKNELL: Yes.

JOHNSON: Thereafter, at 251, do we have the neonatal fluid balance chart recorded by -- data recorded by Sophie Ellis?

HOCKNELL: Yes.

JOHNSON: Then a message from Lucy Letby at 252 to [Dr A] saying:

"Didn't sleep much, did you? Thinking about [Baby O] walking to work. Dad asked me to open the patio doors in the family room so [Baby O] would know what sun and fresh air felt like."

HOCKNELL: Yes.

JOHNSON: Is that followed at 253 by an update on the computer relating to sucrose?

HOCKNELL: Yes.

JOHNSON: Then by door swipe entry which appears to record the arrival of some of the day staff, who included Lucy Letby, at time 255?

HOCKNELL: Yes.

JOHNSON: Do we then come to the day shift at tiles 257 and 258?

HOCKNELL: Yes.

JOHNSON: Dealing first with the staff rota, please, at 257. For the doctors do we see the paediatrician of the week and on call consultant was [Dr B]?

HOCKNELL: Yes.

JOHNSON: Dr Brearey was also in the hospital?

HOCKNELL: Yes.

JOHNSON: The junior medical staff were Drs [Dr A], Ukoh, Edwards, Burke and Cooke?

HOCKNELL: Yes.

JOHNSON: There's no record of who the shift leader was, but the designated nurse for [Baby P] was Lucy Letby?

HOCKNELL: Yes.

JOHNSON: The other staff on duty were [Nurse D], Christopher Booth, Mary Griffith. Yvonne Farmer was doing practice development and the student nurse, as we have seen already, was Rebecca Morgan?

HOCKNELL: Yes.

JOHNSON: The nursery nurses working that day were Janet Cox and Angela McShane?

HOCKNELL: Yes.

JOHNSON: Then in the next tile, please, do we see that [Baby P] was in nursery 2 --

HOCKNELL: Yes.

JOHNSON: -- with his brother [Baby R]?

HOCKNELL: Yes.

JOHNSON: Each was being cared for separately?

HOCKNELL: Yes.

JOHNSON: [Baby P]'s designated nurse, as we know, was Lucy Letby; [Baby R]'s was Christopher Booth.

HOCKNELL: Yes.

JOHNSON: Other children in the unit included [Baby Q], who was in nursery 1?

HOCKNELL: Yes.

JOHNSON: Thank you. Moving on then, we have door swipe data at 259 for [Nurse D] timed at 07.32?

HOCKNELL: Yes.

JOHNSON: We have a message sent by [Dr A] to Lucy Letby concerning his night's sleep and that he was rushing to work, which I think we've already seen in the context of the other sequence possibly.

HOCKNELL: Possibly. I'm not sure about this one.

JOHNSON: I think I'm wrong actually. In answer to the message that he had been sent, "Didn't sleep much, did you?", he replied:

"No. Dropped off at 2. Woke a couple of times and eventually went to bed. Overleapt by an hour. Rushing like a fool right now. Traffic is usually light on Fridays. I can't imagine what they're feeling now. Do they know about the PM? Student today? So late."

Then more door swipe data for Mary Griffith, followed by the fluid balance chart at 08.00 hours which is recorded by Lucy Letby, is that right, at tile 262?

HOCKNELL: Yes.

JOHNSON: Then at tile 263, do we have a note written by Lucy Letby for what happened at the beginning of the shift?

HOCKNELL: Yes.

JOHNSON: We have to look at this in the context of Sophie Ellis' note at 6.39, which we had seen at 249, saying:

"Abdomen has been soft and non-distended, 25ml of air aspirated by Kate Ward, NGT placed on free drainage."

What was Lucy Letby recording at 8 o'clock, please?

HOCKNELL: "Written in retrospect for care given from 08.00. Emergency equipment checked. Fluids calculated. [Baby P] nursed

in an incubator. Observations within normal range. [Baby P] nil by mouth. IV fluids: 10% glucose at 90ml/kg running via peripheral line. Line occluding with high pressures. NG tube on free drainage. Trace amount in tube. Abdomen full. Loops visible. Soft to touch."

JOHNSON: At 264, timed at 08.04, did Lucy Letby send a message to [Dr A]?

HOCKNELL: Yes.

JOHNSON: Can you deal with it, please?

