Monday, 28 November 2022

(10.28 am)

(In the presence of the jury)

MR JUSTICE GOSS: Mr Driver.

MR DRIVER: May it please your Lordship, may we call Dr Saladi, please.

DR SATYANARAYANA SALADI (sworn)

Examination-in-chief by MR DRIVER

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

A. Satyanarayana Murthy Saladi.

Q. Dr Saladi, could you confirm that as of the summer of 2015 you were a consultant paediatrician based at the Countess of Chester Hospital?

A. That's correct.

Q. And you understand, I anticipate, that you have been invited here today to answer questions about a baby in the neonatal unit by the name of [Baby F]?

A. That's correct.

Q. Is it right that you were on annual leave when [Baby F] and his twin brother [Baby E] were born on 29 July 2015?

A. That's correct.

Q. However, a few days later, on the 4th going into 5 August 2015, you returned to work and you were designated the paediatrician of the week?

A. That's correct.

Q. Could you explain to the jury in a sentence or two what that means?

A. Paediatrician of the week is a system where we, as the consultants, sort of oversee the care of the babies who are admitted to the children's ward as well as the neonatal unit for that week. And if I remember correctly, at that time it used to start from Friday and continued until the next Friday morning.

Q. Thank you. We understand, and we've already heard, that your colleague, Dr John Gibbs, was the paediatrician of the week at the point the boys were born.

A. Possibly.

Q. Thank you. So when you came into the hospital on the 4th or 5 August, were you appraised, brought up to speed, with all the relevant information pertaining to the babies who would be under your general management --

A. Yes, that's correct.

Q. -- and clinical control?

A. Yes.

Q. Thank you.

Did that include [Baby F]?

A. Yes.

Q. Did you conduct what is referred to as a grand round on the morning of 4 August 2015?

A. Yes.

Q. And we're going to look at the clinical notes that were created as part of that grand round. They'll appear on the screen just to your right there. They are behind tile number 67, Mr Murphy.

You'll see from that representation there that these were notes made by a junior colleague of yours, Dr Gail Beech. Is the process that the registrar writes up the notes when conducting the grand round in the company of the paediatrician of the week?

A. Yes.

Q. So if we can look at Dr Gail Beech's notes, please, of the weekly neonatal unit to be completed every Thursday.

A. Tuesday.

Q. Tuesday, apologies. Dated 4 August. The gestational age of the baby. He was now in his seventh day of life. The named consultant, Dr Gibbs. And then paediatrician of the week, yourself. Is that right?

A. Yes. So this is prepared on the 4th.

Q. Thank you. So would this be the process: Dr Beech noting any observations made by you and the information provided to you?

A. I have seen the baby on 5th and these -- this document is prepared a day before.

Q. Yes.

A. Because, basically, grand round is -- basically we look at all the information so they prepare all this information on the day before so that we have all that information at hand. So I wouldn't have seen the baby on 4 August.

Q. Right.

A. But I would have seen this information on 5 August.

Q. Yes. So the information is prepared by a junior doctor and provided to you in advance of your attending upon the baby --

A. On 5 August.

Q. -- on 5 August?

A. That's correct.

Q. And prior to coming to court to give evidence, have you had the opportunity to refresh your memory as to the contents of the notes that we've put on screen?

A. Yes.

Q. Thank you. Does it accord with your recollection of this baby and the information --

A. That's correct.

Q. -- collected about him?

A. Yes.

Q. We can see there, if we look to the right, that, amongst other information recorded, was the fact that hyperglycaemia had resolved.

A. That is correct.

Q. Could you confirm that hyperglycaemia refers to an elevated blood sugar level?

A. That is correct.

Q. This baby's hyperglycaemia resolved, do you recall, within a day or two of his birth?

A. That is...

Q. And did it require any further treatment, the hyperglycaemia?

A. There was -- the baby did receive insulin for a very short period to control the hyperglycaemia in the first couple of days of life.

Q. Thank you. If we could scroll down, please, and continue to scroll down, please.

Now we move to the grand round itself on 5 August. So you having been appraised all of the relevant information, you undertook this round and you created a plan for the continuing care of this baby?

