

27 February 2023  
Baby K

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Monday, 27 February 2023  
(10.30 am)

(In the presence of the jury)

MR JUSTICE GOSS: Yes, Mr Johnson.

MR JOHNSON: My Lord, we're moving on to call evidence relating to [Baby K]. If the jury would like to go to the indictment, please, to page 5. So right at the beginning of jury bundle 1, behind divider 1.

If we go to page 5, we'll come to count 14.

You will see that there is a single count concerning [Baby K]. It's count 14, as I say. Putting the allegation into the chronological context, it comes next after [Baby I], whose case we dealt with a couple of weeks ago, and before the cases of [Babies L and M].

So you'll remember we skipped out of turn because of witness issues, so we're stepping back in time a little here.

The allegation is one of attempted murder. The jury may recall from the opening in October that the allegation in effect is that Lucy Letby interfered with the ET tube and Dr Jayaram walked in in the immediate aftermath of that, walked into nursery 1.

So you will hear as part of the evidence, ladies and gentlemen, that unhappily, [Baby K] actually died a few days later, but this is an allegation of attempted murder, not murder, because we are not alleging that what Lucy Letby did actually caused the death a few days later. So that's just to put it into context, I hope.

MR JUSTICE GOSS: All right. [Baby K], sadly, has died, but it is not alleged as a result of an unlawful act. What is alleged is that the defendant attempted to kill her before she died, but didn't actually cause her death.

MR JOHNSON: Thank you.

Witness statement of [MOTHER OF BABY K] (read)

MR DRIVER: My Lord, may I begin the presentation of the evidence by the reading of a statement of [Mother of Baby K]. Has your Lordship has received a paper copy?

MR JUSTICE GOSS: I have, thank you very much, Mr Driver.

MR DRIVER: Members of the jury, this statement was made on 2 April 2019, it reads as follows:

"I am [Mother of Baby K], mother of [Baby K] and wife to [Father of Baby K], but everybody knows him as [redacted].

"At the beginning of August 2015, I discovered I was 5, maybe 6, weeks pregnant. It was a planned, natural pregnancy and we were both thrilled with the news. The pregnancy progressed as normal. [Father of Baby K] and I attended all the scans and appointments together. When we attended the 12-week scan at the Countess of Chester Hospital, an issue was identified with the baby.

"During the 12-week scan it was identified that [Baby K] had a build-up of fluid at the back of her neck. At 15 weeks I had the amniocentesis and was reassured that everything was fine and there were no problems and the tests came back negative for Down's syndrome.

"I was now having regular checkups and scans every 2 to 3 weeks at the Countess of Chester Hospital. I was under the consultant Mr McCormack at the time and from the regular scans I was having, the fluid at the base of [Baby K]'s neck had begun to reduce.

"The only other problem that occurred during my pregnancy was when we attended a scan at 18 to 20 weeks, where it was discovered [Baby K] had a little pocket of fluid on her lungs,

but during the next scan it had all cleared and the fluid at the back of her neck was continually reducing. Everything was developing fine and Mr McCormack had no concerns with either me or [Baby K].

"It was a normal Monday morning on 15 February 2016, which was the day before I reached the 25-week point of my pregnancy. I woke up with what I can only describe as a few niggles and pains. I didn't think much about it and got into the shower in preparation for work as I was still working full-time.

"[Father of Baby K] suggested calling the local midwife before he left for work so I called the midwife and explained how I was feeling. I explained that I was 25 weeks tomorrow, that is to say Tuesday, 16 February 2016. She told me to call the labour ward at the hospital so I called up the Countess of Chester Hospital and was advised to call in to be checked over.

"I arrived at the Countess of Chester Hospital and on to the maternity/labour ward. I was then taken into one of the side rooms where a midwife checked me over and informed me that I was 2 centimetres dilated and she informed [Father of Baby K] and I that something was happening and I had gone into labour. We couldn't believe it.

"I was then admitted on to the labour ward and was closely monitored over the next couple of days. The medical staff talked about giving me steroid injections just in case the labour progressed further.

"The steroids were to assist [Baby K] and to develop her lungs following delivery. I received two steroid injections 12 hours apart. Once I was admitted, the medical team at the Countess of Chester started looking at the options of transferring me to another hospital, one that was equipped to deal with 25-week old babies and the delivery.

"The nearest hospital to Chester was Arrowe Park Hospital on the Wirral, but they were full and did not have a vacant bed in their neonatal unit. I remained at the Countess of Chester. By 2 pm in the afternoon, I was placed into one of the labour rooms on the maternity ward. This is where I remained.

"The following day, Tuesday, 16 February 2016, I was given the second injection of steroids. On the Tuesday evening a consultant spoke to us about the possibility of having a C (caesarean) section, as it was getting to that stage."

Page 6, my Lord:

"There were no indications from the medical team that they had any concerns regarding [Baby K]. She wasn't showing any signs of being distressed. They had me on two-hourly checks. Her heart rate was good throughout all the checks, so we both made the decision to leave her and see how things developed. I had gone on nil by mouth just in case I had to go into theatre.

"On Tuesday evening, the 16th, around midnight, I woke up in pain. [Father of Baby K] pressed the red emergency alarm on the wall and within a minute the room was full of staff. The midwife checked me over and got me ready for the delivery.

"[Baby K] was born at 02.12 hours on Wednesday, 17 February 2016. She was placed directly into an incubator that was on the other side of the labour room. The staff worked on [Baby K] for 30 to 45 minutes. When I say working on her, they were getting her breathing, placing the tubes, clearing her airway, putting a hat on her and keeping her warm.

"As far as we were aware, there was nothing to be concerned about. We later found out she weighed 692 grams or 1 pound and 8 ounces. A member of staff asked [Father of Baby K] if he wanted to go over and see her. There seemed to be so many people around the incubator all trying to help [Baby K], [Father of Baby K] very briefly went over to see her but came back to me within seconds as he didn't want to get in their way.

"The consultant explained to us before [Baby K] was born that because of her age, 25 weeks, following the delivery there would be a medical team in the room who would there to solely look after the baby. The midwife and the consultant was there to take care of me and the baby during birth.

"The specialist neonatal doctor and nurses would be there to care for [Baby K]. Once she was out she would be placed into an incubator and, when the team thought she was stable enough to move, she would be transferred to the special care on the neonatal unit.

"Both of us visited [Baby K] around 4.30 am. The next thing I remember, a female nurse with blondish hair tied in a ponytail, she was a little round, in her 30s wearing a blue uniform, she came into the room. She told us that [Baby K] was fine. She was stable and doing really well. She asked if we would like to go and see her. We both immediately said yes.

"The female nurse helped me into a wheelchair and she pushed me down on to the neonatal unit and into nursery room 1. [Father of Baby K] was with me the whole time. The nurse offered to take a couple of photographs of the three of us on [Father of Baby K]'s phone. She took several pictures of the three of us. After about

15 minutes, we decided to go back and [Father of Baby K] wheeled me back to the labour ward and I think I fell asleep. The pictures have been timestamped on [Father of Baby K]'s phone at 04.31 am on 17 February 2016, making [Baby K] only a few hours old."

Page 9, my Lord:

"While I was sleeping, somebody came into the room to inform us that a bed had come available at Arrowe Park and arrangements were being made to transfer [Baby K] as soon as possible. We always knew that [Baby K] would have to be transferred to another hospital with the equipment and facilities to cope with her needs.

"At 9 am, on Wednesday 17, February, the transfer team had arrived at the Countess of Chester. They came into the labour room and introduced themselves to us and explained what was going to happen. It was explained that they had to get [Baby K] out of the incubator on the neonatal unit and into the transport incubator.

"This process took some time as the medical team were having difficulty stabilising [Baby K]. It was at this point that [Father of Baby K] and I had the discussion about giving her a name. It got to midday and the transfer team said to us, 'Right, it is now or never, we've done as much as we possibly can here at Chester with the equipment available to us, we need to get her to Arrowe Park Hospital'.

"I was wheeled down to the neonatal unit with [Father of Baby K] to see [Baby K] before she left and followed her in the waiting ambulance."

MR JUSTICE GOSS: "To the waiting ambulance."

MR DRIVER: Forgive me:

"... and followed her to the waiting ambulance. [Baby K] was conveyed by the transfer team from the neonatal unit at Chester to the waiting ambulance.

"I had not been discharged from the Countess at this point and the hospital staff on the labour unit were desperately trying to get things organised so we could make our way to Arrowe Park to be with her.

"We always knew that the Countess of Chester Hospital could only take babies from 27 weeks' gestation, so we were always aware that at some point [Baby K] was going to be transferred to a different hospital.

"At 2 pm on Wednesday afternoon, 17 February, I was discharged from the Countess of Chester Hospital. We headed straight over to Arrowe Park Hospital in the car, arriving about 2.30 to 2.45 pm. We went straight in to see [Baby K].

"Later that afternoon, arrangements had been made for us to stay at Ronald McDonald House. This is a purpose-built accommodation block that provides accommodation to parents and families with a child in the hospital.

"I remember the night [Baby K] passed away. [Father of Baby K] and I were both in the accommodation, Ronald McDonald House. I was lying awake in bed when I had the strangest feeling, which I cannot begin to describe. It was about 4 am on Saturday morning, 20 February. I quietly said to [Father of Baby K] if he was awake, which he was, as neither of us had slept much. I, said to [Father of Baby K], 'Shall we go and see her?'

"On the neonatal special care unit at Arrowe Park, the parents have no restrictions when it comes to visiting their children. They can go on to the unit any time they like. We both got up and went to see [Baby K].

"As soon as I walked into the room I could see the monitors and the saturation readings for [Baby K] were low. Previously, one of the nursing staff had shown us what the levels and readings should be on the monitors, so I knew straightaway things weren't great. I cannot say what the readings were but they were low.

"There was a slim dark-haired female doctor in the room with [Baby K] at the time and I looked at her and said, 'She's not good, is she?' The doctor confirmed the worst. She told us [Baby K] had been fighting all night and she'd been debating to call us. She had explained they had been trying to get her stats reading up throughout the night but we could both see from the readings that things were not good. I asked the doctor, 'Is it just a waiting game now or is she going to get better?' We had a long conversation with the doctor who explained that [Baby K] wasn't good and what happens next is entirely our decision.

"I remember saying to the doctor that [Baby K] had been poked and prodded from the moment she was born. Her tiny little delicate body had swollen up so much and we didn't want her to be suffering any more. We certainly didn't want to be informed that we had lost our little girl by the alarms on the machines going off and we didn't want to prolong things for her anymore.

"The doctor explained that we can do this any way you and [Father of Baby K] want to. We both knew what this meant without it actually being said. We made the decisions to switch off the

machines and to let her go. This was by far the hardest decision of my life.

"One of the staff showed us to the family room away from the ward and all the machinery where it was peaceful and quiet. [Baby K] was wrapped in a blanket and was wearing a little hat. She was brought into us with the use of a handheld pump for her breathing. [Baby K] was placed into [Father of Baby K]'s arms and the doctor said to the both of us, 'We can do this whenever you are ready'.

"The doctor removed the breathing pump, stepped out of the room, and said she would return in 20 minutes. [Baby K] was in [Father of Baby K]'s arms when she took her last breath and silently passed away. We don't know exactly when that was during the 20 minutes we had with her. When the doctor returned, she checked [Baby K] and confirmed she had gone and she was pronounced dead at 05.28 hours on Saturday, 20 February 2016. Somebody then brought a cot into the room for us to place [Baby K] in and to allow us some private time alone with us."

That concludes the relevant parts of [Mother of Baby K's] statement, my Lord.

MR JUSTICE GOSS: Yes. Thank you very much.

MR JOHNSON: Kate Tyndall, please.

MRS KATE TYNDALL (recalled)

Examination-in-chief by MR JOHNSON

MR JOHNSON: Welcome back. Would you identify yourself for the recording, please?

TYNDALL: Kate Tyndall, intelligence analyst.

JOHNSON: Thank you, Mrs Tyndall. We're moving now to the count concerning [Baby K]. Have you compiled a sequence for that allegation?

TYNDALL: Yes.

JOHNSON: Does it begin with some text messages sent the day before [Baby K]'s birthday?

TYNDALL: Yes.

JOHNSON: So tile 1. If you could deal with the Lucy Letby texts out and I will deal with others sending texts to her.

TYNDALL: Okay.

JOHNSON: Thank you.

TYNDALL: Lucy Letby sends a message to [Nurse E] that reads:

"Unit is a hive of activity in preparation for the big bods [laugh out loud]."

JOHNSON: And did [Nurse E] respond about 48 minutes later saying:

"God is it! Is Eirian being a nightmare? Would be so funny if they bypassed it. Did the 24-weeker come?"

Then there was some social material.

TYNDALL: Yes. Then Lucy Letby replies but not until nearly 5.30 in the evening:

"Eirian was running round locking all the cupboards, putting bags away, tidying surfaces, et cetera. No, it didn't come but 6 centimetres, so wouldn't transfer out. Imagine it'll have delivered today [as read]."

JOHNSON: The next tile, please?

TYNDALL: That's just a collection of social messages between Lucy Letby, [Nurse E] and Jennifer Jones-Key.

JOHNSON: Yes. Just one question I omitted to ask you. These were all messages being sent during a day shift whilst Lucy Letby was working in the neonatal unit; that's right, isn't it?

TYNDALL: No, she was working on the night shift.

JOHNSON: Sorry.

TYNDALL: This was the day shift before her coming in for the night shift.

JOHNSON: Thank you, yes. Okay. So tile 5. Can you deal with this, please?

TYNDALL: That reads:

"Oh. Ailsa was handing over to me last night, full of cold, looked dreadful, and has gunky eyes for 2 days, which she thinks is conjunctivitis, but still came into work. I hope I haven't caught anything."

With an emoji with a mask on it.

JOHNSON: Was that followed by some further social messaging with [Nurse E]?

TYNDALL: Yes.

JOHNSON: Then [Nurse E] responded at tile 7:

"She not got drops for eyes? Silly girl. My sore throat is slightly better today. I think gargling with Corsodyl is helping. Jolly good."

TYNDALL: Yes. Then Lucy Letby replies:

"No, she hasn't done anything apart from moan by the sounds of it. Laura told her to go to doctor or stay at home and she swapped a shift so not in until Thursday when should have been back today. Told her to take some chloramphenicol and saline home. Wonder why throat bad for so long."

JOHNSON: Then a further one to Ailsa Simpson this time?

TYNDALL: That reads:

"Hey, hope you've had a day in bed and are feeling brighter."

JOHNSON: And did [Nurse E] respond:

"Think just a bit run down and been hectic plus weather keep changing not helped. Couple of babies had gunky eyes last week. Wonder if she got off them [as read]"?

TYNDALL: Yes. Then Lucy Letby replies:

"No, and loads of it going around. Hmm maybe."

JOHNSON: There was some more social messaging between the two of them followed by a response from Ailsa Simpson at 18.19, tile 13 saying:

"Bless you for thinking of me, thank you. I'm feeling a bit brighter thank you. A day in bed is just what I needed. Eyes still sore but the saline and eye drops have definitely helped. Hope I didn't forget the hand anything over to you last night and hope last night went well/okay and 24-weeker didn't keep you all too busy? Hope you slept well today [as read]."

TYNDALL: Yes. Then Lucy Letby replies:

"Oh, that's good. Hopefully no more gunky eyes. No you hadn't forgotten anything and they both did well overnight. 24-weeker wanted NVD [which I think is normal vaginal delivery] so was 6 centimetres when they left this morning. Male C was vented and high BMs so kept us busy. Glad you're feeling better."

JOHNSON: Then Jennifer Jones-Key sent a message saying:

"We haven't had chance. Mad day."

TYNDALL: Yes.

JOHNSON: Did Lucy Letby respond to that?

TYNDALL: Yes:

"Oh dear, 24-weeker come?"

JOHNSON: Was that then followed by some more social messaging at tiles 17 and 18, and then a further response from -- sorry. 18 isn't social messaging.

TYNDALL: No.

JOHNSON: That's Jennifer Jones-Key saying:

"No. Has 3 other admissions and babies screened."

TYNDALL: Yes. Then Lucy Letby replies with:

"Great lol."

JOHNSON: Then the final message before the night shift started is from Ailsa Simpson to Lucy Letby saying:

"Glad they were both okay for you. It's a shame that mum wasn't stable enough to be transferred out. Poor little C. He really is having a rough time. Hope he sorts himself out soon. Hope the rest of your nights go okay and, fingers crossed, I'll see you Thursday morning."

Do we come next to the beginning of the shift on which [Baby K] was born?

TYNDALL: Yes.

JOHNSON: Tile 21 starts, as we have seen in all other cases or pretty much all other cases, with a list of the staff.

The paediatrician of the week was Dr Gibbs, the on-call consultant was Dr Jayaram. The SHO was Dr Lo. And there was also

a Dr Smith who I think we will hear was a registrar. For the nursing staff, the shift leader was Caroline Oakley. Joanne Williams ended up being [Baby K]'s designated nurse, albeit she wasn't born by the start of the shift.

TYNDALL: Yes.

JOHNSON: The other two registered nurses working were Lucy Letby and Sophie Ellis and the nursery nurse was Valerie Thomas.

TYNDALL: Yes.

JOHNSON: If we move down to the population distribution chart, do we see there were two children in nursery 1 being looked after by Caroline Oakley?

TYNDALL: Yes.

JOHNSON: One child in transitional care being looked after by Valerie Thomas?

TYNDALL: Yes.

JOHNSON: And then in nursery 2, three children, two of whom were being looked after by Lucy Letby, that's AR and GT?

TYNDALL: Yes.

JOHNSON: The third child in nursery 2 at that stage was [RN], being looked after by Joanne Williams?

TYNDALL: Yes.

JOHNSON: And then the remaining six children were split between nurseries 3 and 4, being looked after by Valerie Thomas and Sophie Ellis?

TYNDALL: Yes.

JOHNSON: Thank you. As we will see, [Baby K] actually went into nursery 1, didn't she?

TYNDALL: Yes.

JOHNSON: So tile 22 next, please. Do we see what we've seen in several other cases, swipe data of the night shift coming in?

TYNDALL: The sequence starts at just before 2 o'clock to coincide with [Baby K]'s birth.

JOHNSON: Sorry, I took my eye off the time. At 01.56 we have Lucy Letby's swipe data entering the labour ward?

TYNDALL: Yes.

JOHNSON: Followed a few minutes later by Dr Lo --

TYNDALL: Yes.

JOHNSON: -- going to the labour ward? Followed by the arrival of Dr Jayaram, first into the maternity main entrance at tile 24, then into the labour ward at tile 25, the time of which was 02.06?

TYNDALL: Yes.

JOHNSON: Dr Lo followed Dr Jayaram into the labour ward at 02.09?

TYNDALL: Yes.

JOHNSON: At tile 27 do we have the pertinent details concerning [Baby K]'s birth?

TYNDALL: Yes.

JOHNSON: If we look at that, please, this picks up on what [Mother of Baby K] told us in her witness statement.

The time was 02.12, [Baby K]'s parents, [Parents of Baby K]. [Baby K] recorded in the notes as 25 weeks' gestation, weighing 692 grams. Condition at birth: dusky, floppy, no respiratory effort with a heart rate in the region of 60 beats per minute. Then some antenatal information recorded which we heard in slightly different language from [Mother of Baby K] in her witness statement. Then finally the Apgar scores at 1, 5 and 10 minutes?

TYNDALL: Yes.

JOHNSON: At tile 28, is that Dr Jayaram's retrospective note?

The event is timed at 02.12, but the notes were made at 04.50.

TYNDALL: Yes, it's his account of [Baby K]'s birth.

JOHNSON: Yes. We'll be hearing from Dr Jayaram, so we'll leave his notes to him.

At tile 29 do we have a further note attributed both to Dr Jayaram and to Dr Smith, who was the registrar?

TYNDALL: Yes, regarding intubation.

JOHNSON: Thank you. At tile 30, tiled at 02.40, do we have the record of [Baby K]'s admission to the neonatal unit?

TYNDALL: Yes.

JOHNSON: And the reason for the admission was her extreme prematurity and the fact that she was going to be transferred to a tertiary unit?

TYNDALL: Yes.

JOHNSON: At tile 31 is there a tile behind which we would see Dr Jayaram's notes of his conversation with [Parents of Baby K]?

TYNDALL: Yes.

JOHNSON: At tile 32, do we have more notes made by Dr Jayaram concerning [Baby K]'s condition?

TYNDALL: Yes, on her arrival in the NNU.

JOHNSON: Yes. Then at tile 33 do we have some swipe data recording the passage of Dr Lo from the neonatal unit to the labour ward?

TYNDALL: Yes.

JOHNSON: Followed at tile 34, the timing of which is 02.45, with a note made by Dr Jayaram concerning the administration of surfactant to [Baby K]?

TYNDALL: Yes.

JOHNSON: At tile 35, timed at 02.45, were [Baby K]'s vital signs recorded?

TYNDALL: Yes.

JOHNSON: Followed 15 minutes later at tile 36 by the prescription for surfactant?

TYNDALL: Yes.

JOHNSON: At tile 37, the neonatal infusion prescription chart, an infusion of dextrose being given to [Baby K], timed at 03.00 hours?

TYNDALL: Yes.

JOHNSON: Then at tile 38, timed at 03.03, the blood gas record recorded by Joanne Williams; is that right?

TYNDALL: Yes, that's right.

JOHNSON: Just for the jury's information, Joanne Williams was or had been nominated as [Baby K]'s designated nurse --

TYNDALL: Yes.

JOHNSON: -- at this stage?