HOCKNELL: "Eek. Not like you to be late. Have you made it in? Yes, I think they know but they want to talk to [Dr B] today. I've got [Initial of Baby R] and [Initial of Baby P]. [Initial of Baby P] has stopped feeds as large asps. Yes, I've got my student again but might see if she can work with someone else as don't feel I'm in frame of mind to support her properly and got loads of paperwork et cetera to finish off."

JOHNSON: Yes. And [Initial of Baby R] and [Initial of Baby P] in that context are [Baby R] and [Baby P]?

HOCKNELL: Yes.

JOHNSON: And we know Christopher Booth had [Baby R]?

HOCKNELL: Yes.

JOHNSON: At 265 is there then door swipe data recording a movement of Yvonne Farmer?

HOCKNELL: Yes.

JOHNSON: Then at 266, at 08.16, did [Dr A] send a message saying:

"Not far away. Should be in just before the handover. Large asps. I wonder if they've all been exposed to a bug that BPen [that's presumably benzylpenicillin] and gent [as in gentamicin] didn't account for. Are you okay? It is rubbish not to sleep well in the middle of three long days. Hope your day goes okay. Big children for me today. See you later"?

HOCKNELL: Yes.

JOHNSON: Did Lucy Letby reply 3 minutes later?

HOCKNELL: Yes.

JOHNSON: Deal with that, please.

HOCKNELL: "Mm maybe. I'll be watching them both like a hawk. I'm okay, just don't want to be here really. Hoping I may get the new admissions. Guess what? Wanted me to go to MRI as Mary looking after baby but has metal so can't go. I've escaped though, phew."

And again says:

"Hope your day okay too. Catch up later."

JOHNSON: Did [Dr A] respond at 269 saying:

"Didn't I say you'd get asked"?

HOCKNELL: Yes.

JOHNSON: And an emoji of what may be a cup of tea --

HOCKNELL: Yes.

JOHNSON: -- or coffee?

At 271, is there door swipe data for [Dr B]?

HOCKNELL: Yes.

JOHNSON: At 272 and 273 for Dr Cooke and Jessica Burke?

HOCKNELL: Yes.

JOHNSON: At 274 at 08.33, did Lucy Letby send a further message to [Dr A]?

HOCKNELL: "Yes, seems to be my new role. It's a transport incubator job with sedation, so quite relieved!"

And then sends another message with tea or coffee cups.

JOHNSON: Yes. Followed by further door swipe data for Drs Ukoh and [Dr B] and then, at 278, Lucy Letby continuing the conversation about a transport job and sedation by saying?

HOCKNELL: "Sending my student!"

JOHNSON: Who was Rebecca Morgan?

HOCKNELL: Yes.

JOHNSON: At 279 to 281, is there door swipe data for Dr Brearey?

HOCKNELL: Yes.

JOHNSON: Followed at 282, 09.00 hours, Rebecca Morgan's recording of [Baby P]'s vital signs?

HOCKNELL: Yes.

JOHNSON: Followed in turn by further door swipe data in the next tiles, 283 to 285, relating to Drs Cooke, Brearey and Ukoh?

HOCKNELL: Yes.

JOHNSON: At 286, in a note that Lucy Letby made much later in the day at 21.18 -- if we can click on it, please, Mr Murphy -- did she record:

"Registrar Ukoh arrived to carry out ward round. [Baby P] had an apnoea/brady/desat with mottled appearance requiring facial oxygen and Neopuff for approximately 1 minute. Abdomen becoming distended"?

HOCKNELL: Yes.

JOHNSON: Was that then followed at 287 by a further note which was timed at 9.30 -- which you have timed at 9.30, in the context of blood gases as:

"Decision made to carry out bloods and gas, approx 09.30"?

HOCKNELL: Yes.

JOHNSON: Is that "approximately 9.30" in Lucy Letby's note?

HOCKNELL: Yes.

JOHNSON: Right, thank you.

At 288, door swipe data for [Dr B] at 09.34?

HOCKNELL: Yes.

JOHNSON: Then at 289, Dr Ukoh's notes concerning his examination of [Baby P]; is that right?

HOCKNELL: Yes.

JOHNSON: If you could click on it just to pick out a single line, although of course if asked to, I'll read any or all of it. Amongst the entries it says:

"Abdomen moderately distended/bloated -- soft."

Is that right?

HOCKNELL: Yes.

JOHNSON: Thank you. At 290 did [Dr A] send a message at 9.35 saying:

"Good plan. I've let [Dr B] go. Told her I'd do the cons but if the ward round. Looks like another busy one. No APNP today either [as read]."