A. Yes.

Q. Looking at the plan, the first stage was an abdominal X-ray.

A. Well, because what is said happened on the fourth night, my entire round was written again on this document and this plan is part of that plan. So it would be there in the subsequent pages.

Q. Thank you. The events of the previous night, were they reported to you through Dr Harkness; do you recall?

A. I can't recall.

Q. You can't recall. If we could just leave this tile then and go to tile 187, please, Mr Murphy, and the document behind it, please, which should be J2933.

We can see an entry from the registrar Dr Harkness recorded at 03.30 hours on 5 August.

A. Mm-hm.

Q. So that's overnight --

A. Yes.

Q. -- and prior to your grand round? We can see what it is that Dr Harkness recorded as to the events in the early hours.

A. Mm-hm.

Q. For your information, Dr Saladi, the jury have already heard from Dr Harkness --

A. Okay.

Q. -- and heard his account of these. But if you care to refresh your memory of Dr Harkness' notes.

(Pause)

Continue to scroll down, please, Mr Murphy.

So we can see that amongst other notes made by Dr Harkness, at the bottom of our page he, Dr Harkness, has documented the plan to continue to monitor sugars.

A. Mm-hm.

Q. If we could then return, please, Mr Murphy, to the grand round note, which was behind tile 67.

So the plan that you devised during the grand round, was that based, at least in part, on the events of the early hours, as recorded by Dr Harkness?

A. Yes.

Q. So having reminded yourself of Dr Harkness' notes, could you take us through the plan and your thinking behind it, please?

A. Yes. Can I ask you to go through my actual rounds, which is there, two pages down below?

Q. Right. So you want to look at page 2932?

A. 2932, yes.

Q. Yes. I wonder whether --

A. I will be able to tell you when, if you go down.

Q. If we could scroll up.

MR JUSTICE GOSS: He wants to go down, he wants to go further on from there.

A. I want to go down to the next pages after Dr Harkness' notes.

MR DRIVER: Thank you. I wonder whether Mr Murphy could put that up on screen.

A. Yes, next page.

Q. 2933. 2933, the next page, is the Dr Harkness note that we looked at a moment ago.

A. 2934 then.

Q. Thank you. Mr Murphy will get that up for us in a moment.

A. Yes, so that's my ward round documented by Dr Ogden.

Q. Thank you. We'll just magnify that so we can all see it more clearly. Dr Ogden taking the notes that -- at 10 am she was with you, with the baby, when you reviewed the baby?

A. Yes.

Q. "History overnight noted."

So that's the history as documented by Dr Harkness?

A. Yes and Dr Gibbs.

Q. And could you then, please, take us through the review?

A. Yes. So the first two lines, the V part, talks about

baby is breathing in air and baby's saturations, the oxygen level in the body, is fine.

Q. So the ventilation --

A. Baby is not having any breathing issues.

Q. Thank you.

A. The next one. F stands for fluids, and:

"Enteral feeds stopped overnight."

What that means is, overnight, baby was getting some part of the feeds through the tube into the tummy and some part of the feeds through the drip and because they were having issues with the blood sugars, they stopped the feeds going into the tummy because the feeds which are going into the tummy need to be digested and absorbed. So to get a better control of the sugars, they have stopped the feeds and they were giving all the feeds -- well, all the fluids through the drip.

Q. Yes.

A. Not the feeds, the fluids.

Q. Understood.

A. And the fluids are total parenteral nutrition and the fluids volume was also increased from 150ml to 165ml per kilo per day, again because they were not able to control the -- they were not able to get the blood sugars back up.

Q. Right. So due to low blood sugar readings, there was a change in the regime of the provision of fluids --

A. That's correct.

Q. -- both in terms of the method and the extent?

A. That's correct.

Q. Thank you. Could you continue, please?

A. BM, that is blood sugar, is low. So baby had three glucose boluses/dextrose boluses overnight. And the last bolus was given 30 minutes ago. So I suspect -- I'm not sure whether the 30 minutes refers to 10 o'clock or when I started the rounds. But the sugar now is 1.3.