At tile 39 do we have Joanne Williams' retrospective nursing notes concerning [Baby K]'s birth and admission to the neonatal unit?

TYNDALL: Yes.

JOHNSON: We then have a series of four tiles from 40 to 43 spanning the period of time between 03.06 and 03.11 hours, relating to movements between the maternity, neonatal and labour wards of Doctors Jayaram, Lo and Nurse Joanne Williams?

TYNDALL: Yes.

JOHNSON: And in particular, just concentrating on tile 43, at 03.11, we have Joanne Williams, the designated nurse, going from the neonatal ward to the labour ward?

TYNDALL: Yes.

JOHNSON: Thank you. At 03.15 there is a record of the fact that Dr Jayaram made a note to the transport team?

TYNDALL: Yes. It's the note of the phone call to the transport team requesting her transfer.

JOHNSON: Yes. So this is in effect a bespoke medical team sent to accompany [Baby K] from Chester to Arrowe Park?

TYNDALL: Yes.

JOHNSON: At tile 45, a further note made at the same time by the transport team?

TYNDALL: Yes.

JOHNSON: At tile 46 through to tile 48, is there swipe data in the 2 minutes including and between 03.23 and 03.25 relating to the movements of Dr Smith?

TYNDALL: Yes.

JOHNSON: Followed at tile 49, timed at 03.30, by the manuscript record made by Joanne Williams of [Baby K]'s vital signs?

TYNDALL: Yes.

JOHNSON: At tile 50, is that a further note made by Nurse Williams on the neonatal fluid balance chart?

TYNDALL: Yes.

JOHNSON: Followed at the same time, tile 51, by another note on the intensive care equipment chart?

TYNDALL: Yes.

JOHNSON: So there we have at 49 to 51 what we've been referring to often as the standard three?

TYNDALL: Correct.

JOHNSON: At 52, timed a minute after those previous three tiles, a blood sample was taken for laboratory analysis?

TYNDALL: Yes.

JOHNSON: And as a matter of fact, if we just look behind the tile, please, Mr Murphy, we will see that after 5 days there was no bacterial growth in the blood, so no bugs in the blood?

TYNDALL: Correct.

JOHNSON: Do tiles 53 and 54, timed respectively at 03.31 and 03.35, record further communications with the transport team?

TYNDALL: Yes.

JOHNSON: Tile 55, at 03.38, Dr Lo, door swipe data, passing from the maternity -- out of the maternity ward?

TYNDALL: Yes.

JOHNSON: Then at tile 56, more door swipe data for Dr Lo at 03.38?

TYNDALL: Yes, back into the neonatal.

JOHNSON: Yes. Then at 57, at 03.40, Caroline Oakley into the neonatal unit?

TYNDALL: Yes.

JOHNSON: At about the same time as Valerie Thomas, tile 58?

TYNDALL: Yes.

JOHNSON: At tile 59, 03.41, further transport team communications relating to their conversation with Dr Jayaram?

TYNDALL: Yes.

JOHNSON: At tile 60, this is a note made by Dr Jayaram. It's not timed, but it was made at 04.50 --

TYNDALL: Yes.

JOHNSON: -- and concerns the administration of fluids to [Baby K]?

TYNDALL: Yes, and the conversation he had with the neonatal team.

JOHNSON: Yes. Do we then have at tiles 60 and 61 further door swipe data relating to Dr Laura Lo?

TYNDALL: Yes.

JOHNSON: Then perhaps more significantly in this context, at tile 63, timed at 03.47, Joanne Williams, who was [Baby K]'s designated nurse, being recorded by the door swipe data as leaving the neonatal unit to go to the labour ward?

TYNDALL: Yes.

JOHNSON: It was just after that exit of the designated nurse from the unit that the event that is alleged in the case of [Baby K] happened and she collapsed?

TYNDALL: Yes.

JOHNSON: The collapse is recorded in the next tile, 65, by Doctors Jayaram and Smith; is that right?

TYNDALL: It's recorded by Dr Jayaram, I think, but it references Dr Smith being there.

JOHNSON: Yes, thank you. This is timed at 03.50, as we can see from the tile itself.

TYNDALL: Yes.

JOHNSON: It involved [Baby K]'s -- if we just go to the -- although Dr Jayaram will deal with this, just to give the jury a reminder of what these events relate to. So there, Dr Jayaram has recorded that at 03.50 there was a sudden deterioration with [Baby K]'s sats dropping to 40%. She was bagged via an ET tube, the CO2 monitor was not changing colour, and there were poor chest movements.

The cold light test was normal. The ET tube was removed. [Baby K] was bagged using a face mask and her sats recovered quickly. Dr Smith, the registrar, then re-intubated her, [Baby K], following a bolus of morphine being given.

TYNDALL: Yes.

JOHNSON: There is more detail in the note, but we'll come to that with him.

At tile 66 do we have Joanne Williams', the designated nurse, notes of the same event?

TYNDALL: Yes.

JOHNSON: Followed at tile 67 by the prescription for morphine that's referred to in Dr Jayaram's note?

TYNDALL: Yes.

JOHNSON: And at tile 68, the written record on the chart of that having been administered?

TYNDALL: Yes.

JOHNSON: A note made by Joanne Williams together with, at tile 69, the neonatal infusion prescription chart recording the same event?

TYNDALL: Yes.

JOHNSON: If we just look at that, please, and look at the original. We see there the document is signed by Joanne Williams and Lucy Letby?

TYNDALL: Yes.

JOHNSON: Going back to the carousel, please, and tile 70 and indeed 71, more door swipe data at 04.02 and 04.03, relating to the movements of Dr Lo?

TYNDALL: Yes.

JOHNSON: Tile 72, timed at 04.20, a prescription for a drug that I can't pronounce, phytomenadione?

TYNDALL: Yes.

JOHNSON: I'll save you the embarrassment of trying to say it.

TYNDALL: Thank you.

JOHNSON: Again, signed by Lucy Letby, but this time with Caroline Oakley?

TYNDALL: Yes.

JOHNSON: A record of that having been administered in the next tile, tile 73. That's the computer update, the type of which we've seen many times before in different cases?

TYNDALL: Yes.

JOHNSON: Then at 74, timed at 04.23, Joanne Williams moving from the maternity neonatal unit to the labour ward?

TYNDALL: Yes.

JOHNSON: So the jury will remember that several visits from the nursing staff are referred to and a description indeed given of the nurse by [Mother of Baby K] at about this time. So this ties in with those descriptions.

At tiles 75, 76 and 77, all timed at 04.30, do we have the standard three documents, all annotated by the designated nurse, Joanne Williams?

TYNDALL: Yes.

JOHNSON: At tile 78, swipe data referencing the movements of Dr Jayaram, timed at 04.38?

TYNDALL: Yes.

JOHNSON: And two prescriptions for antibiotics at tiles 79 and 80, timed at 04.40?

TYNDALL: Yes.

JOHNSON: At tile 81, door swipe data again for Dr Lo, timed at 04.42?

TYNDALL: Yes.

JOHNSON: Tile 82, the written record of the first of those antibiotics being administered?

TYNDALL: Yes.

JOHNSON: More door swipe data for Joanne Williams at 04.46 at tile 83?

TYNDALL: Yes.

JOHNSON: Followed by further nursing notes made by Joanne Williams concerning the events at and around this time?

TYNDALL: That's her full record of all the events for [Baby K] up until that point.

JOHNSON: Thank you. At tile 85, timed at 04.50, do we have Dr Jayaram's retrospective -- that's the time that Dr Jayaram's retrospective notes were made and they all relate to things that had happened up to that event and you have put those in at the correct times?

TYNDALL: Correct.

JOHNSON: Thank you. Tiles 86 to 88 concern the administration of antibiotics?

TYNDALL: They're the computer-generated records regarding the previous giving of the antibiotics.

JOHNSON: Thank you. Then at tile 89 the results from a pathology sample timed at 04.57?

TYNDALL: Yes, that's the time the sample is received.

JOHNSON: But I think if we actually look at the document behind there, you've also recorded the results there; is that right?

TYNDALL: Yes.

JOHNSON: So we have a snapshot of the position before that time.

Is there then at tile 90 a family communication nursing note made by Joanne Williams --

TYNDALL: Yes.

JOHNSON: -- timed at 05.07? Followed in turn by the prescription of and administration of morphine sulphate and sodium chloride?

TYNDALL: Yes.

JOHNSON: That's tiles 91 to 93. At tiles 94 to 96 inclusive, the standard three set of documents, observations timed at 05.30?

TYNDALL: Yes.

MR JUSTICE GOSS: I'm sorry to interrupt you. On our screen it just said sodium chloride, it didn't say morphine sulphate as well. Is that behind --

TYNDALL: 92 is the computer-generated recording of the morphine sulphate given at 03.50. So the sodium chloride is given on tile 91.

MR JUSTICE GOSS: That's all right, yes.

TYNDALL: 93 is that computer-generated record relating to the sodium chloride. The one in between is morphine, but that's given at 03.50. It's just when they're updating the records on the computer.

MR JOHNSON: Thank you.

So 94 to 96 is the standard three, as we've said, at 05.30?

TYNDALL: Yes.

JOHNSON: 97, Dr Lo's retrospective note of the administration of Curosurf?

TYNDALL: Yes.

JOHNSON: A surfactant. That's updated on the computer by Joanne Williams and Dr Lo, is that right --

TYNDALL: Yes.

JOHNSON: -- at tile 98? Some more pathology samples at tiles 99 and 100?

TYNDALL: Yes.

JOHNSON: Then at 101, another transport team note, timed at 05.50?

TYNDALL: Yes.

JOHNSON: At tile 102, a record made under the names of Dr Jayaram and Dr Smith concerning the insertion of a UVC?

TYNDALL: Yes, inserted by Dr Smith.

JOHNSON: Thank you. At tile 103, at 05.55 hours, further transport team records?

TYNDALL: Yes, regarding a call they'd received from Dr Jayaram.

JOHNSON: Tile 104, a nursing note made by Lucy Letby in [Baby K]'s case; is that right?

TYNDALL: This is the admission record for [Baby K] for her admission into the NNU.

JOHNSON: Yes. Let's look at that as this is a record made by Lucy Letby. Can we look at the original, please?

TYNDALL: It starts on the right-hand side of the page, that record that we have that shows [Baby K]'s name, her parents' name, her delivery, admission time, on the right-hand side of the screen.

JOHNSON: And we see, where the cursor is now, that LL are the initials under which this documentation is completed?

TYNDALL: Yes.

JOHNSON: Is that right?

TYNDALL: Yes.

JOHNSON: Thank you. Going back to the carousel then, please, is there further -- sorry, this is an X-ray record timed at 06.07 hours; is that right?

TYNDALL: Yes, regarding the position of the ET tube.

JOHNSON: Yes. Let's just look at that if we may, please. I'm not going to ask you to read all the way through this, but does it record the fact that -- well, can we look at the radiologist's interpretation rather than try and do it for ourselves? Does that record the radiologist's view that the ET tube was in a satisfactory position?

TYNDALL: Yes.

JOHNSON: And the timing of that is 06.07?

TYNDALL: Yes.

JOHNSON: The next tile, 106, is an event noted by Dr Jayaram 8 minutes later, isn't it?

TYNDALL: Yes.

JOHNSON: If we go to your transposition of his notes, do we see there, about four lines up from the bottom, that the ET tube had to be pulled back to 6 centimetres?

TYNDALL: Yes.

JOHNSON: And [Baby K] had to be extubated again?

TYNDALL: Yes.

JOHNSON: So that's 8 minutes after the X-ray, which reported that the tube was in a satisfactory position?

TYNDALL: Yes.

JOHNSON: At tile 107, do we have further transport team notes timed at 06.22?

TYNDALL: Yes. Again, regarding a discussion with Dr Jayaram.

JOHNSON: Thank you. At 108, timed at 06.24, were blood gases taken and recorded by Joanne Williams?

TYNDALL: Yes.

JOHNSON: At 109, timed at 06.25 hours, do we see an infusion prescription chart completed by Lucy Letby and Caroline Oakley?

TYNDALL: Yes.

JOHNSON: If we could just go to that document, given that it has Lucy Letby's signature on it, please. It follows the form that we've seen in many other cases. It appears to be a bolus of 14ml and we see, towards the right of the form, Lucy Letby's signature appears over the top of Caroline Oakley's, timed at 06.25?

TYNDALL: Yes.

JOHNSON: Most of the information towards the left-hand side of the form appears to be signed by Dr Jayaram?

TYNDALL: Yes.

JOHNSON: Thank you. Moving on, please, to tiles 110 through to 112, all timed at 06.30 hours, do we have the standard three?

TYNDALL: Yes.

JOHNSON: On which Joanne Williams has recorded the data?

TYNDALL: Correct.

JOHNSON: At 113 to 114, do we have further transport team notes?

TYNDALL: Yes.

JOHNSON: Followed at 115 by a further clinical note made by Dr Jayaram?

TYNDALL: Yes.

JOHNSON: If we just go to this one, please. Again, I'm not going to go through all this because Dr Jayaram will deal with it. But do we see that, three lines up from the bottom, the ET tube ventilating [Baby K] had slipped to 8 centimetres at the lips and had to be withdrawn again, following which her heart rate picked up immediately?

TYNDALL: Yes.

JOHNSON: Thank you. At 116 do we have a nursing note made by Nurse Melanie Taylor?

TYNDALL: Yes. She takes over the care of [Baby K] for the day shift but it's the desaturation at 07.25 (inaudible: coughing) as she's coming on shift, so it's her record of it.

JOHNSON: Moving over the page, please, again can we just click on this one, please? You've told us that Melanie Taylor's nursing note covers this, albeit it happened at 07.25, just before the night shift ended and her day shift started. Do we see at 07.30 that morning that Lucy Letby has signed -- it's the third line down, I think; is that right?

TYNDALL: Yes, that's correct.

JOHNSON: We see again Lucy Letby's signature there for a 7ml saline bolus?

TYNDALL: Yes.

JOHNSON: That had been prescribed, as we see, from his part of the record, by Dr Jayaram?

TYNDALL: Yes.

JOHNSON: Thank you. Then at 07.30 hours, tiles 118 to 120, do we have the final standard three recorded by the night shift nurse, Joanne Williams?

TYNDALL: Yes.

JOHNSON: Thank you. Then at tile 121, with the time frame 07.30 to 08.00 hours, you have recorded the nursing shift handover to Melanie Taylor?

TYNDALL: Yes.

JOHNSON: Followed at 122 by a note made, a transport team note, timed at 07.37, in effect booking the ambulance to transfer [Baby K]?

TYNDALL: Yes.

JOHNSON: At 123, timed at 07.50, Dr Jayaram's notes concerning the position at that stage?

TYNDALL: And the events that had occurred prior to that.

JOHNSON: Yes. Again, we'll let him take us through that material. But is that followed 5 minutes later at tile 124 by a further radiologist's report from Dr Wright concerning a chest X-ray, and she recorded the satisfactory position of the ET tube?

TYNDALL: Yes.

JOHNSON: At 125, timed at 08.05, do we have further transport team notes?

TYNDALL: Yes.

JOHNSON: Then at 126 do we have the nursing notes updated by Joanne Williams on the computer?

TYNDALL: Yes.

JOHNSON: That's timed at 08.14?

TYNDALL: Yes.

JOHNSON: Then at 127, is there some swipe data of Dr Jayaram, timed at 08.29?

TYNDALL: Yes.

JOHNSON: Then at 128 down to 132 do we have several entries, which include the standard three but are not limited to that, concerning various observations and treatments given to [Baby K] at 08.30 hours?

TYNDALL: Yes.

JOHNSON: Followed at tile 133, timed at 08.43, by a blood gas record?

TYNDALL: Yes.

JOHNSON: Then at 134, Nurse Melanie Taylor's retrospective notes concerning that blood gas record --

TYNDALL: Yes.

JOHNSON: -- amongst other things? At 135 is there a record of the transport team arriving at Chester at 08.50 hours?

TYNDALL: Yes.

JOHNSON: At 136 through to 138 do we have a series of documents recording events that happened at 09.00 hours?

TYNDALL: Yes, including the transport team's notes on their arrival.

JOHNSON: Thank you. And the handover to the transport team from Dr Jayaram?

TYNDALL: Yes.

JOHNSON: Do we then have, at 139, timed at 09.10, the vital signs recorded by the transport team using the Chester equipment?

TYNDALL: Yes.

JOHNSON: That included [Baby K]'s heart rate, saturations, respiration, blood pressure, the rate of oxygen that she was being ventilated with and so on?

TYNDALL: Yes.

JOHNSON: Thank you. At 140, is there a more narrative record of the arrival of the transport team and what they did, timed at 09.15?

TYNDALL: Yes.

JOHNSON: Again, we'll leave that to the witnesses to deal with.

At 141, also timed at 09.15, Dr Jayaram's notes concerning events at that time?

TYNDALL: Yes, again with discussions with the transport team.

JOHNSON: Thank you. At 142, 143 and 144 and 145, is there a record in various places of further administration of surfactant to [Baby K]?

TYNDALL: Yes.

JOHNSON: At 146, 148 and 149, do we have the standard three?

TYNDALL: Yes, recorded by Melanie Taylor.

JOHNSON: Thank you. They're interspersed with, at 147, similar data recorded by the transport team?

TYNDALL: Yes.

JOHNSON: At 150, 151 and 152, do we have two sources for blood gas results?

TYNDALL: Yes.

JOHNSON: Together with Melanie Taylor's note of the fact that [Baby K]'s gases were worsening at that stage?

TYNDALL: Yes.

JOHNSON: At 153, the intensive care chart equipment settings records, timed at 09.45, the administration of dobutamine?

TYNDALL: Yes.

JOHNSON: And that information is also recorded at 154 on the infusion prescription chart?

TYNDALL: Yes.

JOHNSON: Melanie Taylor's notes for the events occurring at or about that time appear at tile 155?

TYNDALL: Yes.

JOHNSON: Then at 156 we have a clinical note made by [Dr A] concerning the insertion of an arterial line?

TYNDALL: Yes.

JOHNSON: That's timed at 09.55. Ten minutes later, the neonatal team make notes concerning the administration of the Curosurf, the dobutamine, fluids and [Dr A]'s successful deployment of the arterial -- well, it says unsuccessful deployment of an arterial line.

TYNDALL: It says unsuccessful in the left radial but was successful in the right radial.

JOHNSON: Yes, thank you. At 158, at 10.00 hours, the neonatal fluid balance chart data is filled in by Nurse Melanie Taylor?

TYNDALL: Yes.

JOHNSON: Then at 159, did [Nurse E] send a text message to Lucy Letby timed at 10.04 saying:

"Hope you had a good shift and are well away in the land of nod now!"?

TYNDALL: Yes.

JOHNSON: At 160 through to 162, between 10.20 hours and 10.30, do we have various records made by the transport team?

TYNDALL: Yes.

JOHNSON: Followed at 163 by Melanie Taylor's record of [Baby K]'s heart rate, respiratory rate and temperature?

TYNDALL: Yes.

JOHNSON: Together at 164 and 165 with the other two constituent parts of the standard three?

TYNDALL: 164 is the intensive care chart, 165 is a prescription for heparin --

JOHNSON: Yes.

TYNDALL: -- an infusion.

JOHNSON: Thank you. Then at 10.40, do we have three tiles, 166 to 168, which concern the arterial line, nitroxide(?) being administered and Melanie Taylor's note that [Baby K]'s gases improved?

TYNDALL: Yes, and she was placed on nitric oxide.

JOHNSON: At 169, the transport team's note concerning that same event?

TYNDALL: Yes.

JOHNSON: And then the neonatal infusion prescription chart.

There are two entries, both timed at 10.50 and at tiles 170 and 171 respectively?

TYNDALL: Yes.

JOHNSON: Thank you. At 172 at 11.00 hours, Melanie Taylor's record made on the neonatal fluid balance chart?

TYNDALL: Yes.

JOHNSON: Followed by at 173, the transport team's entry, timed the same, 11.00 hours, concerning their conversations with [Parents of Baby K]?

TYNDALL: Yes.

JOHNSON: Their observations of [Baby K]'s readings are recorded in the succeeding tile, 174?

TYNDALL: Yes.

JOHNSON: And 175 --

TYNDALL: Yes.

JOHNSON: -- concerning drugs? And an increase at 176 at 11.10 of some of the drugs?

TYNDALL: Yes.

JOHNSON: 177, also at 11.10, Melanie Taylor and [Nurse B] made entries on the neonatal infusion prescription chart?

TYNDALL: Yes, regarding sodium chloride.

JOHNSON: Thank you. Then at 178, timed at 11.13, a blood gas record recorded by Nurse Taylor?

TYNDALL: Yes.

JOHNSON: Then an untimed entry, which fits in at this stage, made in the nursing notes by Melanie Taylor?

TYNDALL: Yes, regarding the sodium chloride.

JOHNSON: At 180, 181, 182, do we have various notes made by the transport team?

TYNDALL: Yes, regarding the fluids and the observations.

JOHNSON: Thank you. Then a further radiologist's report from Dr Wright at 183 concerning the position of the ET tube?

TYNDALL: Yes.

JOHNSON: And that was by this stage remaining in a satisfactory position?

TYNDALL: Yes.

JOHNSON: At 184, the transport team record the fact that [Baby K] was given hydrocortisone?

TYNDALL: Yes.

JOHNSON: At 185 and 186, we have [Baby K]'s vital signs recorded together with the intensive care chart equipment settings?

TYNDALL: Yes.