HOCKNELL: Yes.

JOHNSON: And shortly after that, according to the note that Lucy Letby made in tile 291, in other words shortly after the decision made to carry out bloods and gas and the abdomen becoming distended, did she record in the nursing notes, "Acute deterioration"?

HOCKNELL: Yes.

JOHNSON: We'll just look at that, please. It might be a good idea to look at the full note here if we could to get it all into context lest breaking it down has misrepresented anything or given anybody a misleading impression. Right at the top left:

"Shortly after acute deterioration..."

So to get the context of that, we probably need to go back to the previous nursing note, which I think is --

HOCKNELL: Page 49.

JOHNSON: Thank you. It's tiles 286 and 287. This of course is all a retrospective note. If we just look at the top of the section, it says the time of the note creation is 21.18, but it's not concluded until 22.00 hours, so made several hours later. And the part we've just been looking at is the second paragraph, which in full reads:

"Registrar Ukoh arrived to carry out ward round. [Baby P] had an apnoea/brady/desat with mottled appearance requiring facial oxygen and Neopuff for approximately 1 minute. Abdomen becoming distended. Decision made to carry out bloods and gas at approximately 09.30."

Then shortly after:

"Acute deterioration."

Is that the sequence?

HOCKNELL: Yes.

JOHNSON: Thank you. If we can go back, please, to 293. Do we then see that [Dr B], in a note she made quite a long time later, recorded the fact that she'd been called to nursery 2 as [Baby P] was unwell?

HOCKNELL: Yes.

JOHNSON: The door swipe data that may correspond with that attendance is in the next tile at 294 and timed at 09.38?

HOCKNELL: Yes.

JOHNSON: The time of these events, recorded by [Dr A] in his retrospective notes, tile 295, is approximately 09.40?

HOCKNELL: Yes.

JOHNSON: What we see in the succeeding five tiles, 296 to 300, is door swipe data for Nurse Yvonne Farmer and Dr Katarzyna Cooke, followed by a record of the fast bleep at tile 301, timed at 09.50?

HOCKNELL: Yes.

JOHNSON: A document, I think we have seen today at tile 302 records that, at 09.50, chest compressions were started on [Baby P]?

HOCKNELL: Yes.

JOHNSON: That time is replicated in [Dr A]'s notes at tile 303?

HOCKNELL: Yes.

JOHNSON: Where he recorded:

"Called to NICU at about 9.50 for arrest of [Baby P]"?

HOCKNELL: Yes.

JOHNSON: The CPR scribe, whoever it may have been, it is unattributed in the note, at tile 303, gives the same time?

HOCKNELL: 304, yes.

JOHNSON: Sorry, 304, I beg your pardon.

At tile 305 we have [Dr B]'s notes. I think we may have looked at this this morning in our quick preview of this sequence, where [Dr B] recorded that Dr Ukoh and Nurse Letby were present:

"Dropping sats and heart rate. Just a few minutes earlier had briefly seen [Baby P] and discussed with registrar to do a gas, lactate, ammonia full blood count and CRP. Shortly after this [Baby P] deteriorated and Dr Ukoh started to bag. IV access x1 was lost as not flushing. Airway maintained with Neopuff bag whilst getting intubation ready. Few attempts at IV access unsuccessful."

HOCKNELL: Yes.

JOHNSON: At 306 and 307, do we have largely the same results, although not exactly the same, relating to blood gases taken from [Baby P] at 09.51?

HOCKNELL: Yes.

JOHNSON: One of them is signed by Lucy Letby, for the other there is no name recorded; is that right?

HOCKNELL: I think it's a printout from the machine.

JOHNSON: Okay, thank you. At 308 at 09.51, [Dr A] records the circumstances surrounding [Baby P]'s collapse?

HOCKNELL: Yes.

JOHNSON: Followed, at 309, by [Dr B]'s note recording the arrival of [Dr A] and what he did for [Baby P]?

HOCKNELL: Yes.

JOHNSON: At 310 through to 312, do we have door swipe data for Drs Cooke and Burke?

HOCKNELL: Yes.

JOHNSON: Then a record of adrenaline being given to [Baby P] at 09.55 at tile 313?

HOCKNELL: Yes.

JOHNSON: That fact also recorded in [Dr A]'s note at 314?

HOCKNELL: Yes.

JOHNSON: And in the resuscitation record at 315?

HOCKNELL: Yes.