JOHNSON: Still by Melanie Taylor. Then a further record, albeit 2 minutes later than the other one, but in a different -- a record made by [Nurse D] and Melanie Taylor concerning the prescription for hydrocortisone?

TYNDALL: Yes.

JOHNSON: The administration of that recorded by Melanie Taylor at 188?

TYNDALL: Yes, that's her nursing note about how it's delivered.

JOHNSON: And then the update on the computer, timestamped at 11.33 hours, at tile 189?

TYNDALL: Yes.

JOHNSON: Some more surfactant administered to [Baby K] recorded by Nurse Taylor at tile 190, timed at 11.40?

TYNDALL: Yes.

JOHNSON: The transport team's notes at the same time, tile 191?

TYNDALL: Yes.

JOHNSON: The intensive care equipment settings recorded by Melanie Taylor at the same time, tile 192?

TYNDALL: Yes.

JOHNSON: Then at tiles 193 through to 196, do we have a number of records made by the transport team relating to the Curosurf and the other observations that were being recorded relating to [Baby K]?

TYNDALL: Yes, and a bit of a narrative around her position at the time.

JOHNSON: Thank you. At 11.45, tiles 197 and 198, do we have the computerised records of the prescription for and administration of the surfactant?

TYNDALL: Yes.

JOHNSON: At tile 199, the neonatal infusion prescription chart, an entry timed at 11.55, made by [Nurse B] and Melanie Taylor relating to the administration of sodium bicarbonate?

TYNDALL: Yes.

JOHNSON: Then in the succeeding tile, 200, in the intensive care equipment settings chart, what's recorded as a "full bicarb correction" by Melanie Taylor?

TYNDALL: Yes.

JOHNSON: At midday, tile 201, first Melanie Taylor's record of the fact that [Baby K] was moved into a transport incubator?

TYNDALL: Yes.

JOHNSON: That same event recorded by the transport team at 202 at the same time?

TYNDALL: Yes.

JOHNSON: At 203 [Baby K] was given some adrenaline?

TYNDALL: She wasn't given the adrenaline, it records on the prescription it was drawn up and taken for -- "if required by doctor's instructions". So I think prepared in case they need it for the transport.

JOHNSON: One of the things you've transposed from the notes is that it is:

"Not used. Taken for if required at Dr [and you can't read it]'s instructions"?

TYNDALL: Yes.

JOHNSON: Thank you. 204, Nurse Taylor's retrospective nursing notes relating to the preparation of the adrenaline?

TYNDALL: Yes.

JOHNSON: Then at 205, the transport team's notes timed for events at 12.15?

TYNDALL: Yes, that's effectively their fluid balance chart readings.

JOHNSON: 206, 5 minutes later, 12.20, it's a record of in effect [Baby K]'s vital signs together with the respiratory support that she was receiving?

TYNDALL: Yes.

JOHNSON: [Baby K] was formally handed over from Chester to the transport team at between 12.25 and 12.30, which fact you record at tile 207?

TYNDALL: Yes.

JOHNSON: Then we have some further records completed by Nurse Taylor between tiles 208 and 210 relating to a prescription for pancuronium.

TYNDALL: Yes, she was given pancuronium at 12.30.

JOHNSON: Yes, which we've heard in the context of other cases is, in effect, a paralysing agent.

At 211, blood gas readings recorded?

TYNDALL: Yes, at Chester.

JOHNSON: That's at 12.30. Then the transport team also make a record of blood gases that they time at 10 minutes later at 12.40?

TYNDALL: Yes.

JOHNSON: At that time, 12.40, tile 213, [Baby K] left the neonatal unit at Chester?

TYNDALL: Yes.

JOHNSON: And Nurse Taylor has made a record of her condition at that stage?

TYNDALL: Yes.

JOHNSON: At the same time, tile 214, [Baby K]'s leaving of the NNU is recorded in the intensive care chart?

TYNDALL: Yes.

JOHNSON: At tile 215, the administration of the pancuronium is recorded on the computer as having happened at 12.30 and the entry itself is timestamped by the database at 12.42?

TYNDALL: Yes.

JOHNSON: Do we then have a series of four tiles going from 216 to 219, all of which are notes made by the transport team, timed at 12.50, concerning what they were doing with [Baby K] at the point of transfer and various readings of observations conducted upon her?

TYNDALL: Yes.

JOHNSON: Thank you. We then move away from the Countess of Chester, of course. There are some observations between tiles 220 and 222 covering the time between 12.56 hours and 13.04, and these are what look to be ventilator pressures and readings relating to the ventilation being given to [Baby K]?

TYNDALL: Yes.

JOHNSON: At 223, have you reproduced some of the text, if not all of the text, of the discharge letter completed by Dr Smith?

TYNDALL: Yes, I've included a primary section about ventilation.

That continues on to slide 224, just because of the limitations of the software.

JOHNSON: Yes. Do we then go to at 225, timed at 13.15, the transport team's record of the arrival of [Baby K] at Arrowe Park?

TYNDALL: Yes.

JOHNSON: And at 226, so we're taking a step back, 13.15 on the 17th, do you then insert a tile simply saying that the medical

records show that [Baby K] was cared for at Arrowe Park from that time on 17 February?

TYNDALL: Yes.

JOHNSON: There then appear four tiles, 227 to 230, which are entries made between 16.06 hours and 16.54, made by Melanie Taylor in the nursing record at Chester?

TYNDALL: Yes.

JOHNSON: Do we then come to four tiles with some text messages between 231 and 234?

TYNDALL: Yes.

JOHNSON: Does it start with Lucy Letby sending a text to [Nurse E] at 17.48?

TYNDALL: Yes.

MR JUSTICE GOSS: Which would seem to be in response to one a long time -- a message that came the other way?

TYNDALL: Yes.

MR JUSTICE GOSS: I haven't made a note.

MR JOHNSON: "I hope you're in the land of nod" was how it ended, I think.

TYNDALL: Lucy Letby was on the night shift, so she would have been asleep when [Nurse E] sent that message to her.

MR JUSTICE GOSS: During the daytime. This seems to be a response to that enquiry which was made in the morning.

TYNDALL: Yes.

MR JOHNSON: Could you read it out, please?

TYNDALL: "25-weeker delivered so fairly busy. How's your mum?"

JOHNSON: Yes. For your Lordship's note, it was tile 159:

"Hope you had a good shift and are well away in the land of nod now."

MR JUSTICE GOSS: Thank you.

MR JOHNSON: Did Lucy Letby then send a further text at 21.05, so a few hours later?

TYNDALL: Yes, saying:

"Everything okay? Not like you not to text back lol."

JOHNSON: [Nurse E] did text back 2 minutes later saying:

"Oh sorry. 25-weeker gone out now?"

TYNDALL: Yes. Then Lucy Letby responds with:

"Yes, but not till 2-ish and very unstable BP on quad inotrope. 31-weeker born at 7 and vented, which I've got, but Chris off sick so only me, Amy, Sophie, Val and Angela with 13 babies and tonnes of ABX [antibiotics]."

JOHNSON: Yes. Thank you. So that's 17 February. Do we then move to the end of this sequence, the final six entries?

TYNDALL: Yes.

JOHNSON: Which are all a few days later on Saturday, 20 February.

The first, tile 235, timed at 05.10, which is Dr Gardener, who of course is one of the doctors at Arrowe Park, recording the fact that the decision had been made to withdraw care from [Baby K] --

TYNDALL: Yes.

JOHNSON: -- and recording a discussion with [Baby K]'s parents?

At tile 236 there is a single tile just to mark the time of death at 05.28?

TYNDALL: Yes.

JOHNSON: Followed at 237 by Dr Gardener's clinical note concerning the direct circumstances connected with that?

TYNDALL: Yes.

JOHNSON: At tile 238 at 08.15, Dr Gardener's record of having completed a death certificate and that the cause of death was certified as 1A, severe respiratory distress and 1B, extreme prematurity?

TYNDALL: Yes, but then this is crossed out with the words "reissued".

JOHNSON: Yes. Then a further note made by Dr Babarao at 239, timed at 11.30, in effect recording the same information?

TYNDALL: But the other way round. He puts extreme prematurity first and severe RDS second.

MR JUSTICE GOSS: Sorry, you're dropping your voice.

TYNDALL: Dr Babarao records it the other way round. Cause of death first, extreme prematurity, and second, severe RDS.

MR JOHNSON: I'll deal with it with one of the witnesses.

We can see the first one is 1A and 1B and this is 1A and 2 and there is a difference as far as the medical profession is concerned. Not only are they the other way round, but it's the numbering that can be relevant.

We'll deal with that somewhere else.

Finally, at tile 240, do we see that on Friday, 20 April, so 2 months later --

TYNDALL: It's 2018.

JOHNSON: Sorry, yes, 2 months and 2 years later, I should have said. Lucy Letby did a Facebook search at 23.56 hours for "[Surname of Baby K]".

TYNDALL: Yes.

MR JOHNSON: Thank you.

My Lord, that may be a convenient point unless Mr Myers has --

MR MYERS: I have no questions.

MR JUSTICE GOSS: Right. Yes, that would be a convenient point, yes. A different witness is coming to deal with the neonatal review. So we'll have a ten-minute break now, please.

(In the absence of the jury)

MR JUSTICE GOSS: I assume that those members of the public who have not been present in court before, and there are quite a number of people who haven't been in court before, may have been viewing some of the proceedings elsewhere. We conventionally have this mid-morning ten-minute break around now and we will

have another one, if necessary, this afternoon. I am just explaining to you what the procedure is. It's normal, conventional, what we do. We will resume in 10 minutes, so we will be resuming at 12.03. Thank you very much.

(11.53 am)

(A short break)

(12.03 pm)

(In the presence of the jury)

MR JUSTICE GOSS: Mr Johnson, are you calling the next witness?

MR JOHNSON: Sorry, it's the neonatal review. Yes.

Claire Hocknell, please.

MRS CLAIRE HOCKNELL (recalled)

Examination-in-chief by MR JOHNSON

MR JOHNSON: Welcome back, Mrs Hocknell. Hopefully in that bundle in front of you is the neonatal review for [Baby K].

HOCKNELL: Yes.

JOHNSON: Thank you.

MR JUSTICE GOSS: Hang on, we haven't got our copies of these. These are going to go in between the reviews that we already in this section?

MR JOHNSON: They are.

MR JUSTICE GOSS: So behind [Baby I] but before [Babies L and M]?

MR JOHNSON: Correct.

(Pause)

Thank you. Mrs Hocknell, for the record, would you just identify yourself, please?

HOCKNELL: Claire Hocknell.

JOHNSON: Thank you. This is the review schedule for what's entitled event 16, [Baby K]. Do we see from the cover sheet that it follows the same conventions as we have established in relation to the other reviews?

HOCKNELL: Yes.

JOHNSON: Thank you. The difference between this particular case and, I think, any other case that we've seen so far is that at the beginning of the shift [Baby K] was not a patient, but by the end of the shift she was?

HOCKNELL: Yes.

JOHNSON: So we see the respective positions set out, first on page 2 of 9, which is the start of the shift, and then page 9 of 9, which is the end of the shift?

HOCKNELL: Yes.

JOHNSON: Do we see, comparing the two pages together, that the difference is the arrival of [Baby K] at 02.40 hours on the morning of 17 February?

HOCKNELL: Yes, that's correct.

JOHNSON: Thank you. We see at the beginning that Lucy Letby was in nursery 2, looking after two children, AR and GT?

HOCKNELL: Yes.

JOHNSON: And that is where she completed the shift.

The other nurse in nursery 2 was Joanne Williams, with RN. If we go to the end of the shift and the population distribution graphic, we see that Joanne Williams had become the designated nurse for [Baby K] during the shift?

HOCKNELL: Yes.

JOHNSON: The nurse looking after the other two children in nursery 1 was, of course, Caroline Oakley?

HOCKNELL: Yes.

JOHNSON: Both at the beginning and the end of the shift?

HOCKNELL: Yes.

JOHNSON: Thank you. So can we go to the body of the document then, please, starting at page 3. The whole of page 3, of course, is at a time before [Baby K] was born?

HOCKNELL: Yes.

JOHNSON: We see there that Lucy Letby was involved with AR and GT throughout the period of time covered by that page between (inaudible: distorted) hours and 01.00 hours?

HOCKNELL: Yes, and there's a record for baby KC as well.

JOHNSON: Yes, thank you. Right at the bottom of the page, you're quite right. On page 4 of 9, line 60, we see in effect a marking of [Baby K]'s birth, is that right --

HOCKNELL: Yes.

JOHNSON: -- at or about that time. Prior to that time, Lucy Letby had been involved with AR and RN?

HOCKNELL: Yes.

JOHNSON: Just looking at the entries relating to [Baby K] then on that page, first of all, they're all, as in other cases, marked with that yellowish shading; is that right?

HOCKNELL: Yes.

JOHNSON: The people who are recorded by the records as having had direct contact with her are Dr Jayaram, Dr Lo and Nurse Joanne Williams and indeed Nurse Caroline Oakley?

HOCKNELL: Yes.

JOHNSON: We see that during that period of time between 02.12 hours and 03.03, Lucy Letby was involved with RN, AR and GT; is that right?

HOCKNELL: Yes.

JOHNSON: So moving on to the next page, please, do we see that there are a lot of [Baby K] entries there before 03.50 hours?

HOCKNELL: Yes.

JOHNSON: That so far as they are concerned, the people who have made the relevant notes are the transport team, Nurse Joanne Williams, and Dr Smith?

HOCKNELL: Yes.

JOHNSON: Whilst all that was going on, we see entries between 03.04 and 03.30 hours, made by Lucy Letby, relating to the children GT and AR?

HOCKNELL: Yes.

JOHNSON: The event that occurred at 122 is followed by eight yellow shaded lines that relate directly to [Baby K]?

HOCKNELL: Yes.

JOHNSON: At 123 is a clinical note made by the doctors?

HOCKNELL: Yes.

JOHNSON: 124 is a note timed at the same time as the collapse is recorded, made by Joanne Williams and Lucy Letby, relating to medication being given to [Baby K]?

HOCKNELL: Yes.

JOHNSON: At the same time, the same two nurses, namely the designated nurse and Lucy Letby, sign the infusion chart for [Baby K]; that's line 126?

HOCKNELL: Yes.

JOHNSON: At 04.20, we see that there are two lines relating to [Baby K] concerning medication being given. It's really one event, but recorded in two separate places?

HOCKNELL: Yes.

JOHNSON: Administered by, it says Caroline Oakley, checked by Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Between those events that we've just looked at, we can see that at 04.00 hours, lines 132 to 134, Lucy Letby has made entries on the chart relating to the child AR in nursery 2?

HOCKNELL: Yes.

JOHNSON: Thank you. We also have, of course, lines 138 and 139 relating to observations made by Joanne Williams at 04.30 hours?

HOCKNELL: Yes.

JOHNSON: Then finally, on that page, at line 144, timed at 04.34, medication given to the child HC?

HOCKNELL: Yes.

JOHNSON: Just so that we get used to who's where, HC of course is in nursery 1?

HOCKNELL: Yes.

JOHNSON: Thank you. Next, please, over the page, further medication being given to HC in nursery 1 at lines 145 through to 147?

HOCKNELL: That's correct.

JOHNSON: Signed and co-signed by Caroline Oakley and Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Then at 04.40 to 04.45, three lines, 148 to 150, signed by Lucy Letby and Caroline Oakley relating to medication given to [Baby K]?

HOCKNELL: Yes.

JOHNSON: Then at 153 we have the timing of Joanne Williams' nursing note at 04.48?

HOCKNELL: Yes.

JOHNSON: Followed by Dr Jayaram's clinical notes at 04.50, line 154?

HOCKNELL: Yes.

JOHNSON: Followed again, in turn, by two further entries, updates made on the computer by Lucy Letby and Caroline Oakley?

HOCKNELL: Yes.

JOHNSON: Then there's a pathology sample collected for [Baby K], which we've seen in the sequence of events. Just concentrating on [Baby K]'s entries on this page, please, do we see a pair at 05.07 relating to Joanne Williams' nursing notes?

HOCKNELL: Yes.

JOHNSON: Then three entries, 174 to 176, at 05.23 and in the following minute or so, three records signed and co-signed by Joanne Williams and Lucy Letby relating to [Baby K]?

HOCKNELL: Yes.

JOHNSON: The observation chart completed by Joanne Williams at 05.30, lines 177 and 178?

HOCKNELL: Yes.

JOHNSON: And then towards the bottom of the page, a clinical note together with a further prescription, this one signed by or recorded by Joanne Williams and Dr Lo?

HOCKNELL: Yes.

JOHNSON: In between times, just moving back up towards the middle of the page, at lines 162 to 164, are there entries made at 05.00 hours on the child AR by Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Of course AR is in nursery 2?

HOCKNELL: Yes.

JOHNSON: Moving on to page 7 of 9, please, concentrating first on [Baby K] on this page, 192 to 194 concern pathology samples and a transport team note made at 05.50?

HOCKNELL: Yes.

JOHNSON: A further transport team note at 05.55, line 197?

HOCKNELL: That's correct.

JOHNSON: Bypassing the entries at 06.00 and looking at the block of [Baby K] related data first of all towards the middle of the page, do we see at 207 at 06.04 a nursing note completed by Lucy Letby?

HOCKNELL: Yes.

JOHNSON: Followed by an X-ray and a clinical note at 06.07 and 06.15?

HOCKNELL: Yes.

JOHNSON: Followed at 06.22 and 06.24 by the transport team's record and the blood gas chart completed by Joanne Williams for [Baby K]?

HOCKNELL: That's correct.

JOHNSON: Then at 06.25, an infusion was started for [Baby K], signed and co-signed by Lucy Letby and Caroline Oakley?

HOCKNELL: That's correct.

JOHNSON: That appears, if we just -- sorry to jump around a bit, that's about 5 minutes after Lucy Letby had recorded feeding the child GT, who is in nursery 2?

HOCKNELL: Yes.

JOHNSON: Thereafter, at 05.30, do we have Nurse Joanne Williams' observations and intensive care chart data completed in relation to [Baby K]?

HOCKNELL: Yes.

JOHNSON: Thank you. Also at 06.30 and in the succeeding 12 minutes or so, do we have Lucy Letby, sometimes together with Caroline Oakley, recording data relating to GT and KC?

HOCKNELL: Yes.

JOHNSON: I don't know about anybody else, but if anyone is slightly confused by that, KC of course is in nursery 1, GT in nursery 2.

HOCKNELL: Yes.

JOHNSON: Thereafter, some transport notes put in at the relevant part of the chronology. The only other note that we see relating to [Baby K] on that page is at line 238 and that's Dr Jayaram's clinical note concerning [Baby K]'s desaturation just before the night shift ended and the day shift started?

HOCKNELL: Yes.

JOHNSON: Just above that at 07.00 hours, do we see that charts were completed for the child AR, who was one of Lucy Letby's designated patients in nursery 2?

HOCKNELL: Yes.

JOHNSON: And a prescription chart for GT, who of course was her other charge in nursery 2 at 06.49?

HOCKNELL: Yes.

JOHNSON: Thank you. Then on the final page, please, do we see that there is a single entry on that page relating to [Baby K] that was also signed by Lucy Letby? That's the infusion started at 07.30.

HOCKNELL: That's correct.

JOHNSON: Otherwise, the records relating to [Baby K] are attributable to the designated nurse, Joanne Williams, Dr Jayaram or the transport team?

HOCKNELL: Yes.

JOHNSON: Thank you. Otherwise, in that last half an hour of the shift, in other words during the handover time, there are no Lucy Letby entries at all?

HOCKNELL: That's correct.

MR JOHNSON: Thank you very much. I don't know whether there are --

MR MYERS: No questions, thank you.

MR JUSTICE GOSS: Thank you. Thank you very much, Mrs Hocknell.

(The witness withdrew)

Witness statement of DR JONATHAN FORD (read)

MR DRIVER: My Lord, may I read another statement before calling Dr James Smith who's just outside court. The statement is at page 16 of today's reading bundle. It's a statement of a Jonathan Ford dated 22 August 2018, which reads:

"I am a consultant obstetrician and gynaecologist currently working at Leighton Hospital, Crewe. I have been asked to comment on the birth of baby [Baby K] on 17 February 2016 at the Countess of Chester Hospital.

"At this time I was a registrar working within the Women's and Children's Division at the Countess of Chester Hospital. [Mother of Baby K] was admitted to the Countess of Chester Hospital on 15 February 2016 at a gestation period of 24 weeks and 6 days with threatened preterm labour and had been reviewed by the day team of doctors. [Mother of Baby K] had been seen by two consultants during the day.

"I was working nights during this time and at 23.45 hours reviewed [Mother of Baby K]. There was a plan already in place from the day team consultants regarding conservative management of her.

"I spoke with [Mother of Baby K] regarding the issues of extreme prematurity, including the intrapartum management of her, the surveillance on her baby during labour, and then the implications for her baby once born.

"I scanned [Mother of Baby K] and noted that her baby was breech presentation with the estimated foetal weight on the scan approximately 600 grams, which is considered a viable weight.

"I confirmed with [Mother of Baby K] a plan for delivery and a decision was made for no vaginal examination for progress, which would normally be completed every 4 hours if someone was in labour, but in view of the extreme prematurity the longer the pregnancy could be delayed and for [Mother of Baby K] to receive steroids, the better.

"I completed my review of [Mother of Baby K] with Dr Horsted, who was a senior house officer I was working with, and shift leader Leigh, who was the lead midwife in charge of the labour ward that night. Following this examination, I had no further dealings with [Mother of Baby K] that night.

"I again reviewed [Mother of Baby K] on 16 February 2016 at 21.00 hours. She had had a settled day. The consultant during the day had stopped her magnesium sulphate and tocolytics, medication to slow or stop labour. [Mother of Baby K] was pain-free so it was agreed that she would receive conservative management and await events.

"I was called back to the labour ward to review [Mother of Baby K] on 17 February 2016 at 01.20 hours. She was now 25 weeks' and 1 day gestation and was in pain, implying she was in active labour with a sensation of pressure down below.

"I examined [Mother of Baby K] and noted that she was fully dilated with bulging membranes. I scanned [Mother of Baby K] again and noted the baby was in breech presentation and confirmed the baby's heartbeat was still present. I spoke with Dr Brigham, who was the on-duty consultant, and we made a plan to not rupture the membranes, for [Mother of Baby K] to not actively push, and for her to not have a repeat dose of magnesium sulphate.

"At 01.52 hours the membranes around the baby ruptured which meant that birth was inevitable. Paediatricians were called to the birth and [Mother of Baby K] was encouraged to push. There were no contractions at this stage, so [Mother of Baby K] was given medication to encourage contractions, but there was little descent.

"[Mother of Baby K] was placed into a lithotomy, which is a position where her legs were raised. I then delivered [Baby K], who was in breech. She was low in the vagina so I grasped the feet, rotated the back uppermost, and completed a Lovset's manoeuvre for the arms.

"There are three types of breech and one of these is called a footling breech, which is when the feet come out first. Such a birth will require further manoeuvring to deliver the head, which is generally the largest part of the baby. With a preterm baby there is a risk the baby can slip through a cervix that is not fully dilated, but [Mother of Baby K] was fully dilated and the head was delivered easily.

"The birth was an uneventful breech birth and [Baby K] was wrapped in a swab and born at 02.12 hours. I immediately clamped the cord and passed [Baby K] to the paediatricians who were present.

"The cord gases at delivery were 7.26, with a base excess of minus 3.5 and 7.31 with a base excess of 4. In view of the prematurity, I arranged for the placenta to be sent to Alder Hey Children's Hospital for histological examination. I always send a placenta for histology if there have been complications during a pregnancy such as extreme prematurity, a mother with severe pre-eclampsia or a growth-restricted baby.

"[Mother of Baby K] was aware of what had happened and we discussed the birth event with her immediately afterwards. I have reviewed the ultrasound reports during [Mother of Baby K]'s pregnancy and note on the dating scan at 14 weeks that [Baby K] had a cystic hygroma, which is a swelling on the back of the baby's neck, which can be a marker of problems in the pregnancy such as chromosome problems, heart problems or other foetal anomalies. This was why [Mother of Baby K] had an amniocentesis at 15 weeks.

"When [Mother of Baby K] had a detailed scan at week 16 and an anatomy scan at week 20 of her pregnancy, the cystic hygroma was resolving and there were no problems with how [Baby K]'s heart looked. I had no further dealings with [Baby K] after birth."

That concludes Jonathan Ford's statement. May I call Dr James Smith, please?

MR JUSTICE GOSS: Certainly.

DR JAMES SMITH (sworn)

Examination-in-chief by MR DRIVER

MR DRIVER: Could you state your full name, please?

SMITH: Dr James Smith.

DRIVER: Dr Smith, could you confirm that you were employed at the Countess of Chester Hospital in February 2016?

Is that correct?

SMITH: That's correct.

DRIVER: Could I ask you to put your statement to one side whilst you give evidence? You will be taken to clinical notes and other material recorded at the hospital at the time to assist with your recollection.

On that topic, you anticipate that you're going to be asked questions about a patient, a baby, by the name of [Baby K]. Do you have any actual memory of [Baby K] and the surrounding events?

SMITH: Yes, I do.

DRIVER: Thank you. What was your role at the Countess in February 2016?

SMITH: I was a specialist registrar in February 2016, employed through Medacs locum agency. I was the equivalent of an ST5 registrar, which is a mid-level grade registrar, and I covered the registrar rota during that month on shifts covering the paediatric and neonatal unit.

DRIVER: Thank you. During the course of that employment were you at one point notified of the impending arrival of an extremely premature baby?

SMITH: Yes, I was.

DRIVER: Were you informed by midwives and neonatal nurses on 16 February that a 25-week gestation neonate might be arriving any moment soon?

SMITH: Yes, that's correct.

DRIVER: Did you have any involvement in the care of the baby's mother prior to the delivery?

SMITH: No, I did not.

DRIVER: Were you informed when delivery was imminent?

SMITH: Yes.

DRIVER: I'm going to direct your attention to the screen to your right, doctor, and invite Mr Murphy to put tile 27 up, please. On screen, doctor, you'll see a chronology of events presented for ease of reference. Behind each of these tiles or squares

we've embedded the clinical notes and nursing records and the like.

Having been informed that a 25-week gestation neonate was imminent, what did you do in terms of communication with your colleagues at the time?

SMITH: So because it's a 25-week gestation neonate, I asked them to let me know if the baby was going to be delivered imminently because I wanted the paediatric consultant to be called in urgently if that was the case because for that gestation of neonate, you need senior support with that kind of baby. So as soon as they told me that she was going to be born, I asked them to call Dr Ravi Jayaram in urgently, and he came in urgently.

DRIVER: And he attended promptly upon request, did he?

SMITH: He did.

DRIVER: Thank you very much. If we could click behind the tile, which informs us of the time and date of birth -- I should ask, firstly, were you present at the birth?

SMITH: I was. I remember Dr Ravi Jayaram being there with me.

One of the neonatal nurses will have been there as well, but I can't remember who that was. And definitely me and him were there. My SHO, so senior house officer, also knew about the birth. I don't have memories of her being there, but I believe in the notes that it says the SHO was also present. But definitely I was there, the paediatric consultant was there, and I believe one of the neonatal nurses will have been there as part of the team basically.

DRIVER: Thank you. You can see on the screen for presentational purposes, details have been uplifted from the original notes and reproduced here for ease of reference. But if we click on the original note for a moment and scroll down so the witness can see the handwritten entries on that document.

Are they your notes?

SMITH: These are not my actual -- that's not my handwriting.

DRIVER: That's not your handwriting. But let's go back one step then, please, Mr Murphy, and let's see the tile, please.

SMITH: I'm happy to explain what was on that though.

DRIVER: I think the important parts have been reproduced on the screen now. Does this accord with your memory of the

circumstances of this delivery and the condition of the baby upon birth?

SMITH: Yes, that's what I've wrote in my statement. So that's the gestation. Footling breech means that the baby came out feet first. The baby was born in expected condition for this gestation, which is what's explained there.

The "query cystic hygroma" had resolved spontaneously, so no issues with that.

And the Apgars are correct according to my statement. So 4/9/9, which is good Apgars for a baby.

DRIVER: Thank you. We've already heard some evidence about the resolved cystic hygroma. Could you please assist us with the condition at birth, which is noted as:

"Dusky, floppy, with initially [at least] no respiratory effort from the baby and a heart rate in the region of 60 beats per minute"?

In your evidence a moment or two ago, you said words to the effect that these are expected conditions or presentation for a baby of this gestation. Could you expand on that, please?

SMITH: Yes. At this gestation, the presentation can be variable, but what's a good or reasonable sign with that is you do have a heart rate, so you don't always have a heart rate in this gestation. So you do have a heart rate, which is around 60. You don't have any respiratory effort, but that's not unexpected at this gestation. The baby's going to be floppy because you haven't done any resuscitation yet. And the baby's dusky, but again at this gestation that's not unexpected. So you have a heart rate initially. Some babies at this gestation, they might make some respiratory effort prior to resuscitation, but it's to be expected that you would need to do a full resuscitation with this gestation of baby, like -- so full airway and breathing support.

DRIVER: Thank you. Before we move on to that, could I ask you about use of the adjective "dusky" in this context.

SMITH: Dusky with this gestation of baby -- I mean, dusky is a description of the colour, so they would be describing deep red, for example, to purple possibly. But the haematocrit of a baby of this gestation is high, so that's the concentration of red cells, so actually having this colouration when they come out at this gestation is not unexpected, like it's... That term to me, it means they need full airway breathing resuscitation, but that's to be expected at a gestation of 25 plus zero.

DRIVER: Thank you. Staying with the footling breech delivery, I think we'll see on nursing notes later this morning that it was noted that [Baby K] had bruising on the hands and feet. Is that or could that in any way be connected to the method by which she was delivered?

SMITH: Hands and feet, sorry, you said?

DRIVER: Yes.

SMITH: Yes, I believe that's possible because it's the extremities and a footling breech, I don't deal with this -- to say I don't deal with this gestation as much as, say, a neonatal consultant in a tertiary neonatal unit, but I would have thought that a footling breech delivery is a reason to have bruising in the extremities, yes.

DRIVER: Thank you. So she did not make any spontaneous respiratory effort and so did that call for a response by you and your colleagues?

SMITH: Yes. So you would initiate the full neonatal life support pathway, basically.

DRIVER: And what are the essential parts of that in terms of respiration?

SMITH: So you initially give five inflation breaths and then -- so first of all, the baby comes out and you assess the baby, so you're looking at tone, colour, heart rate, respiratory rate, respiratory effort. And then you're going to give neonatal life support, which is you give five inflation breaths first and then you reassess and then you give a further five inflation breaths. For this gestation of baby, though, you would have already prepped an endotracheal tube ready for intubation because you would do the initial -- still the initial inflation breaths and stabilise the baby with the mask but then you're going to need to intubate this baby at this gestation. So you're initially stabilising them with the mask and then it is to be expected you're going to then intubate this baby to stabilise the airway and their breathing.

DRIVER: Do I understand correctly that with a baby of a gestation age in the region of 25 weeks, intubation would always follow upon delivery?

SMITH: Yes, that's correct. So you would do the Neopuff mask with the inflation breaths first and then you would want to stabilise the heart rate, so you would ideally want the heart rate to improve above 100 and you would be putting on oxygen

monitoring, like a peripheral sats monitor, but it may not pick up at that stage. And then after your inflation -- after your two sets of inflation breaths, you are looking for chest movement and heart rate improving above 100.

Once you've got the baby stabilised with a heart rate above 100 and good chest movement, you're giving ventilation breaths, that's one per second. Then you've got the endotracheal tube ready and then you're going to intubate the baby.

DRIVER: Thank you. Having reminded yourself of the details from the clinical notes, can you confirm that all those steps were taken and she was deemed sufficiently stable to intubate within a few minutes of her arrival?

SMITH: Yes. So the Apgar was 4 at 1 minute, but -- can I just refer just briefly...?

DRIVER: It's on screen, I think.

SMITH: I'm just looking for the time when the heart rate improved. So heart rate -- yes, 100 beats per minute by 2 minutes 30 seconds. That's good. And [Baby K] was actually making occasional gasps, breathing for herself, taking spontaneous breaths at 3 to 4 minutes. And so that's when you would attempt intubation at that point because you've got a heart rate above 100, so you know that you are oxygenating the baby with the mask. So the oxygen's gone in, that's what's improved the heart rate, so you're continuing with the ventilation breaths with the mask and you've got the tube ready and that's when you would intubate.

DRIVER: Thank you. If we could go to tile 28, please, Mr Murphy, and click on to notes behind, notes that were written by Dr Ravi Jayaram, but refer to acts undertaken by you and Dr Jayaram, who were working together with [Baby K]; is that correct?

SMITH: That's correct.

DRIVER: The notes written retrospectively at 04.50 tell us some of the details we've already touched upon. The time, date and type of delivery. The fact that you, Dr James Smith, undertook resuscitation of the baby.

Her condition immediately after birth, which we've already looked at. If we keep going down the page, please, and as you've just told us, her heart rate was satisfactorily above 100 at 2 minutes and 30 seconds of life; is that correct?

SMITH: Yes, that's correct.

DRIVER: And looking down the next entry or two, that her oxygen saturation levels were sufficiently high for you to feel it appropriate to attempt to intubate the baby?

SMITH: Yes, that's correct. I mean, saturations of over 85% at 6 minutes is good, especially with this gestation. Just to say, if the initial bag -- resuscitation with the mask isn't successful, so you're not ventilating the baby, then with just this gestation you can proceed to intubation, but if you're able to stabilise the baby with mask ventilation first, that's the standard neonatal life support procedure to go through, which is better. So that's what we did, we stabilised the baby first, the baby's oxygen saturations are more than 85%, the heart rate is good, so you can proceed to intubation safely.

DRIVER: That's what you did and it was you, albeit in the company of Dr Jayaram, who conducted the intubation; is that correct?

SMITH: That's correct.

DRIVER: How did it go?

SMITH: So looking at the notes, it did take three attempts.

Intubating a baby of this gestation is difficult, it's technically quite difficult. The baby's obviously very small and what you're looking for is you're trying to visualise what they call the cords and you're going to pass the tube through the cords.

Now, at no point during the attempts was I worried to hand over the procedure to Dr Jayaram. The reason for that is the baby was stable after each stable attempt -- stabilised. You get 30 seconds to put the tube in and then if you're not successful after the 30 seconds then you would go back to the mask. You would give the baby some more breaths, you'd make sure their heart rate is above 100 again and you'd make sure that their saturations are fine.

At no point was the baby compromised so I needed to hand over the procedure to Dr Jayaram. So in this gestation, it can take more than one attempt because you're looking for the cords. What happened, I intubated in the end with a size 2.0 -- so initially we tried with a 2.5 tube, but that was too large at that stage to go through the cords, so that's why we switched to a 2.0, which went in.

DRIVER: Thank you. So although technically challenging, ultimately the procedure was successful?

SMITH: Yes, that's right.

DRIVER: And you've made mention of the fact that, as you can recall, there were no specific circumstances which prompted you to take a step back, as it were, and invite Dr Jayaram to take over. What circumstances would dictate or drive the registrar to take a step back and hand over to the consultant?

SMITH: If the baby wasn't recovering sufficiently between the attempts. When I'm supervising a registrar now, I would be asking them are they able to see the cords, what can they see? So if, for example, you weren't -- the registrar in question wasn't able to see the cords at all, then perhaps that's a stage where, right, okay, the consultant would take over. Also, the confidence of the registrar, does he feel he can get it in? And the baby's recovery, like I said, between the episodes.

Also, like I said, I think the larger tube didn't go in and then -- but in that situation if you can see the cords, okay the larger tube didn't go in, we can try it with a smaller tube. If my registrar for example had tried with a smaller tube and still hadn't got it in, that's another reason to take over because you've tried a smaller tube and let's hand over. But in this case the smaller tube work and the baby -- [Baby K] was intubated successfully.

DRIVER: So they're examples where, for whatever reason, the procedure might prove too challenging for a registrar?

SMITH: Yes.

DRIVER: What about if during the attempt at intubation there was, for example, evidence of trauma or bleeding?

SMITH: Yes. I was asked about this in my statement. If I'd seen -- if, me personally, I'd seen any evidence of trauma, any bleeding, that would be a reason for myself to tell my consultant that and I would want him to perform the procedure. To the best of my memory, I didn't visualise anything like that with [Baby K] and it doesn't fit with what I would do in my standard practice. For many intubations that I've done, if I saw significant trauma/bleeding, I would have asked my consultant to step in and take over.

So two sides to that. One is my memory of that, I don't remember anything like that, and the second thing is what I would do myself in, like, these scenarios that I've been in as a registrar over the years, like I would -- so that's the two things that don't fit with that is what I can say.

DRIVER: And having refreshed your memory from the contemporaneous -- well, sorry, the clinical notes made within an hour or two of the event, is there anything within the notes to suggest there was any bleeding or any trauma at all?

SMITH: Within the notes I've seen that it mentions bloodstained secretions on the time when I re-intubated the first time. So that's the re-intubation when the baby is on the neonatal unit. In the nursing notes it mentions a large amount of bloodstained secretions.

With that re-intubation, I remember performing the re-intubation -- in other words coming in the room and then asking Dr Jayaram, "Shall I re-intubate?" So I remember that. I don't remember the bloodstained secretions.

DRIVER: Dr Smith, we'll come to the re-intubation later. I just want to --

SMITH: This one? Okay, with this one, no, there was nothing -- there's nothing in the notes at the time with this intubation and no indication in the notes to do with any blood, secretions or any indication of trauma from anything in the written notes or from what I can remember.

DRIVER: Thank you. What about the clinical picture generally as noted at this point in time?

SMITH: Yes, the clinical picture at this point in time -- I mean, the baby's Apgars are good, the oxygen saturations are good. The resuscitation has gone successfully and what I'd also say is the first blood gas of the baby attending the neonatal unit is good, reasonable for this gestation. So that all indicates to me that it was -- the resuscitation was a good one.

DRIVER: Pausing there, you've just made reference to the transfer of the baby to the neonatal unit, so let's catch up with you, with our visual presentation and go to tile 30, please.

It records the fact of her admission into the unit at 02.40 and you told us a moment ago something of blood gas records from blood gases taken upon arrival.

Could you expand upon that again, please?

SMITH: So the first blood gas from what I can see from the notes is a venous blood gas. So that will have been done from when I've cannulated [Baby K] to give fluids and IV antibiotics. And the first blood gas, I believe, is at 03.03 hours and it's pH

7.22, PCO2 7, with an acceptable lactate of 4, considering it's just after the delivery.

So a pH of 7.22, PCO2 of 7 is a good first gas for this gestation. Like, it's a good gas, you'd say.

DRIVER: Thank you. From memory, you've given us the time of that, so that was within an hour of her admission into the NNU?

SMITH: Yes. I believe she attended the neonatal unit at 02.40 and so I will have gone to -- proceeded to cannulate, so put in a venous line and that's the first gas from the venous line.

DRIVER: Thank you. And those gas records, those tests, were in general terms satisfactory?

SMITH: Yes, they are.

DRIVER: Thank you. Tile 52, please. Samples taken from the baby by you or at your direction at least at 03.31. If we can click behind that. So ordering doctor, yourself, James Smith. Could you explain what this is to us, please?

SMITH: So when you do a cannulation on a newborn baby, of this gestation you're going to cover with IV antibiotics automatically. That's because of the gestation and the breathing difficulties that they would have at this age has to be expected. So you'd cover with antibiotics for safety, so you're going to take a blood culture and you're going to also take a full blood count and CRP marker of infection at the same time.

DRIVER: Thank you. So she was prescribed antibiotics as a matter of course in effect?

SMITH: Yes, all babies of this gestation would get antibiotics -- any baby with respiratory distress would get IV antibiotics. If they have respiratory distress after birth -- and all babies with this gestation will have need for respiratory support, so you would cover with antibiotics, yes.

DRIVER: And in addition, as per standard guidelines, was [Baby K] prescribed vitamin K?

SMITH: Yes, that's correct.

DRIVER: And intravenous 10% dextrose was commenced for nourishment; is that correct?

SMITH: That's correct.

DRIVER: Did you examine the baby from a cardiovascular perspective?

SMITH: I did. My examination is in my statement. So she had normal heart sounds and two femoral pulses present and good air entry bilaterally and her abdomen is soft and non-tender and bowel sounds present, so a normal examination when she's arrived on the neonatal unit.

DRIVER: Finally in this regard, was there a neurological examination of the baby?

SMITH: Can I just refer to my statement just one second?

DRIVER: I'm sure I can lead this. Your statement suggests:

"Neurological examination showed normal tone."

SMITH: I see that, yes. So that's correct, yes.

DRIVER: Of course she was very premature and below the age threshold for babies who would ordinarily be accepted and cared for within the Countess of Chester Hospital, so in consequence did you or your colleagues communicate with Arrowe Park at this early stage?

SMITH: Yes. So the transport team were contacted because they will transport the baby to a tertiary or level 3 neonatal centre, who will deal with a baby of this gestation in the long-term.

DRIVER: Were you to some degree guided by the requests from Arrowe Park for your initial treatment and care for the baby?

SMITH: Yes. I mean, they are there to give advice as well on the current situation and they requested that central lines be put in, which is again standard management for a baby of this gestation.

DRIVER: And did they also request a series of X-rays to be undertaken?

SMITH: Yes, again once you've put in the central lines or if there's a reason to do one earlier, you would perform X-rays, so chest X-ray and abdominal X-ray, to look at the line position, yes.

MR DRIVER: Thank you. My Lord, we're next to move to the event at 03.50 hours and I wonder whether that would be an appropriate moment.

MR JUSTICE GOSS: Certainly. We are not going to complete the doctor's evidence in the near future. Back again at 2 o'clock to continue with your evidence. Thank you very much, Dr Smith.

2 o'clock, please, members of the jury. Remember your responsibilities as jurors.

(1.00 pm)

(The short adjournment)

(2.00 pm)

MR DRIVER: Dr Smith, before we move to the events of approximately 03.50 hours on 17 February, could I just return to the intubation that you achieved after three attempts a few hours earlier. What, if any, indicators were there on the labour ward that the intubation was successful in the sense that the tube was in a functioning position?

SMITH: So the oxygen saturations were stable, the baby's heart rate was stable, there was good air entry bilaterally, so both sides of the chest, and so the baby was stable enough for transfer.

I believe that my statement says initially it was 50% oxygen and then when the baby was on the neonatal unit, it was 80%, so there was an increase in the oxygen, but that's, again, normal when you're moving the baby across. You might need to adjust the oxygen delivery to the baby during transfer.

DRIVER: So those oxygen percentages that you just mentioned is a percentage of purity of oxygen in the air being delivered to the baby via the intubation?

SMITH: That's correct.

DRIVER: As to that on the ward, would that be the responsibility of the caring nurse or a medic such as yourself?