JOHNSON: And by the scribe at 316?

HOCKNELL: Yes.

JOHNSON: Together with the insertion of an ET tube at the same time at tile 317?

HOCKNELL: Yes.

JOHNSON: We then have, at 318 and 319, [Dr B] and [Dr A]'s notes respectively concerning these events, which resulted in [Baby P] being intubated and given adrenaline.

HOCKNELL: Yes.

JOHNSON: At 320, do we have Lucy Letby's notes relating to this collapse?

HOCKNELL: Yes.

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

HOCKNELL: "Emergency intubation successful. Resus commenced at documented in medical notes. Peripheral access lost. X2 IO access points and drugs/fluids given via these ports."

JOHNSON: Thank you. Does the door swipe data, at 321, record the movement of Mary Griffith?

HOCKNELL: Yes.

JOHNSON: And we then have a series of tiles in quick succession over the next 8 to 10 minutes recording various amounts or various doses of adrenaline being given to [Baby P] --

HOCKNELL: Yes.

JOHNSON: -- his blood gas results, the fact that he was put on a ventilator and he was also given sodium chloride; is that right?

HOCKNELL: Yes.

JOHNSON: And that takes us, in essence, down to tile 340. So about 15 or so tiles all recounting the administration of adrenaline, sodium chloride and CPR?

HOCKNELL: Yes.

JOHNSON: Amongst those, at 329, did somebody, albeit this isn't attributed to an individual, record the fact that CPR was stopped because spontaneous circulation had been restored?

HOCKNELL: Yes.

JOHNSON: At tile 340, next, please, do we have swipe data for Yvonne Farmer at 10.09?

HOCKNELL: Yes.

JOHNSON: Followed by a blood sugar reading, again unattributed, at tile 341?

HOCKNELL: Yes.

JOHNSON: Followed by more door swipe data for Yvonne Farmer and Dr Cooke interspersed with a record at tile 344 of the administration of sodium chloride?

HOCKNELL: Yes.

JOHNSON: Sodium chloride also recorded at 346, albeit under the more common word "saline"?

HOCKNELL: Yes.

JOHNSON: Then the scribe, at 347, recorded the fact that bloods had been taken?

HOCKNELL: Yes.

JOHNSON: A further record of sodium chloride at 348 and 349?

HOCKNELL: Yes.

JOHNSON: Followed at 350, now timed at 10.14, by door swipe data for Dr Cooke?

HOCKNELL: Yes.

JOHNSON: The prescription for the sodium chloride recorded at tile 351 and signed by Dr Burke and Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Followed by the scribe's record of bicarbonate of soda and saline being administered at tiles 352 and 353?

HOCKNELL: Yes.

JOHNSON: Then by the prescription for those substances signed by Dr Burke at tile 354?

HOCKNELL: Yes.

JOHNSON: [Dr A]'s notes of bicarbonate and adrenaline being administered to [Baby P] at tiles 355 and 356, timed at 10.15?

HOCKNELL: Yes.

JOHNSON: Followed by Dr Cooke's ordering of a septic screen; is that right?

HOCKNELL: Yes.

JOHNSON: Just so that we know what the result was, if we can click on the tile, please, this is at 10.17 that morning:

"No bacterial growth after 5 days' incubation."

So no bugs in the blood.

At 358 to 360, more door swipe data for Dr Cooke, followed by [Dr B]'s notes at 361, timed at approximately 10.30, and concerning her conversation with Dr Rackham, who we know was the transport team consultant.

HOCKNELL: Yes.

JOHNSON: At 362, tile 362, timed at 10.34, do we have more blood results?

HOCKNELL: Yes.

JOHNSON: At 363, a blood gas measurement was taken apparently but no data relating to the results appears to be available, albeit the same -- although data from a blood gas record does appear a few minutes later at tile 365 --

HOCKNELL: Yes.

JOHNSON: -- and 366?

HOCKNELL: Yes.

JOHNSON: And 366 is written by or attributed to Lucy Letby; is that right?

HOCKNELL: Yes.

JOHNSON: At 367, the gas results reviewed by [Dr A] in the clinical notes at 10.46?

HOCKNELL: Yes.

JOHNSON: Followed by door swipe data of Christopher Booth at 368, timed at 10.55?

HOCKNELL: Yes.

JOHNSON: At 369, timed at 11.00 hours, vital signs for [Baby P] recorded, albeit the person who recorded them has not signed for them?