SMITH: The medics, so myself and Dr Jayaram, the consultant, would be there to adjust the oxygen, but I believe it's both, so the nurse would be keeping an eye on the oxygen saturation, adjusting the oxygen as needed. The actual ventilator settings, though, in terms of the pressures and the rate, is adjusted by either myself or Dr Jayaram, so doctors. But the oxygen, if the saturations are dropping, I believe the nurses are allowed to adjust it and increase it if needed.

DRIVER: What about the act of connecting the baby or connecting the tube to the ventilation?

SMITH: So during the -- so after the initial intubation, the baby is attached to the Resuscitaire ventilation and then you would do manual pressing with your thumb, occlusion of the top, to give a breath, like during transport. So you're giving one per second breath through that ET tube. Then you're transporting the baby on the Resuscitaire. Then once you get to the neonatal unit, the baby's then attached to a ventilator.

I believe that's how they did it at Chester. So the baby is on the Resuscitaire, then moved, then attached to a ventilator.

DRIVER: The ventilator being in a fixed position in a ward?

SMITH: Yes, fixed position with a machine, a ventilator, which is the settings. They have a touchscreen monitor and you would set the right settings in terms of pressures and rate and oxygen and then that is then connected via tubes to the baby and the nurses do that, the nurses connect the ventilator to the baby.

DRIVER: That's what I was enquiring into. So from recollection, you played no part in the connecting of [Baby K] to the ventilator within the unit?

SMITH: No, I wouldn't. The truth is I don't know how to do that. Doctors have knowledge of how to adjust the settings but the actual connection of all the pipes from the ventilator to the baby is done by the nurses. You'd still be close by just to supervise and be on hand if the baby needed re-intubating, for example, but the actual connection is done by the nurses. I mean, once the baby got to the neonatal unit what I would be doing is I would be assembling equipment to put in a cannula, which is what I did next. So I will have opened up a sterile pack, got a needle, blood tubes -- blood bottle -- sorry, to cannulate [Baby K].

DRIVER: Thank you. And you did successfully cannulate [Baby K] on the unit, I understand?

SMITH: Yes. It's not documented that I did the cannula, but I believe that's -- it was me that put it in and that was when we got the first blood gas and I sent the blood bottles, so yes.

DRIVER: Thank you. Let's now move, please -- and Mr Murphy, could you please put up tile 64, which records an event at about 03.50 hours.

Do you recall treating [Baby K] for a sudden deterioration in oxygen saturations at about this time?

SMITH: So what I remember is I remember coming back in the room and I believe I will have been labelling the blood bottle, sending off the blood bottles, but I can't be certain of that. I remember coming back in the room because I'd been out of the room briefly. So I was coming back in the room and I see the baby is in the incubator, [Baby K] -- and I can't comment on where the nurses were, they will have been there but I don't know where because my memory doesn't stretch that far back.

What I do remember is Dr Jayaram being on the right-hand side of the incubator as I'm walking in and he's giving breaths through the Neopuff. So basically, the ventilator at this point has been disconnected because of desaturation and he's giving breaths through with a kind of manual pressure to see if that improves the baby's oxygen saturations. So I remember that.

DRIVER: That was underway when you entered the nursery, nursery 1?

SMITH: Yes, that was already underway. I can't remember from my memory what the baby's oxygen saturations were, but the notes comment on it being a sudden deterioration and the oxygen saturations, I believe my statement says, dropped to 40%. So he's then giving, like, correctly giving -- trying to give manual breaths through the endotracheal tube, but it's not improving, and so then we took measures after that.

DRIVER: Pausing there, how were you informed that it was not improving?

SMITH: So from my memory, I said I think I came in and I said, "What's wrong?", and then it's just the -- it's obvious there's a desaturation there. So you're giving the breaths through the tube, but then you're looking for chest movement, improvement in saturations, but it's not working. What you get taught is four reasons actually why this would happen. One is displacement of the endotracheal tube, so it's moved, so it's not working properly. Obstruction, so blockage of the tube.

Pneumothorax, but I believe the notes say that we did a cold light test, which is a light you shine on the baby to see if there's a pneumothorax, so air where it shouldn't be, but that was negative and also the chest X-ray doesn't show that at all later on. And then equipment failure is the other one, but the equipment failure would be obvious if there was a malfunction with the ventilator or if there was no pressure being given by manual breaths because that's a separate circuit, basically.

So the two things for a sudden deterioration you'd be thinking is displacement of the tube or obstruction of the tube, so blockage. And the other thing, actually, in the statement is the

capnograph, which is attached, so the CO2 monitor, is purple, it should be changing to yellow to indicate you're actually getting end-tidal CO2, so that means it's working and it wasn't changing colour. If it is not changing colour, you're not getting improvement in the saturations, you're not seeing chest movement, then the tube is either displaced -- if it's the tube that's the problem it's either displaced or blocked. So the correct decision is to remove the tube, which is what Dr Jayaram did.

DRIVER: Thank you for that explanation. The tube having been removed, how did [Baby K] progress immediately thereafter?

SMITH: So I believe my statement says that on removing the tube and then giving mask breaths, so breaths again with the mask, saturations immediately improved. So that means that the problem there was the tube and the mask ventilation has restored the saturations. I remember offering at that point to Dr Jayaram, would you like me to re-intubate, because I'd already been the one who had managed to do it. He said yes, so we got equipped together for a re-intubation.

DRIVER: Just to clarify the provision of air with the mask, is that direct into the baby's respiratory system without a tube?

SMITH: That's right. So you would take the tube out, you would remove the tube and the capnograph and the attachment that you have been giving with manual breaths, that's carefully removed, you've taken that out, and then immediately you would get the Neopuff mask on to the baby's face, covering the nose and mouth, and then you'd be giving, again, manual breaths, one per second, through the mask to get oxygen into the baby via the mask.

DRIVER: So then having satisfied yourselves that her saturations, her oxygen saturations, were improving, did you then go on to re-intubate?

SMITH: Yes. So the notes state that I re-intubated this time on the a second attempt. We gave a morphine bolus this time, which is again standard because during the delivery, you don't -- you just do the intubation. But when they're on the neonatal unit, the baby can sometimes need some morphine because it makes the procedure easier and the baby might be active, so some morphine can help to facilitate the intubation.

DRIVER: Essentially, for the baby's comfort?

SMITH: Yes, that's correct.

DRIVER: Did you personally, leaving aside anything you may have seen in anybody else's notes, did you personally at any point see any blood or any trauma, evidence of any trauma?

SMITH: I... I didn't see any evidence of trauma that I can remember and I would have said -- if there was something there for me to see that was obvious, I believe I would have said to my consultant what I saw, but I don't remember seeing anything.

DRIVER: Thank you. Let's move on to other contributions you made to the care of [Baby K] overnight. If we could go to tile 102, please, Mr Murphy, and click on, please.

Scroll down. I think all the way down, I think.

I'm interested in you obtaining umbilical venous access.

Do you remember that part of your treatment of [Baby K]?

SMITH: I don't remember details, but I know that from the notes that's what I will have done. From the notes, I can see that I've inserted a UVC, so umbilical venous catheter, but the UAC, so umbilical artery catheter, which is used for -- a UVC is used for giving fluids and medicines and a UAC is used for central blood pressure monitoring and blood sampling. The UVC was successful, but the UAC was not successful.

DRIVER: Did Dr Jayaram also attempt with a UAC, but without success?

SMITH: Yes, that's correct. So I can see that from the notes.

So he's attempted as well -- and this actually does happen with this gestation, very premature, this can happen, and then that's why we have the transport team as well who come, who do these kind of lines every day, and they can assist in getting in a UAC, which I think they attempted later. So that's why we called the transport team to come and assist, yes.

DRIVER: Thank you. You informed us earlier that Arrowe Park had suggested that a series of X-rays should be undertaken with [Baby K]. Did you in due course consider radiographs?

SMITH: Yes. So a chest X-ray was taken and it shows the endotracheal tube, which at this point has been re-intubated, but at the same depth as the previous one, so 6.5 centimetres. This is now a size 2.5 tube. So on the X-ray, the tube is in a good position and you can also see on that X-ray the UVC as well, which is in an acceptable position.

DRIVER: Thank you. Mr Murphy, we don't need to look at the radiograph itself, but if we could go to our tile 105, please. We see the fact of the taking of an X-ray is recorded there. If we go to -- let's just consider the description behind.

As you've just told us, this is post-re-intubation and it was confirmed, was it, that the ET tube was in a satisfactory position?

SMITH: Yes. So the ET tube is in a satisfactory position and the rest of the report is there and it also does state that the left side of the chest does seem to show some consolidation, which could be due to either surfactant-deficient lung disease or infection.

DRIVER: Is that the sentence that begins with the word "hazy"?

SMITH: Yes:

"Hazy shadowing is present throughout the left hemithorax [so it's the left side of the chest] and compatible with consolidation."

You do also see that with bad surfactant-deficient lung disease, although it's not on the right side. If you have what they call focal changes, so more on one side than the other, then you'd definitely err on the side of caution towards infection and you would give a longer course of antibiotics than you ordinarily would to be on the safe side.

It could be surfactant -- I've looked at the X-ray myself. It could be just due to surfactant-deficient lung disease because it's going to be bad at this gestation or it's going to be significant at this gestation, should I say. But it could also be infection.

DRIVER: Does surfactant deficiency, sadly, just go with the territory of a baby born at 25 weeks' gestation?

SMITH: Yes. So all babies born at 25 weeks' gestation will have surfactant-deficient lung disease. Mum received steroids before birth, which is to help with the maturation of the lungs to prevent that. And we also gave surfactant, so artificial surfactant, which is called Curosurf, or poractant alfa, which is to act as surfactant, which the baby would produce later on because babies only produce surfactant when they're of an older gestation basically. So baby received surfactant to help with the breathing -- and surfactant basically helps the baby's lungs to breathe easier. But you get these kind of lung changes with haziness and speckling with surfactant-deficient lung disease, so...

DRIVER: Thank you. Can we go to tile 106, please, Mr Murphy.

I think you had cause to consider [Baby K] again at 06.15.

If we could click on to the underlying clinical note.

At the bottom of page 037, at 06.15, was it noted that [Baby K] was again having lower saturations and reduced tidal volume?

SMITH: Yes, that's correct.

DRIVER: Was a blood gas measurement taken?

SMITH: Yes, that's correct.

DRIVER: What did it show?

SMITH: So this blood gas is not good. It shows an increased PCO<sub>2</sub>, so 12.8, and the pH is now 7.07, so it's fallen.

The gas is worse than the previous gas.

DRIVER: What intervention did you undertake?

SMITH: The notes -- I mean, oxygenation can be to do with perfusion and the mean blood pressure was sub-optimal, so a fluid bolus was given. Could you just scroll down so I can see what the rest of the intervention was?

So the oxygen saturations are not optimal, so they're at 75, so the tube has been pulled back to see if that would improve the oxygen, but then the saturations have continued to not improve. So the tube -- so at this stage you again you are thinking, is it a problem with the tube, so you're not improving the saturations, you've tried to pull back the tube, it's not improved, so you have to again start again, stabilise the airway. So you've removed the tube and you're going to bag the baby again.

And then what's documented in the notes is that [Baby K]'s responded to bagging, face mask bagging, again.

So then you're going to re-intubate again and that's what I've done. So she is re-intubated again.

DRIVER: Thank you. Again, it was you who performed that procedure?

SMITH: Yes. I mean, again, I don't remember this third intubation, but I -- because I performed it twice successfully,

that's why I will have said I can do it and then I've done it. So this time was first attempt and I put:

"2.5 ET tube size and 6.5 centimetres at the lips."

Again, as before -- because the previous -- the chest X-ray shows the ET tube is in a good position at that depth.

DRIVER: So does it follow that there'd been a development with that tube from the earlier X-ray to this point in time at approximately 06.15?

SMITH: So something -- I mean, the oxygenation of the baby is not as good, so initially you have -- the first time the tube is not changing colour, it looks like it's either displaced or it's blocked, you've taken it out. The baby's responded to bagging very quickly. You've then re-intubated. So you've got a new tube and the baby's then stable. So that means that tube is functioning.

The poor gas could actually be the results of the first time the baby had the desaturation. So the gas would take time to improve.

So you do have a gas which is not good, but then the oxygen saturations mean there's a problem there again.

So you've got the gas, which could be the first episode, which you needed to re-intubate, but you've got -- oxygenation is not good, so that means that there's -- something still -- so the baby -- so the tube is -- the re-intubation the first time, the tube was working, the oxygenation was fine. But then a period of time has passed and then the oxygenation is now not good again, so desaturation. So that means there's a problem with the tube again.

So the tube has either become displaced again or it's blocked, so the tube's been removed and then re-intubated.

DRIVER: Having removed the tube, what, if any, checks were undertaken to see if it was blocked?

SMITH: From the notes, I can't see any mention of the tube being blocked. My memory doesn't have anything extra to add to that.

DRIVER: Thank you. Could we then go to tile 124, please, which is further X-rays. We are now at 07.55 hours. I wonder if you would still have been on duty at this point, but does this chest X-ray show that the tube is in a satisfactory -- the ET tube is in a satisfactory position?

SMITH: Yes. So this repeat X-ray says:

"Satisfactory position of the ET tube."

I've checked it as well myself and it's in a good position.

DRIVER: Yes. Nasogastric tube is where it should be or was that somewhere --

SMITH: So it says "nasogastric tube in situ", so that means it's going down the oesophagus, with its tip in the gastric cardia. That means it's just in the tip of the stomach. That's why it's saying you can advance it 5 to 10 millimetres. That's the NG tube going into the stomach.

The UVC, it says, is in a satisfactory position. It mentions again about the left lung with:

"Hazy increased density compared to the right. Infection remains the likely cause assuming no evidence of fluid overload."

I would also say, though, that surfactant-deficient lung disease could give a similar picture, but infection, yes, that's fine to say. It says:

"Normal bowel gas pattern."

DRIVER: As to the increased density, is that just comparative to the right lung or as compared to previous X-ray?

SMITH: So:

"Continues to demonstrate increased density..."

I think they mean the left lung continues to show the same as it did before, which is increased density in comparison to the right, because that's why the left side of the chest looks more white compared to the right. So that on the right side of the chest you've got very good aeration, so it's -- well, good for this gestation, you've got it looking black. And the left side looks hazy and white because there's less aeration there.

DRIVER: Thank you. Finally, if we go to tiles 223 and then 224.

I think, Dr Smith, you may have put your name to a discharge or transfer letter, I should say. If we could click behind 223 and we go to the original document, please. Would it have been part of your responsibilities as the registrar on duty to complete this documentation from Chester to Arrowe Park?

SMITH: Yes, that's correct.

DRIVER: Do you recall doing so?

SMITH: Yes, I do.

DRIVER: And does it -- is it intended to set out the history that you've shared with us during your evidence today?

SMITH: Could you just scroll down just I can see the rest?

DRIVER: Of course. I think it might go over two tiles.

(Pause)

SMITH: Scroll down again, please. (Pause). Yes. So I think I've summarised the different intubations that were required and the medications that we've given and the UVC insertion and that summarises sepsis, this paragraph, so cover for sepsis. You've sent off bloods, you've given antibiotics. Medications the baby was given. So yes, the letter is satisfactory.

DRIVER: I think there may be some more. If we go to the next tile, I think we've heard earlier --

SMITH: I've also included the blood results just there. You can see the baby's bloods, the full blood count and the CRP result, which came back.

DRIVER: Down to the bottom.

SMITH: That's my signature at the very bottom. That's mine.

MR DRIVER: Thank you, Dr Smith. Could you remain there and answer any questions that are asked of you?

Cross-examination by MR MYERS

MR MYERS: Dr Smith, [Baby K] being born at 25 weeks puts her in a category of extremely preterm, doesn't it?

SMITH: Yes, that's correct.

MYERS: A birth weight of 692 grams is an extremely low birth weight, isn't it?

SMITH: Yes.

MYERS: And for a baby in that situation, there are going to be inevitable problems associated with that, aren't there?

SMITH: Yes.

MYERS: In particular, and what you've been dealing with, respiratory problems?

SMITH: Yes.

MYERS: Because the lungs simply haven't developed the way they normally would by a full gestation?

SMITH: Yes, that's correct.

MYERS: You've described that when [Baby K] was born -- we've looked at the note that describes her as dusky, floppy, not breathing and a heart rate of 60. Do you recall seeing that?

SMITH: I recall the resuscitation. All the words that you've just said -- 7 years later, do I specifically remember every single one individually? It's difficult to comment. But I remember being in the room with the resuscitation and I remember it going well and it being a standard resuscitation for this gestation of baby.

MYERS: But overall -- for this gestation of baby, but overall this is not a great condition for a neonate to be in, is it?

SMITH: Neonates of this gestation need a lot of support and they need a lot of resuscitation. Neonates of this gestation, according to the -- am I allowed to quote studies? -- according to the EPICure 2 study have a survival rate of 75% for neonates of this gestation.

I don't think I'm wrong in saying that.

MYERS: Have other studies placed that lower, in the area of 40% to 50%? You have picked on one that says 70%, are you familiar with studies that place it lower than that?

SMITH: I have chosen the latest study I was able to find which quoted a gestation of 25 weeks, so that is from EPICure 2, which said 75% survival. So to answer your question, yes, they do have a lot of resuscitation need and it is extremely premature. But in the initial resuscitation, I can say that nothing occurred that was not standard resuscitation for this gestation of baby.

MYERS: Her time commenced, didn't it, by being put on the neonatal life support pathway; that's right, isn't it?

SMITH: Yes, so NLS, neonatal life support. That's what we follow for all babies across the UK.

MYERS: The fact she's put on to neonatal life support straightaway is indicative of the challenge she faces in terms of respiration, isn't it?

SMITH: Well, all babies are resuscitated following NLS guidelines, so all babies will receive neonatal life support. You have an algorithm, so a system you follow for all babies, and depending on the need at each stage depends on what you do next. So obviously, at this gestation, you're going to need the full airway support of an endotracheal tube, but all babies would receive NLS, neonatal life support, care after birth of any gestation, including term babies.

MYERS: She faces significantly greater respiration difficulties than a term baby, doesn't she?

SMITH: That's correct.

MYERS: A tertiary unit like Arrowe Park Hospital is the unit that is best suited to a baby like [Baby K] when she comes into the world, isn't it?

SMITH: They are more experienced at dealing with extremely premature babies and they do it more often. However, level 2 neonatal units are equipped and have the staff capable of stabilising before transport a baby of this gestation.

MYERS: The Countess of Chester was able to take or at this time authorised to take babies starting at about 27 weeks' gestation, wasn't it, as a secondary unit?

SMITH: That is for keeping babies long-term. But all level 2 neonatal units are able to manage a baby that arrives on the ward and isn't able to be -- safe to be transferred.

Consultant-level care is able to manage this gestation of baby at a level 2 unit because to complete your paediatric training as a consultant, you have to be able to manage any gestation of baby if you're covering a level 2 neonatal unit.

MYERS: Weren't there enquiries made for [Baby K] to be born at a tertiary unit, actually in advance of birth?

SMITH: That is -- I cannot say specifically for [Baby K]. But what I can say, because I haven't read the obstetric notes, but what I can say is for any baby that is less than 27 weeks at a level 2 neonatal unit, the correct thing to do would be to contact the tertiary neonatal unit, the level 3 neonatal unit, to see if it's possible to safely transfer the mum in utero with the baby to that unit, yes.

MYERS: A level 3 unit offers a higher degree of specialist intensivist care, doesn't it?

SMITH: It does, that's correct.

MYERS: And the optimal unit for a baby like [Baby K] to be at was a level 3 unit, wasn't it?

SMITH: If it had been possible for [Baby K] to be born in a level 3 or tertiary neonatal unit, then yes, it would have been -- that would have been -- the course that would be taken at a level 2 unit would be to transfer the baby to a level 3 unit, yes.

MYERS: When you were asked questions about the bruising on [Baby K]'s hands and feet post-delivery you said that a neonatal consultant in a tertiary will deal with this more often; do you recall saying that?

SMITH: I... I believe I was talking about... I know what you're referring to actually now. So yes, what I wanted there was -- the number of babies that I have dealt with that I have seen bruising peripherally is -- I... It's not frequent for me. So the reason why I have added that to my statement is for a footling breech delivery, if you were to speak to a tertiary or level 3 neonatal consultant, they are more likely to have seen this size of baby, this gestation of baby, more often and they are more likely to have seen multiple footling breech deliveries. So they would be able to say whether, yes, in, let's say, 9 out of 10 footling breech deliveries I have been to I've seen peripheral bruising.

I was not able to comment on that because I have not seen gestations of this baby at footling breech deliveries frequently from what I can remember, so yes, that's why I asked for an expert opinion, if possible, with that because the question was, "What is your opinion of the bruising?" So it's just -- it's difficult for me to say more than that because of my experience having not -- I work at a level 2 neonatal unit, I've worked in level 2 neonates, so that's why, yes.

MYERS: A neonatal consultant in a tertiary unit would have a good deal more experience of dealing with a baby like [Baby K] than you had. That's not said to be rude, Dr Smith, it's just what the situation was at that time?

SMITH: Yes, that is correct.

MYERS: When you understood that you would be dealing with [Baby K], one of the first things you did was to contact Dr Jayaram to attend; is that right?

SMITH: That's correct.

MYERS: And that's because you appreciated this could be -- provide certain difficulties, technical difficulties and medical difficulties?

SMITH: Yes. I mean, with any baby of this gestation, the registrar on call should contact the consultant.

I would want my registrars to contact me, I would want junior staff to contact senior staff in this gestation because you need the most experienced staff available to help with a baby of this gestation.

MYERS: When is the earliest point you say that enquiries were made to see if Arrowe Park could accept [Baby K]?

SMITH: I... I am not able to comment on that. I am sorry, but my memory doesn't extend back that far and I haven't reviewed the obstetric notes and I believe it will probably have been in the obstetric notes. I was given access to the paediatric notes. I don't believe I was given access to the obstetric notes.

What I know is that in a level 2 neonatal unit, if it's safe to transfer the mum to a tertiary unit, so in other words the mum is not in labour, waters haven't broken, this kind of thing, then if it's safe to do so, which is an obstetric decision, not a paediatric decision. If it's safe to do so then the baby should be transferred, like the mum should be transferred in utero with the baby inside to a level 3 unit. But it's an obstetric decision and if, for example, the mum is in labour, if the waters have broken, that is not safe because the baby could deliver in the back of the ambulance. So in that scenario the safest place for baby to deliver is the level 2 neonatal unit and then you get the most experienced staff available to manage that, which is what I did.

MYERS: Whatever had happened beforehand, after [Baby K] had been born, you've described to us that there was communication with the tertiary unit as you were dealing with her in the early hours of that morning, wasn't there?

SMITH: That's correct.

MYERS: And enquiries were being made to see if [Baby K] could be transferred to that tertiary unit?

SMITH: That's right.

MYERS: Why was it that you wanted to see if [Baby K] could be transferred there?

SMITH: You would always do that. So after -- any baby that's born in a level 2 unit which is less than 27 weeks, from what I know to do with guidelines, national guidelines, you would contact the transport team. So we have a neonatal transport team across the north-west and they would find a bed -- so it's called the Cot Bureau, and they would find a bed for the baby, so [Baby K], to go to the tertiary neonatal unit. You don't -- level 2 neonatal units don't manage, long term, babies of this gestation. They're designed for stabilising the baby ready for transport and then that's why you have a transport team that will take the baby to the level 3 unit.

Because a 23 week gestation mum could come into any hospital like by ambulance, I believe they're instructed to bring them to the nearest hospital if the mum is going to deliver imminently, so any hospital, paediatric hospital, that has a level 2 neonatal unit. That's what they're designed to do: they're designed to stabilise that baby, even if it's a 23-week gestation. Then you call the transport team to come out to take the baby to a level 3 unit.

MYERS: You dealt with the intubation with [Baby K] after she'd been born, didn't you?

SMITH: Yes.

MYERS: Was Dr Jayaram present with you when you did that?

SMITH: Yes, the whole time.

MYERS: Is there any reason you can give us as to why it's Dr Jayaram who wrote the notes rather than you?

SMITH: Um...

MYERS: The clinical notes I'm talking about.

SMITH: Yes. Dr Jayaram wrote the notes and because he wrote them in completion, I didn't write myself. Looking back, it would be better that I had wrote also independently. But because he's wrote completely, there's nothing more that I can see that should have been added that I would have added, and the notes are wrote in completion. I wrote the transfer letter, so the transfer letter's been done by me, but yes, best practice, it would have been good for me to write notes also.

MYERS: Although you had called him, you dealt hands on with dealing with [Baby K] during the course of her initial treatment, didn't you?

SMITH: Yes.

MYERS: That being so, going back to the question I asked you, why was it that in fact -- do you know why it was that Dr Jayaram wrote it up at all? Do you know why he did if it's you that had been doing the treatment?

SMITH: Basically, do I know why he wrote the notes?

MYERS: Any reason you're aware of? We can ask Dr Jayaram when the time comes, but any reason you're aware of as to why he did and why you didn't?

SMITH: Well, what I can say is that when I'm on that neonatal unit covering a night shift, I am also covering the paediatric unit. So I will have also been responsible for the children and the babies on the paediatric unit.

So what I would say is that if I -- because I haven't wrote the notes, so he's wrote the notes, I guess it would be a case of as long as the senior doctor, experienced doctor has wrote what has happened and then I have also done the transport transfer letter, that might be why I decided, like, the notes had been completed, but what I would say is that ideally I could have wrote my own notes as well, but there's no specific reason why he's wrote the notes instead of me. It's just that at least one experienced doctor has wrote what has happened and in full and I've also done the transfer letter.

MYERS: Moving to the treatment that [Baby K] received, I'm going to ask you some questions about the intubation shortly, Dr Smith. But intubation, you've told us, is something which almost inevitably will follow when a baby of [Baby K]'s gestation is born?

SMITH: Yes, that's correct.

MYERS: And that's because of the immaturity of her lungs and the problems that will have associated with them?

SMITH: Yes, that's correct.

MYERS: Also, do you agree there are a number of steps that should be taken as quickly as possible with a baby like [Baby K], preferably within the first hour of birth?

SMITH: Yes, that's correct.

MYERS: And you're familiar with that principle or pathway referred to as the golden hour, which is that period?

SMITH: Yes, I am.

MYERS: When you were giving evidence just before lunchtime, you listed a number of things that had to be done in [Baby K]'s case when you were being asked about the period not long after her birth. I'm going to remind you. You talked about babies of this gestation needing antibiotics, which they do, don't they?

SMITH: Yes.

MYERS: Needing respiratory support; that's right, isn't it?

SMITH: Yes.

MYERS: They need vitamin K?

SMITH: Yes.

MYERS: Is that to assist with blood clotting?

SMITH: It's to prevent haemorrhagic disease of the newborn, so yes.

MYERS: Haemorrhagic is, for those of us who aren't doctors, bleeding, isn't it?

SMITH: Bleeding, yes.

MYERS: Those are things which should be done, ideally, within that golden hour period, aren't they?

SMITH: Yes.

MYERS: All right. I want to ask you about the intubation first of all. You've described that it took three attempts for you to get [Baby K] intubated?

SMITH: Yes.

MYERS: And you said that it can be difficult with this gestation?

SMITH: Yes.

MYERS: Given that this is a baby who you were making or enquiries were being made to transfer her to a tertiary, would the appropriate course not be for Dr Jayaram, as the more

experienced consultant here, to either do or to take over this intubation for a baby like this?

SMITH: No, not if the baby is stable. I supervise registrars with intubations. It depends on a number of things that I explained to the other barrister. So it depends on the level of stability of the baby. So it depends on what oxygen levels you have, what the heart rate is doing. It depends on the confidence of the person you're supervising to do with the intubation. It depends on what the registrar is telling you. So has he seen the cords, is it because the tube is too big, do we just need a smaller tube.

You see, the decision is that the person who has gone in to try and get the intubation, they've already got a visualisation of some -- for example, seeing the cords but the tube just not going through. So the decision to take over could actually mean that that is the wrong decision as opposed to you can see that your registrar is likely to get it with the next attempt, so you're going -- and the baby's stable, so you're going to give him another attempt. That's how -- that's what I would do and what any consultant supervising a registrar would do.

MYERS: To put in into the real world, of course, you're against the clock here, aren't you, because you need to get the baby breathing properly?

SMITH: No, no, the baby is breathing properly through the mask, which is why the heart rate has improved and which is why the oxygen saturations are greater than 85% at 6 minutes and then over 90% before you're doing the intubation. The baby is stable from bag -- just bagging through the mask. So you're giving mask ventilation.

That's a very important principle in neonatal life support. Intubation isn't necessarily the critical thing to fix the baby's breathing: you do mask first, and then if the baby is stable with the mask, then the baby is stable. So you want to get a definitive airway in this gestation, but it's not -- what you're saying with time critical, that's not the case.

You obviously can't leave it without a tube for -- it's hard for me to put a time on it. If you've stabilised the baby with the mask, the baby is stable with the mask, and then you are safe to do the intubation after that.

MYERS: Isn't the guidance that intubation should be within 15 minutes of birth?

SMITH: According to the notes, there's two different time figures to do with the intubation. The nursing notes state that it was at 12 minutes. Dr Jayaram's --

MYERS: Can I just ask this first of all, we'll come to the notes: the guidance is that it should be done within 15 minutes, isn't it?

SMITH: I'm sorry, I can't answer that one because I haven't heard that specific figure that you've just quoted.

MYERS: Is there any guidance?

SMITH: Again, I haven't heard a number put on it myself.

MYERS: Right.

MR JUSTICE GOSS: Guidance from where? What's the source of the guidance?

MR MYERS: Standard practice is that it should be within 15 minutes.

SMITH: Which standard practice from where?

MYERS: If it was a tertiary unit, for example --

SMITH: But where -- which -- quote which guideline? That's fine, I'm not saying it's not, but what I'm saying is that I haven't read a specific guideline for that, so it would be helpful to know which guideline if that's the case.

MYERS: I will check that and I will find the material I rely on to put that to you.

MR JUSTICE GOSS: Come back to it. When the doctor's saying is he's not familiar with that, perhaps if he's referred to particularly what the source of it is, it may assist.

MR MYERS: You're a consultant now, aren't you, Dr Smith?

SMITH: I'm qualified as a consultant and I have worked as a locum consultant, yes.

MYERS: And you have been working in secondary units for a long part of your career, haven't you?

SMITH: I've worked in level 2 neonatal units extensively.

MYERS: Are you familiar with the guidelines that apply to the way that children should be treated in units that care for them after birth?

SMITH: Yes.

MYERS: Right. I will endeavour to seek the source of the 15 minutes, but can I just confirm, that is news to you?

SMITH: I have not heard of a specific figure put on it, I can say that. But if there is, then I accept that.

MYERS: Right. In any event, you were about to say, were you, that there's two different timings when the intubation was achieved? Were you going to tell us that?

SMITH: According to the note, it says -- the nursing notes say intubation at 12 minutes and then Dr Jayaram's notes say "around 20 minutes".

MYERS: Very well. I should say lest there be any concern, since this witness and your Lordship have raised it, the figures I come from come from (sic) a witness called Dr Babarao who's a tertiary consultant who will be coming to give evidence tomorrow. So lest there be any concern where 15 minutes came from --

MR JUSTICE GOSS: There's no concern about it, Mr Myers, it's just a question of where it comes from.

MR MYERS: Of course, I understand.

MR JUSTICE GOSS: Whether it is particular, specific guidelines or what. Anyway, we're going to hear about that from another witness?

MR MYERS: Yes. Either I or the prosecution will establish where the 15 minutes originates from, but that comes from his evidence, in fact. Page 2955, my Lord.

MR JUSTICE GOSS: Thank you.

MR MYERS: Let me turn to some of the other timings then and see if you're in agreement. You've recognised the principle of the golden hour, haven't you?

SMITH: Yes.

MYERS: Actually, putting aside the golden hour, surfactant is essential when dealing with a baby like [Baby K], isn't it?

SMITH: Yes.

MYERS: What time period do you say surfactant should be given within?

SMITH: Surfactant, in my practice, can be given after you've secured the intubation initially at the resuscitation or it can be given when you first reach the neonatal unit and then you can give it there on the neonatal unit.

MYERS: If I suggest to you surfactant should be given within 5 minutes of intubation, do you agree or disagree with that?

SMITH: Um... Again, I haven't heard a specific figure put on that, I have to say, but my practice would be to give it -- my own practice would be to give it as soon as it's safe to do so and as soon as you have a secure airway that you're happy with. And from practice you would give it after you've intubated, sometimes at the Resuscitaire and sometimes when you've moved the baby to the neonatal unit it's given.

MYERS: Can we look at tile 36, please, Mr Murphy. A record you can see there, Dr Smith. The first surfactant was given at 03.00, wasn't it?

SMITH: Can you pull up the whole thing or is it...?

MYERS: Yes, we can go behind that and look at the tile.

If we scroll down. Can you see under "Administration history details" towards the bottom of the page?

SMITH: Yes. The only difficulty I had when I was reviewing the clinical notes is they have an electronic prescribing system at Chester so I wasn't sure whether, because it was wrote on this electronic prescribing system, that was the time it was given or that was the time it was entered into the electronic prescribing system. That was the difficulty I had in terms of determining when different things were given because of the electronic prescribing system. Was it given before and then now it's been entered on to the electronic system?

MYERS: I'm relying on material as it's presented here in this schedule and by the prosecution and by that document.

We've got it down at 3 o'clock; do you see that?

SMITH: For Dr Jayaram's notes, does it say at all when it was given or the order of events to do with when it was given, because that might help?

MYERS: There's an order there, but I'm interested to ask you about timings.

SMITH: I mean to do with -- in terms of determining timings, is there an order on the clinical notes from Dr Jayaram, which might indicate when it was given? Because from the notes, I think it was difficult for me to tell, was it given straightaway on the Resuscitaire or was it given once we got to the neonatal unit? I did find that difficult and the electronic prescription didn't really help me in determining that.

MYERS: What I'm interested in, we'll come to the notes if we need to, is whether there is a time at which surfactant should be given and you agree there is really, isn't there?

SMITH: Surfactant, like I've said, should be given as soon as it's safe to do so and it can be given either on the Resuscitaire or on the neonatal unit once you get there.

MYERS: Half an hour's delay after intubation or 40 minutes' delay is too long, is too long, isn't it? That's my question.

SMITH: What do you mean by too long? Where are you getting that information from?

MYERS: Do you not understand the question? It's not optimal, Dr Smith.

SMITH: If the surfactant was given at 03.00 hours and that is -- you have a baby that is stable in terms of their ventilation, so they've got good air entry, their oxygen saturations are good -- the purpose of surfactant is to improve lung compliance so you get good oxygenation. If you have good oxygenation already then the surfactant is obviously going to help the baby. If you have already achieved good oxygenation I would say that has the surfactant given at 03.00 hours altered the clinical course? I would say if you've achieved good oxygenation, I would say no. But if there is guidelines for you should be giving it at a certain time, I would accept that. Like I have said, best practice, ideally you would give it as soon as possible.

MYERS: If a central line, a UVC or UAC, has to be set up, is there a time period within which that should be done from birth, Dr Smith?

SMITH: The first thing to do when you get to the neonatal unit is to secure a venous access or an access. So the first access with this baby was a venous cannula because you can give fluids and you can give antibiotics through that cannula. If you just go directly for a UVC, which you can, you would do that in an

emergency if you needed to give the baby adrenaline, for example. But if you go for the UVC first without having got a cannula, then the blood sugar could drop of the baby and you're not able to give any fluids. That's why cannula was done first and then UVC.

MYERS: Right.

SMITH: What you're going to give through the UVC is the same medicines that you're going to give through the cannula, so you're going to give antibiotics and you're going to give fluids. Obviously, once you've got a cannula you're going to try and get a UVC, so central access.

You could get a UVC first, you could just go directly for that, but there's a risk of -- the baby's blood sugar in the meantime of getting that UVC could drop because you need to get an X-ray after getting a UVC.

MYERS: You told us that the tertiary unit said that a central line should be put in, they requested that.

SMITH: Yes. All babies of this gestation would have -- it's okay to do a cannula first. Then you would get the central access and all babies of this gestation would have central lines put in -- attempted and put in.

MYERS: Now, if we look at the notes, we're going to look if we could, please, dealing with the issue of the central line at tile 65, please. If we go behind that.

We know this is the note that was done retrospectively by Dr Jayaram at 04.50. This is towards the end of that note. If we scroll down, please.

SMITH: Oh, sorry, could you just scroll up for one second? It says there:

"On arrival, given 120 milligrams surfactant at 02.45."

MYERS: That's what it says there, that's right.

SMITH: Okay. So that means -- the other one said 03.00 hours, but this is 02.45 documented. Just to make everybody aware of that.

MYERS: That's exactly what it says there. Let's go down to the bottom. This is Dr Jayaram's note, isn't it, this clinical note?

SMITH: Yes.

MYERS: If we scroll down, please, we can see -- a little bit further down to the following page:

"Plan: await line placement, then contact transport team."

Can you see that next to "plan"?

SMITH: Yes.

MYERS: When it says "await line placement", is that referring to the central line, whether it's a UVC or a UAC?

SMITH: Yes, that's what's referred to there, yes.

MYERS: Right.

SMITH: The only thing, though, that -- the transport team was -- somewhere it's wrote that the transport team advised the lines. There it's wrote line placement then contact transport team. Perhaps the transport team had already been contacted. We would always put in the central lines anyway and we would always contact the transport team, so those two things should be done and they were done.

MYERS: If we scroll down to see, if we can, when this line was put in. Go to the bottom of the page. If we look here, Dr Smith, we can see -- if we look at the entry for 07.50, just across from there it says:

"Jayaram [something] UVC inserted by Dr Smith. UAC would not pass."

Can you see that?

SMITH: That's correct, yes.

MYERS: We know the note before that, if we look one up, is 05.40 am, isn't it? Can you see that? Can we all see where it says "17 Feb 2016, 05.40, written in retrospect"?

SMITH: Yes.

MYERS: You see that. So that means that the line was placed at some point between 05.40 and 07.50 or 20, whatever that is; do you agree?

SMITH: Yes, that's what the notes support.

MYERS: So the central line was put in several hours after [Baby K] her born, wasn't it?

SMITH: Well, putting in a central line is difficult. As to the timing of that, it's -- you see you have to do -- putting in a central line in this circumstance, you have to do it with sterile conditions, which means you need a sterile pack, you need the baby to be stable to be able to do the procedure. You need to have assistance putting it in. It's technically very difficult, it takes time to put in. Then afterwards you have to get an X-ray to check the position before you can use it.

Like I've said, that's the reason for securing a venous cannula first because then all this time you're still able to give the other things that you should be giving and then you can get the central lines.

If you go straight for central line you're not able to give the fluids or the antibiotics and so the decision to do cannula first is correct. The time it's taken to put in the line shows it was technically difficult to get in the line and maybe the baby wasn't stable enough at that time. And also you do need an X-ray, is how -- what I can say for that.

MYERS: You have just told us that putting the line in is difficult; yes?

SMITH: At this gestation, we are talking about a line that is a millimetre in thickness and you're putting it into the umbilical cord, which is -- umbilical vein, which is also about a millimetre across or 2 millimetres at the most, and you have to do everything under sterile conditions, so you don't introduce an infection. So it's a procedure that does take time if you're doing it in sterile conditions. If you're doing it in an emergency then that's different, but this is what's called like a -- it's a non-emergency UVC because you're putting it in under sterile conditions, which takes time. If you're doing an emergency one, then you wouldn't do the sterile, but then there's a risk of infection if you do that.

MYERS: It's because this is difficult that it should be dealt with by a consultant neonatologist at a tertiary centre, isn't it, ideally?

SMITH: I feel like that question -- what's the -- what do you mean by that? Can you clarify?

MYERS: I have just asked you the question. That should be done by a consultant neonatologist at a tertiary unit?

SMITH: If a -- like I've said, to do with -- a procedure to do with this kind of this gestation of neonate, you would ideally want that baby to be born at a tertiary neonatal unit. However, that's not always possible. So when it's not possible, you have

to use the most experienced senior staff you have. Level 2 units are equipped to deal with babies of this gestation, and that's what was done.

So you would put in a UVC in this situation because the baby hasn't been born at a tertiary neonatal unit.

The situation you're presented with is this baby has been born at a level 2 neonatal unit and you would still put the lines in in a level 2 neonatal unit in accordance with what this baby needs at this gestation.

So that's what was done.

MYERS: When I asked you a question, you said it was difficult.

The question I asked you was whether the period of hours that had passed between her birth and this line being put in, let me put it this way, was optimal or was it sub-optimal?

SMITH: Sub-optimal in reference to what?

MYERS: Was it too long?

SMITH: Too long for what?

MYERS: The line to have been put in.

SMITH: In terms of a compromise to the baby? No.

MYERS: Outside what the appropriate period should be.

SMITH: Meaning -- appropriate period meaning what?

MYERS: I'm just asking. Please answer that, Dr Smith.

SMITH: I can answer that the baby will not have been compromised by the UVC being inserted during that time period as opposed to a shorter time period. The baby wouldn't have been compromised.

MYERS: Let me remove the question of compromising. Should the optimal time period be shorter than the 2 or 3 hours that passed for that line to be inserted?

SMITH: It depends on what's happening to the baby in terms of airway as to whether or not you go to circulation.

Because in terms of resuscitation, you do ABC. So with [Baby K], this baby has needed re-intubating during that time because you need to prioritise airway over circulation. Circulation is still being supported adequately by the venous cannula that was put

in. So the correct thing to do in the period of time that you're talking about is to prioritise airway and make sure airway and breathing are okay. And then the lines being put in can be done because there's no compromise to the baby for the lines not being put in any sooner.

MYERS: Do you agree that under the principle of the golden hour, an umbilical line should be inserted within 60 minutes of admission?

SMITH: My understanding of the golden hour is that you get venous access and a venous cannula is sufficient for that. I just -- I feel like it's important that the jury understands there is no difference in terms of venous access in terms of a cannula -- in terms of medicines you can give initially through a cannula versus an umbilical venous cannula. So the medicines that are given initially to a baby of this gestation can be given through a cannula. And then, after that, you secure a UVC, so you can give inotropes if needed.

However, so inotropes -- inotropes improve blood pressure. However, inotropes can also be given peripherally if necessary in a baby. So there isn't a medicine that couldn't be given through the cannula as opposed to the UVC.

Now, the UAC is to measure blood pressure. You can measure blood pressure peripherally. The UAC helps you to measure that centrally. So until a UAC is inserted, you can't measure central blood pressure but you have peripheral blood pressure.

MYERS: I asked you also about antibiotics and suggested they should also be given within that first hour of birth, do you agree, under the golden hour principle?

SMITH: I agree, and having reviewed the notes I can see that that wasn't achieved and I -- you can -- I'm sure you can give exact timings for that and I have noted that as well.