HOCKNELL: That's right.

JOHNSON: Let's just look at that because I don't think we've looked at any of these charts yet in this particular case.

We're on the 24th at 11 o'clock, so looking at the tile overall, it's the penultimate column. We see in the respirations the X in the circle, which we've heard denotes that he was on a ventilator. We see the temperature recorded below and then further down, I don't know whether the -- is the signature obscured by the number or is it on the original without that stamp?

Is there no attribution?

HOCKNELL: I think there's no attribution.

JOHNSON: Or in the next one, as it happens, at midday?

HOCKNELL: Yes.

JOHNSON: Going back to the sequence then, please, at 370, was there an intravenous infusion of morphine given to [Baby P]?

HOCKNELL: Yes.

JOHNSON: The description for that appears in the next tile at 371, timed at 11.00 hours?

HOCKNELL: Yes.

JOHNSON: We then have at 372, timed at 11.00 hours, [Baby M]'s blood pressure, heart rate, the fact that he was -- his sats were 100% in air and then some further data recorded by someone who's not signed for it; is that right?

HOCKNELL: Yes.

JOHNSON: Can we just look at that, please. Is this a piece of paper on which someone has written all these results; is that right?

HOCKNELL: Yes, it's what I have referenced as a scribe note.

JOHNSON: Yes. So the particular note that we're talking about is -- if we look, we can see the two black dots where there were probably holes in the page. If we go just above the first black dot, the upper dot, we can see the 11 o'clock entry that you have transcribed here at tile 372; is that right?

HOCKNELL: Yes.

JOHNSON: At 373 to 375, is there door swipe data between the times 11.03 and 11.10 for [Nurse D], Lucy Letby and Yvonne Farmer respectively?

HOCKNELL: Yes.

JOHNSON: Then, at 376, [Dr A] prescribed a loading dose of morphine?

HOCKNELL: Yes.

JOHNSON: The scribe, in that note we have just looked at, recorded the same data at the same time?

HOCKNELL: Yes.

JOHNSON: Thereafter, at 379 to 381, door swipe data for Yvonne Farmer and Dr Ukoh?

HOCKNELL: Yes.

JOHNSON: Followed at 382 by, on the resuscitation record, somebody writing, "Chest compressions started at 11.30"; is that right?

HOCKNELL: Yes.

JOHNSON: And another dose of adrenaline at a concentration of 1 in 10,000?

HOCKNELL: Yes.

JOHNSON: That's recorded by the scribe, the anonymous scribe, at 383?

HOCKNELL: Yes.

JOHNSON: Is that the same document that we just looked at before?

HOCKNELL: There are two separate scribe documents, so I wouldn't be sure, but...

JOHNSON: Let's have a look just to check if we may. This is the other one, is it?

HOCKNELL: Yes.

JOHNSON: So this is at 11.30; is that right?

HOCKNELL: Yes.

JOHNSON: So between those two lines that we can see transecting the page, somebody's written, "CPR 11.30, adrenaline 1"?

HOCKNELL: Yes.

JOHNSON: Then underneath, "11.32, pancuronium"?

HOCKNELL: Yes.

JOHNSON: Do you know what the other word says to the right of the page?

HOCKNELL: I have put it down as "ROSC".

JOHNSON: "ROSC at 11.36."

Going back to the nursing notes then next, please, at 384, we have a note made much later in the day by Lucy Letby; is that right?

HOCKNELL: Yes.

JOHNSON: Let's just see what this says. Could you read that for us?

HOCKNELL: "CPR for 6 minutes. Loaded with pancuronium. Peripheral access obtained. Observations as charted. Mean cuff blood pressure maintained. Colour and perfusion poor. Mottled and capillary refill 3 to 4 seconds. Nil obtained from NG tube. Abdomen full but soft. Nil urine passed. Meconium passed."

JOHNSON: Is there then a record at 385 and 386 of the administration of adrenaline?

HOCKNELL: Yes.

JOHNSON: At 387, a record made by [Dr A] at 11.30 hours, recording the fact that [Baby P] desaturated, was bradycardic and that CPR was commenced?

HOCKNELL: Yes.

JOHNSON: Does he then, that is [Dr A], record at 388 and 389 the administration of adrenaline and pancuronium?

HOCKNELL: Yes.

JOHNSON: In the resuscitation note, "panc", which may be short for pancuronium, is recorded by the scribe at 390 --

HOCKNELL: Yes.