MYERS: I'm using the same material as I'm using for the surfactant. That's at tile 79, Mr Murphy. Then tile 80. Just so we can see it, Dr Smith.

There we are. These are certainly the electronic prescriptions that are recorded on the system. We've got gentamicin at 04.40 and benzylpenicillin at 04.40 on those. They should be by about 03.12, shouldn't they, if birth was 02.12?

SMITH: Yes, I agree.

MYERS: So this comes some time outside of that window doesn't it?

SMITH: Yes, this is sub-optimal. Again, I'm just concerned about the electronic prescription, but however this is what it states. Antibiotics should ideally be given in the first hour. But I have no memory as to why there was any delay in those antibiotics being given. But yes, according to the golden hour, antibiotics should be given within the first hour. At the point they were given, they're still going to be effective but they should be given in the first hour. What I note as well though is the marker of infection was less than 1 in [Baby K] so there's no sign, according to the blood tests, of immediate infection. But yes, I agree, the antibiotics should be given ideally in the first hour and I haven't a memory as to why they were not given in the first hour.

MYERS: The same goes for vitamin K, as it happens, doesn't it, in terms of giving it in the first hour?

SMITH: Vitamin K, again, yes, you should give that in the first hour. I don't know the time off my memory for that.

MYERS: Is vitamin K the same thing as phytomenadione?

SMITH: That's correct.

MYERS: And if we look at tile 73, that's the first time that appears on our schedule for this. We can see what time that was given, again the same electronic prescription.

We may need to go behind it just to confirm the mediation.

SMITH: It says 04.20 there.

MYERS: That's right. So phytomenadione (paediatric), that's the vitamin K, isn't it?

SMITH: Yes, I prescribe it as Konakion or vitamin K, yes.

MYERS: If we look towards the bottom, 04.20 is when that appears to be administered; do you see that?

SMITH: I do, yes.

MYERS: Which again is outside the recommended period to give vitamin K, isn't it?

SMITH: Um... Vitamin K should be given as soon after birth, in the golden hour, yes, so I would agree with that, yes, it should be given.

MR MYERS: I'm going to return to the ventilator issues and I wonder if we have a break, whether this is the best time to take that break. There's a little way to go yet.

MR JUSTICE GOSS: We will have a break. A ten-minute break, please.

(3.12 pm)

(A short break)

(3.22 pm)

MR MYERS: Dr Smith, before I carry on I just want to ask you one thing about the EPiCure 2 study that you referred to. It is a study, is it, by Marlow, Bennett, Draper, Hennessy, Morgan and Costeloe? Does that sound familiar?

SMITH: I'm sorry, I don't know the names, but yes.

MYERS: It's headed:

"Perinatal Outcomes for Extremely Preterm Babies in Relation to Place of Birth in England: the EPiCure 2 Study."

SMITH: Mm-hm.

MYERS: And you have given us what the morbidity rate is. Did that study also find that, when compared with level 2 services, risk of death in level 3 services was reduced?

SMITH: If that's correct, that's the case then that's fine.

I don't know the whole study off by heart, I should say.

MYERS: That's included in the findings. But if we need more, we can put more in, but I wanted to ask you about that.

SMITH: I didn't know that fact to hand, but if that's the case, then that's okay.

MYERS: It goes on to say that:

"The proportion surviving without neonatal morbidity was similar."

Just to complete that anyway. I just wanted to ask you that, thank you.

Coming back to the intubation, could we look, please, at tile 29, which is the first page of Dr Jayaram's notes. Just go

behind that, please, Mr Murphy. If we scroll down to where we actually deal with the intubation, Dr Smith. We've got "Successfully intubated" and it says:

"Approximately 20 mins at third attempt by Dr Smith. Size 2 and secured at 6.5 centimetres with clips."

You mentioned to us that your recollection is that you tried with a size 2.5 first.

SMITH: I... I believe that's what happened. I don't have very specific memories, but I think probably that's what happened. It's so long ago, it is difficult for me to say.

MYERS: Right.

SMITH: Yeah.

MYERS: I just ask because if it's the case that different widths or gauges of tube were used, would you not expect that to be recorded in the notes so there's a record of what was done?

SMITH: Um... that's why it's difficult for me to say because it's not wrote in the notes, but I think I have a memory that that might be what happened. So you'd use -- if you used a bigger tube first and you're not successful, then you switch to the smaller one. The other reason is that you have standard sizes that you would use at different gestations. And a 2.5 at this gestation you would go for first. Then if that's not successful, you would try a 2.0, which is the smallest tube size.

MYERS: Did you become aware that there was actually an air leak around this ETT after it had been fitted?

SMITH: Yes, that's been -- on my third statement I was asked to make a response to a question about air leak.

MYERS: All right. Just so that we can see what that relates to, I'm going to ask if we could put up the intensive care chart at tile 68, please. Just go behind that, please, Mr Murphy.

We're getting familiar with these charts, Dr Smith.

This is the chart setting out the aspects of the care given to [Baby K]. I'm going to go across to the left-hand side of the chart. We're going to see if we can enlarge that.

We actually have an entry for the leak halfway down.

Is it possible to enlarge the left side, when you're able to, Mr Murphy? Thank you.

Just before we go to any particular entries, just to get our eyes in, can you see the first entry appears to be timed -- the time is 03.30?

SMITH: Yes, I've seen it, yes.

MYERS: It's initialled down at the bottom. The first one I would like to go to is where it says "leak" almost halfway down.

SMITH: Yes, it says 94.

MYERS: 94, all right. If we could look at that. We've got 94, then in the times that follow, we've got 5, 4, 6, 7, 11, 14. 94 is 94% of that air leaking, isn't it?

SMITH: Well, I -- the thing is when I was asked specifically to answer this question, in terms of what percentage leak means or that number, I don't know exactly how to answer that. So I said they needed to get an expert opinion about that. I think it would depend also on the ventilator machine.

What I can say about that is that the baby's first blood gas, which was at 03.03 hours, was good. So pH 7.22, PCO2 of 7. So that will be with the same air leak that is there. Also, if you scroll down on that same chart -- so probably zoom out, then if you look at the percentage, so SaO2, so that means the oxygen saturations of the baby, it's 94%. And it's with 49% oxygen, which is a reduction. So 49% oxygen being given to the baby and you've got 94% saturations of the baby.

That is a reduction from what was on the Resuscitaire in the delivery suite.

So basically, the oxygen that the baby is needing has come down and the baby's oxygen saturations are good. The first blood gas is pH 7.22 with a PCO2 of 7, which means carbon dioxide is also good. So that was at 03.03 hours. But what the number 94 in terms of air leak means, it's not correlating with how the baby's condition is. So that's why I think it's important to -- if you want further clarification for what air leak means in terms of clinical consequences is to get more expert opinion.

But at this stage with that air leak, the baby's blood gas is good at 03.03. The oxygenation is good and the oxygen requirement has actually come down.

MYERS: Does it mean on the face of it, I hear what you say about the oxygen saturation, that in fact 60% of the oxygen -- sorry, 6% of the oxygen required is getting through?

SMITH: No. I don't think that's what it means. But you can -- please feel free to call a tertiary neonatologist or someone who designed the ventilator. But 6% of the oxygen can't be getting through to that baby to give oxygen saturations of 94% with a blood gas that has an PCO<sub>2</sub> of 7. It's not possible.

MYERS: Your view was that a high leak is a warning indicator on neonatal ventilators and it means that around the endotracheal tube ventilated gases are leaking so the tube may need replacing with a larger tube?

SMITH: Yes. That's what I've -- I included in my third statement there's two quotations that I found to do with what air leak means and that's what the quotations described that it's a warning indicator. In terms of what the number actually means is another thing. So more important than the number and the leak is the condition of the baby at the time, and the condition of the baby at that time was, like I've described to do with the blood gas and the oxygen requirement, stable.

But if you detect a high -- if you see a high leak then that means there is -- I mean there is a leak occurring, so changing the tube when it's safe to do so to a larger size is something to consider. But intubation in these babies is very difficult and it did take three attempts. So if you've got a tube that is functioning with a baby with good oxygen saturations, a good gas, that means the tube is working, so the decision as to when to switch to a bigger tube is -- well, it's a judgement, isn't it? You know you've got good oxygenation and a good gas, so there's no -- from those two things what I would say is there's not an immediate need to change that tube to a larger size.

A tertiary neonatologist might give you a different opinion to do with that, but that's -- the best of my knowledge is what I can say.

MYERS: Thank you for that. I'm going to keep this bit on the screen in front of us because the next figure down is resistance. Do you see that, the figure for resistance?

SMITH: Yes.

MYERS: Do you understand, I don't say that to be rude, what that relates to?

SMITH: No, actually, I have to be honest. I have not -- again, maybe a tertiary neonatologist who's more experienced with ventilators would be able to give a better idea.

MYERS: The "VTE" above leak, is an abbreviation for tidal volume; is that correct?

SMITH: I believe so, yes.

MYERS: Are you comfortable explaining what 0.4 at 03.30 means in relation to what follows afterwards?

SMITH: No. Again, you need a tertiary neonatologist.

MYERS: Let's move then on to the events at about 03.50 --

MR JUSTICE GOSS: Sorry, can I just ask? These readings come off the ventilator machine itself or...?

SMITH: I believe so, yes. Yes. They're on a touchscreen monitor and I think this can all be recorded from a ventilator. But there's different ventilator machines at different hospitals, you see. So what I said in my statement was to really know exactly what these numbers to do with this mean, you'd need to -- I would have thought you would need to get the person who knows about this exact machine from the people who designed the machine. So just to give -- I mean, they could give broad -- but I think there are different ventilators at different hospitals, you see, so that's the...

MR JUSTICE GOSS: Right. Thank you. I just thought it was worth clarifying at this stage whilst it's all fresh in our minds.

MR MYERS: Thank you.

I'll move from that then, Dr Smith, to the event at --

SMITH: I'm sorry, just one more to add. Perhaps Dr Jayaram would be able to add more about these numbers that you've asked me about because I'm not able to explain fully, so...

MYERS: I'm not asking you any more about them. I'm going to ask you about what happened or your involvement in what happened round about 03.50, which is the first part of the events that you were asked about after [Baby K] had been intubated and settled down.

You described to us -- there's a series of possibilities that go through your mind, Dr Smith, as to what the cause could be of the ventilation not working properly in a situation like the one you dealt with; is that right?

SMITH: That's correct, yes.

MYERS: Okay. Now, one of those issues was blockage; is that correct?

SMITH: Yes.

MYERS: You checked the tube, there was no blockage?

SMITH: I have no memory of that.

MYERS: The positioning of the tube is another issue that can affect whether air is travelling through?

SMITH: Yes, that's correct.

MYERS: Where it is in relation to the trachea; is that correct?

SMITH: Yes.

MYERS: Once you investigated this, you removed the 2mm tube that had been used, didn't you?

SMITH: Yes.

MYERS: Was that then replaced by a 2.5mm tube?

SMITH: Yes.

MYERS: And you performed that re-intubation; is that correct?

SMITH: Yes, that's correct.

MYERS: Did it seem that that larger tube appeared to be working better than the narrower tube that had been in beforehand?

SMITH: I mean, it was working -- the larger tube, the narrower tube at that point was not working. It was working before that, but then it wasn't working. Then once removed, you put the bigger tube in and, yes, it's working.

MYERS: When you came to put the second tube in, you described that you gave [Baby K] morphine at that point.

SMITH: Yes.

MYERS: The purpose of that is -- is that to in effect relax her and settle her so the intubation is easier to perform?

SMITH: Yes, that's correct.

MYERS: Does it have a sedative effect upon her?

SMITH: Yes, it would, yes.

MYERS: You then performed an X-ray, is that right, after the second intubation?

SMITH: Um...

MYERS: After the re-intubation?

SMITH: Can I just check my own notes?

MYERS: If it assists, yes, of course.

SMITH: I believe the first X-ray was performed at 06.07.

MYERS: Right.

SMITH: So the second intubation was performed quite a few -- a bit before that. Because the second -- the first X-ray was performed after getting the umbilical lines.

So you've done the re-intubation to preserve the airway and then that's the reason why you then do the central lines later because you have to do the airway first.

Then the central lines were put in, like the UVC was put in, and then I believe the first X-ray is at 06.07.

That's to check the tube position and to check the line position as well.

MYERS: All right. I'm going to ask to put up, if we could, please, tile 65 to look at what happens later on. Just go behind that, please. Scroll down to the bottom of that page and on to the next page, please, Mr Murphy.

Just looking at the two later incidents.

Can you see there, just towards the bottom of that page, Dr Smith, at 06.15, "Began to [something] lower sats"? Do you see that?

SMITH: Yes, I can see that, yes.

MYERS: We know that that happened at 06.15. It also happened again at about 07.25, didn't it?

SMITH: Can you scroll to the next...?

MYERS: It may not follow on straight from here so I'm going to ask Mr Murphy to go to tile 106. That follows on.

MR JUSTICE GOSS: I think it says, "Began to have lower sats". That would be my reading of it.

SMITH: That's what I've wrote in my statement:

"So at 06.15 the baby began to have lower saturations again and reduced tidal volumes. Blood gas 06.24 showed pH 7.073, PCO2 of 12. In view of low blood pressure normal saline bolus given, 20ml per kilo. In despite of this, saturations reduced to 75."

So at that point the ET tube was pulled back to 5 centimetres to see if that improved ventilation. But it says:

"Saturations continued to drop so ET tube was removed and I re-intubated with a size 2.5 on first attempt this time."

MR MYERS: We can scroll down with that in mind. So 6.15, we've seen, "Began to have lower sats". Carry on down on to the next page. Pausing there, we've got the blood gas figures. Beneath that, reference to the -- is that the saline?

SMITH: Yes:

"Given 20ml per kilogram saline bolus as mean BP 20. In spite of this, sats to 75. Tube pulled back to 6 centimetres", it says.

MYERS: Yes.

SMITH: "Sats dropped further. Therefore extubated [I believe that says]."

What does that say?

"Responded to bagging."

So bagging again. So that's what you do. Then the baby's come up again with the sats, which means that airway is working. It was just -- again, there's another problem with the tube. Then the baby's re-intubated with a 2.5 by me.

MYERS: On this occasion, the entry says:

"Tube pulled back [can you see] to 6cm. Sats dropped further."

Changing the position of the tube didn't seem to resolve the problem; is that what that comes to?

SMITH: Yes, that's what looks to be an attempted -- the tube position before should have been 6.5, but it's been pulled back slightly to see if that improves things, even though the actual X-ray position is satisfactory, but I mean just to see if that improves matters, but it hasn't, so --

MYERS: All right.

SMITH: -- that's why I re-intubated.

MYERS: Then at 7.25, if we go down to that one, we see the first thing -- is that:

"Mean blood pressure dropped to 14..."?

SMITH: Yes, that's what that says.

MYERS: "... so further saline given. Sats increased to 94%. Then sudden drop in heart rate, dropped to below 100."

SMITH: Yes, that's what that says.

MYERS: As we continue reading that, you put, "Switched to" -- is that IPPV, is that the Neopuff?

SMITH: This is Dr Jayaram's writing, but yes, Dr Jayaram's wrote, "Switched to IPPV", so Neopuff. That means we're giving manual breaths as opposed to the ventilator breaths to see if that improves matters. Because the heart rate's dropped that's why cardiac compressions have been given but then it says:

"Tube noted to have slipped at 8 centimetres."

So the cause for that deterioration with the cardiac compressions from what I can see from the notes appears to have been that the tube has slipped, which it can do through the clamp that you have your -- the plastic clamp. And for that particular deterioration, the cause seems to have been that the tube has slipped down and when it's pulled back it says, "Heart rate picked up immediately", so...

MYERS: That covers what I wanted to ask. Repositioning the tube resolved that issue?

SMITH: Repositioning the tube in this deterioration, this instance, is the thing that has solved the problem.

MYERS: Right, thank you. That concludes what I wanted to ask you about the notes with regard to the tube.

There's just one other area I'd like to ask you about and that's what you were saying about what you see or don't see by way of trauma on intubation, so any damage or any secretions or blood in the trachea.

The tissues of a neonate in that area are delicate and they can bleed slightly even if there's contact with the tube; is that correct?

SMITH: Yes, that's correct.

MYERS: You had a good view into [Baby K]'s area of the cords when you were intubating; is that right?

SMITH: Yes, that's correct, direct visualisation.

MYERS: And to the best of your recollection, you certainly didn't notice and you don't recall any injury?

SMITH: To the best of my recollection, I don't recall any injury. If I had seen an injury or blood or significant blood, I would have asked my consultant to take over at that point because it's something that means that the intubation's going to be technically more difficult.

I know that I would have -- if I'd seen something -- there might have been something there, but I just hadn't seen it, but if I'd seen something I would have asked him to take over, which is why I don't have any memory of seeing an injury and, second, I know that I didn't see one at the time and I've just forgotten because I would have asked him to take over.

I do note that just to say -- the nursing notes do say about bloodstained secretions. But again, I don't have any memory of that for myself when I made the statement.

MYERS: What you worked with is, first of all, independently you don't have any memory, and secondly you're confident that had you seen something like that, it's the sort of thing where you would have asked the consultant to step in, and since you didn't do that, that makes it less likely that there was anything to ask him to step in for?

SMITH: That's what I believe, yes.

MYERS: And certainly the clinical notes don't document any type of secretion or anything like that in the trachea, the sort of thing you're talking about?

SMITH: Um, the notes don't mention -- the nursing notes mentioned large amounts of bloodstained secretions and that's

noted before I've performed the second re-intubation. What I was thinking when I was looking at that note is -- the best thing to do would be to ask the nurse who actually made that entry to see whether she could remember what's meant by that, how much blood, how much secretion. All babies will have secretions, but how much blood was there, what she actually saw -- but for me, myself, I don't remember there being an injury that I could visualise or significant blood that meant that I'm saying to my consultant, "I want you to tube this baby, I feel it's better that you intubate this baby rather than me".

MYERS: To be clear with the chronology, you performed the intubation that followed that report of whatever it was that was seen?

SMITH: Yes. That's another reason that makes me think that I didn't -- I mean, I wouldn't have seen anything worrying because I've then been confident enough to re-intubate the baby and I've performed it successfully again after that.

MYERS: This isn't what you're saying, so this is a hypothetical question, a matter of practice now, Dr Smith. If you were performing an intubation on the baby and did see blood in the cords before you did that intubation, is that something that would make you stop and pause and check what had gone on if you saw that?

SMITH: Check what had gone on? What do you mean?

MYERS: At least investigate, if you can, what the source of that blood is or take a look at what it is.

SMITH: It would depend -- because like you've said blood is possible just from touching the oropharynx, like for example a minimal amount of bleeding. I think it would depend on the amount of blood, so it it's a small amount -- you see, the phrase "large amount of bloodstained secretions", does that mean large secretions with a bit of blood in or does it mean large amount of blood with the secretions? To me it would depend on the large of blood seen, the amount of blood in the secretions as to how concerned you are at the time to look for a cause.

Like I said, I don't remember the bloodstained secretions, I don't remember how much blood was in the secretions because I don't remember that and I can't say and I didn't see any injury myself when I was doing the intubations. I have no memory of that and I would have told my consultant if I'd seen anything.

MYERS: If you saw blood or bloodstained secretions prior to commencing an intubation, is that something that you, as a

matter of good practice, would make a note of in your record if you were making the note?

SMITH: If I was making the note and I had done the intubation and I had seen secretions that had blood or anything, I would, best practice, make a note of that and put that in my notes, yes.

MR MYERS: Thank you, Dr Smith.

Re-examination by MR DRIVER

MR DRIVER: Just one area of re-examination. Dr Smith, you were asked questions about the relationship in time between intubation and the giving of surfactant. So let's just consider the timeline, please. Mr Murphy, if we begin at birth, which is our tile 27, which records the time of birth at 02.12.

Then if we could go to tile 29, please, and look at the clinical note beneath that tile. Can you scroll down until we get to the point of intubation at the third attempt? There we go:

"Successfully intubated at approximately 20 minutes."

Is that 20 minutes after birth?

SMITH: Yes. So this clinical note says around 20 minutes. The nursing note says at around 12 minutes. And those are the two documentations of time as to when the intubation occurred. And it will be 20 minutes after birth, yes.

DRIVER: From birth. So let's take both possibilities then.

That is either at 02 -- what do the nursing notes say, did you say 12 or 14 minutes?

SMITH: The nursing notes say 12 minutes, the electronic nursing --

DRIVER: So it's either at 02.24 or, if we take the 20 minute time, intubation at 02.32. If we could keep going down this page please, the screen, please, Mr Murphy, to the next page. Thank you. We can see there -- on our page J17036, we can see according to the note:

"Given surfactant at 02.45."

Can we?

SMITH: Yes. So that's the time according to the clinical notes that surfactant was given.

DRIVER: You were asked this question:

"Question: Half an hour's delay after intubation or 40 minute's delay is too long, isn't it?"

That was the question that was put to you. As a matter of practice, would you agree that a delay of 30 or 40 minutes between intubation and the giving of surfactant is too long as a matter of principle?

SMITH: I would say that the purpose of surfactant is to improve the oxygenation of the baby. Ideally you would give it as soon as you can, as soon as it's safe to do so.

I have seen practice where it's given on the Resuscitaire, I've also seen practice where it's given once the baby's arrived on the neonatal unit. Because you also don't want to delay the baby getting to the neonatal unit because it's a safer place to be than in the delivery suite, but the purpose of surfactant is to do with oxygenation and the baby's oxygenation was fine on the Resuscitaire before we moved the baby, while we were moving the baby to the neonatal unit, and then once we got to the neonatal unit. So all throughout oxygenation is fine.