JOHNSON: -- followed by the word "pancuronium", then panc, also by the scribe?

HOCKNELL: Yes.

JOHNSON: Then spontaneous circulation was restored again at tile 393, timed at 11.36, and noted by [Dr A] in the clinical notes?

HOCKNELL: Yes.

JOHNSON: At 394, the resuscitation record recorded the fact that chest compressions ended at that moment?

HOCKNELL: Yes.

JOHNSON: You have then put into the chronology the ROSC entry that we saw a little earlier timed at 11.36?

HOCKNELL: Yes.

JOHNSON: Followed at tile 396, timed at 11.44, by a 10ml per kg bolus?

HOCKNELL: Yes.

JOHNSON: Door swipe data at 397 and 398 for Nurse Mary Griffith and [Dr B] timed at 11.44 and 11.51 respectively?

HOCKNELL: Yes.

JOHNSON: At 399 the anonymous scribe recorded at 11.55:

"Adrenaline corrected, not stated."

HOCKNELL: "Started."

JOHNSON: Is it stated or --

HOCKNELL: I think it's "started". I think it's a correction.

JOHNSON: Yes, in the typed version it's -- in this version it's been corrected. It's my printed version. Yes.

Maybe you were right, but maybe it does mean started. Anyway. Whatever it means, there it is.

At tile 400, do we have the X-ray timed at 11.57, reported at the time by Dr Wright and taken into consideration earlier by Professor Arthurs?

HOCKNELL: Yes.

JOHNSON: If anyone's lost track of where we are, this is where Dr Wright noted the presence of the pneumothorax, which Professor Arthurs was asked to demonstrate on the screen this afternoon. You may not have seen that, but the jury will remember that as having been done a couple of hours ago.

Thereafter, at 401 and 402, timed at 11.57 and 11.58, do we have door swipe data for [Dr B]?

HOCKNELL: Yes.

JOHNSON: Then at 403, timed at noon, the scribe recorded various vital signs, together with the fact that there was morphine being administered to [Baby P]?

HOCKNELL: Yes.

JOHNSON: Some of that data, albeit just relating to sodium bicarbonate, appears to be in the IV infusion prescription at the same time at tile 404, signed by Dr Burke and Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Then at 405, the anonymous scribe at 12.08 has recorded:

"Half correction X-ray second question question mark [as read]."

HOCKNELL: Yes.

JOHNSON: Followed by two blood gas results at tiles 406 and 407?

HOCKNELL: Yes.

JOHNSON: We've dealt with a number of these and not looked at the base material. If we do that and go to 406 first, please. This is what some people have referred to as the till roll, which is a printout from the machine --

HOCKNELL: Yes.

JOHNSON: -- which has fuller results than are recorded on the chart, which you'll see on the next tile, please.

Mr Murphy, go straight to the next tile.

This is in effect Lucy Letby transcribing what appears on the printout to the chart; is that right?

HOCKNELL: Yes. It's further down.

JOHNSON: Keep going down. Thank you. There we see the results at 9.51, 10.46, 12.08 and 13.33, all apparently recorded by Lucy Letby?

HOCKNELL: Yes.

JOHNSON: At 408 are there further notes made by [Dr A]?

HOCKNELL: Yes.

JOHNSON: Followed at 409, timed at 12.15, by door swipe entry data for Christopher Booth?

HOCKNELL: Yes.

JOHNSON: Then at 410 by the scribe recording that [Baby P] was to be given 2ml of adrenaline per hour?

HOCKNELL: Yes.

JOHNSON: Yet again, a tile showing an event at 411, followed by the resuscitation chart at 412, recording the start of chest compressions at 12.28?

HOCKNELL: Yes.

JOHNSON: Followed at 413, at the same time, by Lucy Letby's note in the nursing record. Just clicking on that, please, does that record:

"Further collapse. Resus as documented in medical notes"?

HOCKNELL: Yes.

JOHNSON: 414, the same time, [Dr A]'s note concerning the same event?

HOCKNELL: Yes.

JOHNSON: 415, the CPR scribe, no name, records:

"CPR adrenaline infusion commenced 0.5"?

HOCKNELL: Yes.

JOHNSON: At tile 416, timed at 12.30, adrenaline, 1 in 10,000, recorded by someone who cannot be identified?

HOCKNELL: That's right.

JOHNSON: 417, timed at 12.30, Dr Ukoh, the door entry data records him coming into the maternity ward?

HOCKNELL: Yes.

JOHNSON: At 418, [Baby P] was intubated at 12.32?

HOCKNELL: Yes.

JOHNSON: That event recorded by the scribe at 419 and by [Dr A] at 420?

HOCKNELL: Yes.

JOHNSON: The administration of adrenaline recorded at 421, timed at 12.34 by Dr Burke and Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Adrenaline then appears again at 422 and 423, together with [Dr A]'s note at 424?

HOCKNELL: Yes.

JOHNSON: The fact of the intubation is -- this may be a second tube because the previous tube had been recorded as a size 3. This time, at 425, it is recorded as a size 3.5 together with adrenaline at 12.38?

HOCKNELL: Yes.

JOHNSON: That medication recorded by Dr Burke and Lucy Letby at tile 426 --

HOCKNELL: Yes.

JOHNSON: -- together with the scribe at 427 and [Dr A] at 428?

HOCKNELL: Yes.

JOHNSON: A movement of Dr Cooke through the doors of the neonatal unit at 429, timed at 12.40?

HOCKNELL: Yes.

JOHNSON: Then the scribe at 430, also at 12.40, has recorded needle aspiration?

HOCKNELL: Yes.

JOHNSON: 431, more information, perhaps relating to the same event in the resuscitation record, somebody recorded, "Chest needle inserted"?

HOCKNELL: Yes.

JOHNSON: At 432, Lucy Letby's retrospective nursing note. Click on that, please. It records:

"Adrenaline infusion commenced along with dopamine. Needle aspiration for right-sided pneumothorax."

HOCKNELL: Yes.

JOHNSON: Then in the clinical notes at 433, [Dr A] ordered a chest X-ray at 12.30?

HOCKNELL: Yes.

JOHNSON: That X-ray appears at the next tile, 434, with Dr Wright's report. Again, it was referred to this morning by Professor Arthurs.

At 435, [Dr A]'s review of the X-ray at the time, recording:

"Right-sided lateral pneumothorax. Decompressed with 24g Jelco at 2 to 3 ICS in mid-clavicular line."

HOCKNELL: Yes.

JOHNSON: That may be the drain. We'll have to wait to hear from him about that.

At 436, timed at 12.43, the infusion prescription for sodium bicarbonate, signed for by Dr Burke?

HOCKNELL: Yes.

JOHNSON: In the resuscitation record, the same data at 437?

HOCKNELL: Yes.

JOHNSON: The scribe records it again at 438 and the giving of it is recorded by [Dr A] all at the same time?

HOCKNELL: Yes.

JOHNSON: At 440, 441 and 442 the administration of further adrenaline. This is the third dose during this event?

HOCKNELL: Yes.

JOHNSON: Followed by door swipe entry at 443 for Mary Griffith and then a doubling of the dose of adrenaline prescribed by Dr Burke at tile 444, timed at 12.47?

HOCKNELL: Yes.

JOHNSON: And recorded in the resuscitation record at 445 --

HOCKNELL: Yes.

JOHNSON: -- at 12.47?

HOCKNELL: Yes.

JOHNSON: Medication chart, same data, 446, recorded by Dr Burke and Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Then a fourth dose of adrenaline recorded by the scribe at 12.47, tile 447, and by [Dr A] in tile 448?

HOCKNELL: Yes.

MR JUSTICE GOSS: I hesitate to interrupt, but I think if you could find a convenient or the least inconvenient point, because this does go on for quite a long time.

MR JOHNSON: It does. Well, I think that's as good a point as any, my Lord. Looking ahead, it just continues.

MR JUSTICE GOSS: It goes on for quite some time. I know we're in the middle of a sequence of events that are closely connected,

but we've got to break off at some time so that will do for today.

MR JOHNSON: We're still three and a quarter hours short of the time at which [Baby P] died.

MR JUSTICE GOSS: I know, so we've got quite a long way to go.

So we'll come back on Monday to continue, please.

Thank you very much. Same for you, members of the jury, please. 10.30 on Monday, when we will complete this sequence of events and then hear some other witnesses.

Thank you very much indeed.

Please remember, it's a three-day weekend for you, so 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.

(In the absence of the jury)

MR JUSTICE GOSS: Mr Myers?

MR MYERS: We'd be grateful if we could pay a quick visit to Ms Letby. Thank you.

(4.11 pm)

(The court adjourned until 10.30 am on Monday, 20 March 2023)