The purpose of surfactant is to improve the oxygenation. So as to the 30-minute delay, has that caused any compromise? I would say no. But I can accept that giving surfactant as soon as possible, as soon as it's safe to do so, is good practice.

DRIVER: As a matter of fact, do you accept that there was an inappropriate delay in the giving of surfactant after intubation in the case of [Baby K] that morning?

SMITH: (Pause). If I was dealing with a baby of this gestation, I would -- if the surfactant was available, if it was safe to give the surfactant to the baby on the Resuscitaire before moving the baby, then I would give the surfactant on the Resuscitaire before moving the baby. That's the best answer I can give to that, I think.

MR DRIVER: Thank you.

Does your Lordship have any questions for Dr Smith?

MR JUSTICE GOSS: I don't, thank you.

MR DRIVER: This will be Dr Smith's only visit to court.

MR JUSTICE GOSS: Thank you very much for giving your evidence today, Dr Smith. That completes it. You're free to go. Would you

please not talk to anyone about this case or anything to do with this case and therefore any of the babies that are involved with anyone?

SMITH: That's fine, yes.

MR JUSTICE GOSS: Thank you very much.

(The witness withdrew)

MR DRIVER: The next witness is nurse Joanne Williams.

MR JUSTICE GOSS: Yes. Well, I don't know far you're going to get this afternoon, but we'll make a start, I think, because she's...

(Pause)

I gather that this is a witness who has special measures.

MR DRIVER: That is the position. Apologies, screens are required. I'm told the witness can come back tomorrow.

The reality is there's no prospect of us completing her evidence today.

MR JUSTICE GOSS: No. Well, we'll make a start. Just a few minutes, please, members of the jury.

(Pause)

MS JOANNE WILLIAMS (recalled)

Examination-in-chief by MR ASTBURY

MR ASTBURY: It's some time since you last gave evidence, so could you remind us of your name for the record?

WILLIAMS: Joanne Williams.

ASTBURY: We heard on the last occasion that you were employed as a neonatal nurse at the Countess of Chester over the period which this jury are interested in, and you know you have come along today to assist us with events in the early hours of 17 February 2016.

WILLIAMS: Yes.

ASTBURY: Were you working a night shift at that particular time?

WILLIAMS: Yes.

ASTBURY: Starting on the 16th, around about 7.30, until the same time the following morning?

WILLIAMS: Yes, that's right.

ASTBURY: Thank you. In order to assist, do you have any independent recollection of [Baby K]?

WILLIAMS: I remember her being born and being on the night shift, yes.

ASTBURY: Okay. Have you had the opportunity to look at your notes for the purpose of today's evidence?

WILLIAMS: Yes.

ASTBURY: In that case, perhaps I could assist by starting with tile 21, please. If we can go behind that. We can see -- we're becoming familiar with this, we can see there the consultant, the relevant consultants who were either paediatrician of the week or on call. We can see the doctors on duty on the night shift. The SHO is Laura Lo and the registrar, a Dr Smith. Do you have any recollection of Dr Smith?

WILLIAMS: No.

ASTBURY: More importantly perhaps, we can see the nursing staff who were on duty. Caroline Oakley was the shift leader; do you recall that?

WILLIAMS: I don't. In the statement that I gave, I couldn't remember that night, who was in charge.

ASTBURY: But we can see that you were on duty together with Lucy Letby and Sophie Ellis.

WILLIAMS: Yes.

ASTBURY: The nursery nurse on duty was Valerie Thomas. And you were the designated nurse for [Baby K]; is that correct?

WILLIAMS: Yes.

ASTBURY: Looking at the plan of the unit at the start the shift, we don't see [Baby K] on there because we've heard she was born at about 02.12. We can see there that Valerie Thomas and Sophie Ellis are engaged in nurseries 3 and 4. You had a baby with the initials RN in nursery 2. Lucy Letby with two babies in the same room. And two babies contained in nursery 1, designated to

Caroline Oakley. Are you able to remember any of that or do you need the notes for that one?

WILLIAMS: I don't remember the other baby that I was looking after that night.

ASTBURY: Thank you. Do you recall attending [Baby K]'s birth?

WILLIAMS: I remember being called through.

ASTBURY: Can you remember why you were called through?

WILLIAMS: Well, one of us -- as nurses we would attend any preterm deliveries (inaudible).

ASTBURY: All preterm deliveries or does this one particularly stand out?

WILLIAMS: Obviously, [Baby K] was born at 25 weeks.

ASTBURY: Do you remember whether any doctors were present?

WILLIAMS: Only through what I've written on the notes.

ASTBURY: Have you seen from the notes that it was Dr Jayaram and Dr Smith who attended the birth?

WILLIAMS: That's right, yes.

ASTBURY: If we can go to tile 27, please. We can see there that [Baby K] was born at 02.12. Bearing in mind that she was -- was she more preterm than would ordinarily be the case in the Countess of Chester?

WILLIAMS: Yes.

ASTBURY: So bearing that in mind, who would you expect to have been in the neonatal unit? Who would have been present?

WILLIAMS: Certainly the registrar, one of ourselves as nursing staff, the SHO, and we would have called in a consultant.

ASTBURY: That's in addition, is it, to the staff who deliver the care and baby --

WILLIAMS: Midwifery staff, yes.

ASTBURY: Do you remember what gestation [Baby K] was when she was born?

WILLIAMS: 25 weeks.

ASTBURY: What was at that time, if I can put it this way, the limit of gestation for a baby at the neonatal unit in Chester?

WILLIAMS: 27 weeks.

ASTBURY: Was there, in those circumstances, any reason why [Baby K] was being delivered at Chester?

WILLIAMS: It happens, that obviously mums come in and deliver and it's the safest -- they can't stop the labour, so the baby is delivered and then the plan would be to transfer to a local tertiary unit.

ASTBURY: Was there, do you recall, any choice for delivery in this particular case involving [Baby K]?

WILLIAMS: No.

ASTBURY: Do you remember anything about her birth?

WILLIAMS: No.

ASTBURY: Anything unusual about the way that she was delivered?

WILLIAMS: I know obviously she was -- I remember her being born, footling breech, so she was bruised.

ASTBURY: So footling breech, was that?

WILLIAMS: Yes.

ASTBURY: Okay. We've heard that that means the baby is delivered feet first; is that right?

WILLIAMS: That's correct.

ASTBURY: You mentioned that she was bruised? Tell us a little bit about that, please.

WILLIAMS: I just remember her being bruised on her feet.

ASTBURY: Is that an unusual event with a footling breech?

WILLIAMS: No.

ASTBURY: Have you attended footling breeches before?

WILLIAMS: I have, yes.

ASTBURY: And is that a feature of that type of delivery?

WILLIAMS: I have seen it in the past.

ASTBURY: Okay. Now, once [Baby K] was delivered, where was she placed?

WILLIAMS: She would have been transferred to the Resuscitaire.

ASTBURY: What's the Resuscitaire, please?

WILLIAMS: The Resuscitaire is a piece of equipment in all delivery rooms and that provides immediate resuscitation. It's a warming platform to keep the baby warm at delivery.

ASTBURY: Any equipment alongside the Resuscitaire?

WILLIAMS: Most of it is included on the Resuscitaire, so things like Neopuff.

ASTBURY: Is that equipped for resuscitation if necessary?

WILLIAMS: Yes.

ASTBURY: And for those first few minutes of treatment for a premature baby?

WILLIAMS: Yes.

ASTBURY: Do you recall what condition [Baby K] was in when she was first born?

WILLIAMS: I don't, if I'm honest, I don't.

ASTBURY: Okay. Do you remember whether she was intubated when she was born?

WILLIAMS: Yes. We would expect a baby of 25 weeks to be intubated at delivery.

ASTBURY: Do you happen to remember what size tube was used to intubate [Baby K] when first she arrived?

WILLIAMS: Initially, a size 2.

ASTBURY: Okay. Do you remember who inserted that ET tube?

WILLIAMS: Only depending on what I've written in my notes.

ASTBURY: We'll come to your notes in a minute, I just want to see what you can remember for now.

Once that ET tube is fitted by the doctor, what will have happened then on the Resuscitaire?

WILLIAMS: So we would have secured it, the ET tube with what you call a clamp, and the baby would be wearing a hat and then you attach them to ties so that ET tube would stay secure.

ASTBURY: We've heard that doctors take a measurement for the ET tube. I hope I'm not misquoting this, so they can see if it's moved or not or so there can be future reference to the length. What's the importance in securing it in the way you've just described?

WILLIAMS: Obviously because we'd have to transfer her from the Resuscitaire into an incubator on to the unit, so that ET tube just needs to stay securely in place.

ASTBURY: Okay. Who would have secured it in place?

WILLIAMS: It would be normally a team of us that do it.

ASTBURY: Do you remember doing it in this particular case?

WILLIAMS: I don't, sorry.

ASTBURY: So the moment that the ET tube is in place, it's secured -- and I think you mentioned a clamp. Where does the clamp attach to?

WILLIAMS: It fits over the ET tube and then there is a small piece of plastic that is tightened to make sure the tube doesn't slip and then it is tied.

ASTBURY: One end attached to the ET tube --

WILLIAMS: It slots on to the ET tube.

ASTBURY: Right.

WILLIAMS: So it's in front of the ET tube and that's secured and then two holes are on the plastic holding to keep it in place and tied with a hat.

ASTBURY: All right. So I just want to understand how the clamp -- sorry, you'll be entirely familiar with this, I understand that, but just for those of us who aren't.

So the clamp holds the ET tube in place. There are the two plastic arms you were describing?

WILLIAMS: It's a plastic piece with two holes at the end and it sits securely and then if you can imagine the ties from the hat come through and they're tied here in bows.

ASTBURY: Because the tape doesn't pick up your very helpful hand gestures, you're indicating two pieces of plastic which fit against the cheeks of the baby, is that right?

WILLIAMS: Yes, that's correct.

ASTBURY: They have holes in the end of them?

WILLIAMS: Yes.

ASTBURY: And then you're able to use something to secure those against the cheeks --

WILLIAMS: It's a knitted hat and then it had ties, which are soft ties that you just secure with.

ASTBURY: That's done on the Resuscitaire even before the baby moves anywhere else?

WILLIAMS: Yes.

ASTBURY: Having successfully intubated the baby and having secured the tube in the way that you told us, what happened next with [Baby K]?

WILLIAMS: I don't recall in that situation. Obviously, our priorities would be to transfer [Baby K] safely on to the unit and make sure that she's warm and kept warm.

ASTBURY: So was she taken through to the neonatal unit once it was considered safe to do so?

WILLIAMS: Yes.

ASTBURY: How would she have been conveyed into the neonatal unit?

WILLIAMS: With the Resuscitaire pushed.

ASTBURY: It's on wheels?

WILLIAMS: It's on wheels.

ASTBURY: So no need to move her off that and put into anything else, the Resuscitaire is taken straight through?

WILLIAMS: Through to the unit, yes.

ASTBURY: Do you remember where she was placed when she got through to the neonatal unit?

WILLIAMS: Yes, in the top right-hand, first cot space in nursery 1.

ASTBURY: So into nursery 1. I'm not going to go to a plan, but we know there are two doors. If we look at --

WILLIAMS: Yes, nearest to labour ward.

ASTBURY: Is that to the right or the left as we look at the two doors?

WILLIAMS: To the right.

ASTBURY: To the right. So the right corner, as you went in the right door?

WILLIAMS: The first intensive care space there.

ASTBURY: Thank you. You told us you didn't remember there being any other babies in nursery 1.

WILLIAMS: No.

ASTBURY: Was an admission form completed once she arrived in the unit? Would that normally be the case?

WILLIAMS: It would be.

ASTBURY: I'm just going to ask Mr Murphy to go to tile 30, please. We can have a look at what lies behind there, please. This is a pro forma, Nurse Williams, which has all the information one might expect, beginning with the name of the baby, the admission date, the responsible consultant who would have been consultant of the week, presumably?

WILLIAMS: Yes.

ASTBURY: Various reference numbers; is that right? And we can read down and see the parents' names, the time of delivery 02.12, round about the centre of what we're looking at now. Admission time, 02.40. Normal delivery. Gestation. Weight. All the information that you would expect perhaps to be in an admission form to the NNU.

If we scroll down, please. There are some initial readings. We can see there the temperature; is that right?

WILLIAMS: Yes.

ASTBURY: Mean blood pressure; is that correct?

WILLIAMS: Yes.

ASTBURY: A tick list. I'm not going to go through all of them:

"Grunting, passed urine, bowels open (inaudible)."

And we then we can see the reason for the admission:

"Admitted to extreme prematurity, requiring intubation and transfer to tertiary unit."

Pausing there, was it always, can you recall, the intention for [Baby K] to be transferred to a tertiary unit when the chance came about?

WILLIAMS: Yes.

ASTBURY: Just explain to us why that was the case again.

WILLIAMS: Because she was born at less than 27 weeks.

ASTBURY: Scroll down a little bit more, please. Do you have any recollection of filling that form in?

WILLIAMS: I don't remember.

ASTBURY: It has been attributed to you on our document, but we can see at the bottom there that in fact, the completing nurse is Lucy Letby and it's timed at 06.04 hours in the morning. So is that a document that would have taken some time to complete?

WILLIAMS: Yes. Well, we worked as a team and that's what we've always done. So obviously, our priority is always the baby.

ASTBURY: Yes.

WILLIAMS: So to fill out this -- and actually, there is a process that a baby number needs to be generated, so to be on the Meditech system, which this is, so you know -- obviously this doesn't happen in real time, it happens retrospectively.

ASTBURY: So while these numbers are being generated and these forms are being filled in, the baby still needs treatment?

WILLIAMS: Absolutely.

ASTBURY: Still needs attention?

WILLIAMS: And all those observations that are on there are the initial observations made --

ASTBURY: Made in any event?

WILLIAMS: Yes.

ASTBURY: You have confirmed for us that you became [Baby K]'s designated nurse?

WILLIAMS: Yes, that's right.

ASTBURY: We've heard from other witnesses what that entails.

Physically arriving in the nursery on the Resuscitaire, does [Baby K] have to be moved to another incubator or cot?

WILLIAMS: Yes, into a warmed incubator.

ASTBURY: Okay. She was already intubated. As she moved on the Resuscitaire into the nursery, how would she have been receiving her breaths?

WILLIAMS: We would have either to keep her connected to the Neopuff, either in the nursery or via the Resuscitaire, or there is a period where you do disconnect and move the baby straight in.

ASTBURY: But on arrival in nursery 1, how would her ventilation be provided then?

WILLIAMS: So on the Resuscitaire, you can still continue to give breaths, which is what we would have done.

ASTBURY: But once she's placed in the incubator --

WILLIAMS: She can either be attached to a Neopuff again, which is on the wall, or the ventilator would have been set up ready to go --

ASTBURY: Okay.

WILLIAMS: -- which in a lot of instances was the case.

ASTBURY: Was in fact [Baby K] attached to the ventilator on her arrival?

WILLIAMS: I don't remember.

ASTBURY: You don't remember, okay. Do you remember what the initial observations or blood gas readings were at that time?

WILLIAMS: Not without looking at my notes.

ASTBURY: All right. Let's have a look, please, at your notes.

If I can ask Mr Murphy to go to tile 35. You see the name at the top and the individual number generated. As we work our way down the date and time, do you recognise the initials at the bottom?

WILLIAMS: Yes, those are mine.

ASTBURY: They're your initials in the bottom. So if we look at the columns generally, we can see that [Baby K]'s heart rate, certainly whilst you were looking after her, stayed within the necessary parameters, fell slightly, up until about 07.30, her heart rate?

WILLIAMS: Yes, it was stable.

ASTBURY: If we look at the respirations, is there any significance in the circle around the cross?

WILLIAMS: It means that what she's receiving ventilation breaths.

ASTBURY: Does that assist you with whether [Baby K] was ventilated?

WILLIAMS: It shows that she was on a rate of 45 breaths per minute.

ASTBURY: All right. Just going back to the question I asked you earlier about when she arrived in the unit with a tube already fitted and secured, does that suggest she'd have been placed on a ventilator or does that not assist?

WILLIAMS: Yes, she would have placed on a ventilator.

ASTBURY: So just pausing there, as designated nurse, would you have fitted her to the ventilator or connected to the ventilator?

WILLIAMS: It could have been me, yes.

ASTBURY: All right. Could you take us through the process of how either [Baby K] or any other baby in that situation would be connected from Resuscitaire into the incubator and the ventilator attached? Because we've heard that the ventilator is

provided from a static unit in the nursery. So how would that be connected up?

WILLIAMS: So that just involves tubing that fits through the portholes of the incubator, so they can connect straight on to the ET tube.

ASTBURY: Okay. So one end of the tube connected to the gas supply?

WILLIAMS: Yes, or the ventilation.

ASTBURY: Fixed in the wall presumably?

WILLIAMS: So is the ventilator is plugged into the wall, obviously, gas and air.

ASTBURY: The other end connected to the ET tube?

WILLIAMS: Yes.

ASTBURY: Tell us a little bit about that process. Is there any art to that? Is that relatively easy or is that a difficult process?

WILLIAMS: Well, obviously, setting up a ventilator is something that we're used to doing. You can have a ventilator because -- we can have a ventilator running before the baby arrives. That's not unusual to have it ready with standard settings.

ASTBURY: Okay. Again, something you're entirely familiar with, but most of us, possibly some of us aren't. How is it connected up to the ET tube?

WILLIAMS: I'm not sure what you're asking.

ASTBURY: I'm just wondering about the physical connection. So we've got at one end, the tubing which delivers the gas connected to the ventilator. A baby's being born and put in an incubator.

WILLIAMS: Mm-hm.

ASTBURY: We know there's an ET tube in place, secured in the way that you suggest. But up until then, connected presumably to the Neopuff or some or device?

WILLIAMS: Mm-hm.

ASTBURY: That has to be disconnected presumably. How is the ventilator then connected, for those of us who have no idea?

WILLIAMS: Obviously, you've got a respiratory -- you know, a ventilation giving set, as such, which comes with all your tubing, everything that's humidified. Then it's exactly the same connector as a Neopuff. It fits exactly the same on to --

ASTBURY: Okay.

WILLIAMS: -- an ET tube.

ASTBURY: So one literally disconnected, same connection, but from a different source made on to the ETT?

WILLIAMS: It's coming from a ventilator, yes, from --

ASTBURY: To what extent does that new connection interfere with the ET tube? Do you have to apply pressure, do you have to move the ET tube at all?

WILLIAMS: To attach it?

ASTBURY: Yes.

WILLIAMS: No. Obviously, you need to make sure that your tubing connected into the ventilator is secured. So we have things in the incubator to support that.

ASTBURY: You were telling us earlier how it's secured. Is it important that it's secured in place, the ET tube?

WILLIAMS: The ET tube, yes.

ASTBURY: So once the new fitting is connected, would it be your practice to check that it was in the same position and still secure?

WILLIAMS: Yes, and obviously making sure that the ventilator is delivering what's required.

ASTBURY: Okay. Just looking at the observation charts that we've still got on the screen, you start the readings at 02.45 in the top left-hand corner. Can we assume from that then that ventilation was in place by 02.45?

WILLIAMS: Yes, because that's the first set of observations.

ASTBURY: Thank you. You'd have gone through the process that you told us about. You'd have replaced whatever was providing the gas to [Baby K] with the ventilator fitting?

WILLIAMS: Yes.

ASTBURY: Having done so, you'd have checked presumably that that was -- that the ET tube was still in the same place, still secure; is that right?

WILLIAMS: Yes.

ASTBURY: If we can just scroll down for the rest of the readings, please. We see there that you've taken temperature and there are some other readings, including saturations.

If we look at the SaO2, are they the saturations for the baby?

WILLIAMS: Yes.

ASTBURY: Taken from the monitor?

WILLIAMS: Yes.

ASTBURY: Okay. Just looking at the first, is that a low reading in your view?

WILLIAMS: Saturations of 70, yes.

ASTBURY: What about the next reading, 94?

WILLIAMS: Within normal.

ASTBURY: Okay. If we scroll up to check the time of that reading, please. That's taken at 03.30. Do those two readings assist you with how effective the ventilation was being over that 45-minute period?

WILLIAMS: The saturations had improved, yes.

MR ASTBURY: My Lord, I'm about to move on to some of the other data.

MR JUSTICE GOSS: Certainly.

MR ASTBURY: That might be an appropriate time.

MR JUSTICE GOSS: We don't want to start on something that we're not going to finish. Thank you very much.

I'm very sorry, but you're going to have to come back tomorrow. I gather that you can come back tomorrow. That's been checked with you already?

WILLIAMS: Yes.

MR JUSTICE GOSS: Thank you very much. Obviously, as I've said to you before, don't talk to anyone about anything to do with this case. 10.30 tomorrow morning. Just stay where you are. Thank you very much.

10.30 tomorrow, then, please, members of the jury.

(In the absence of the jury)

MR JUSTICE GOSS: Mr Myers, is anyone going to --

MR MYERS: Yes, we will, my Lord, thank you for asking.

MR JOHNSON: We're anticipating a degree of disruption in the week of --

MR JUSTICE GOSS: I've seen the note. We'll come back to that. Thank you very much. I didn't want to raise it now, we'll do it later at a more convenient time.

Could members of the public leave the courtroom, please? I'm going to rise now, but I want the court to be cleared while the witness is still here.

(4.26 pm)

(The court adjourned until 10.30 am on Tuesday, 28 February 2023)