Q. And how would you assess a blood sugar reading of 1.3?

A. It's still low.

Q. Still too low?

A. Yes. And one plus -- I think it's dark milky aspirate from the stomach.

Then the next one, M, is for medication. So that documents the medicines the baby is on. They are caffeine, which we give for preterm babies to stimulate -- well, to make sure that they don't forget to breathe.

Q. Yes.

A. Then the baby is also on nystatin. That is mainly for preterm babies who are on in-dwelling plastic, so we give it to them to prevent fungal infections, so it's more of a preventative medicine. Cefotaxime, teicoplanin, those are the antibiotics which were changed the previous night when the baby became -- well, the sugars were low. So those two are antibiotics.

Q. I'm grateful. Next?

A. S. S... I'm not sure what S stands for. Okay, sepsis:

"Re-screened overnight on cefotaxime and teicoplanin. CRP is less than 1, and W [that this is white blood cell count] is 3.6."

Q. Yes.

A. So CRP is a protein, which we measure as a marker of infection. Normally, it is less than 10. With infections it goes up quite high. But it can take time for the CRP to go up.

Q. Thank you. So in summary, were the sepsis data, the sepsis readings, satisfactory or not?

A. CRP, that is the initial reading, so it's not going to give us any more. So we normally measure another one in another 24 hours or so.

White cell count is not elevated, so it is within -- probably I said in my statement that it's a little below the normal range, I can't remember now, but it's not elevated.

Q. Right. Let's move on to the next page then, please, 2935, where we get to some observations about the long line.

A. So we are talking about -- L stands for line, so baby has long line in the right leg, which has been there for 7 days.

Q. Yes.

A. N stands for neurology, which is baby's brain function. So handles well. That is how baby is reacting to our

touch, to the sounds and things like that: is the baby moving, moving all the limbs, crying or responding appropriately?

Q. So these notes that we're touching upon now, Dr Saladi, are these notes that record the observations that you made --

A. That's correct.

Q. -- upon examination?

A. That is correct.

Q. Thank you. Under "obs/examination", you repeat that the baby was handling well, that he was moving all four limbs.

A. All four limbs. Normal tone. So that is how -- we move the baby's sort of hands and feet and see whether they are limp, they are stiff, or they're normal.

Q. Yes.

A. The next line refers to the heart sounds, so baby's heart sounds are well heard and there is no murmur.

The next line refers to baby's breathing, so baby is -- no abnormal breath sounds and no increased work of breathing. The arrow up stands for increased. WOB stands for "work of breathing". The next line refers to the abdominal examination. No abdominal wall swelling. Oedema refers to swelling. No abdominal wall erythema, which is redness or discolouration.

Q. Thank you. Pausing there, these elements of your examination up to this point were all satisfactory;

is that correct or not?

A. That's correct, yes.

Q. Thank you very much. But then we move to the next entry.

A. So again, it refers to the abdomen:

"Not distended/soft abdomen, and bowel sounds..."

BS stands for bowel sounds. It says the bowel sounds are heard, which again is normal.

Q. It records the presence of --

A. Yes.

Q. Then?

A. "Swelling in the right groin at the site of long line, plus indurated."

Q. What does that mean?

A. So this baby had a long line on the right leg. So a long line is actually quite long, so it goes from the sort of foot into the groin and into the tummy. So this baby had a line like that put in in the right leg and the tip on the X-ray is there actually in the tummy. But we know that long lines can move as well, but I seem to have noticed a swelling in the right groin and I was wondering whether there is any swelling there which could come either because there is -- the line has -- the fluids from the line have leaked out into the tissues or signs of infection, those two are the possibilities.

Q. In this context, what does indurated mean?

A. The skin when you're feeling, it's a little bit more firm.

Q. Right. So would we be correct to conclude that this is an unsatisfactory observation --

A. That is correct.

Q. Moving on through the other observations.

A. The anterior fontanelle, the soft spot, is soft, as it should be. And the femorals, strong, as it should be. Unable to palpate the right femoral, so obviously because there is a swelling there in the groin.

Q. Yes.

A. "The thigh, right, anterior/posterior, swollen and full."

So there is swelling on the front and the back of the thigh. And:

"Heart rate has increased on palpation of the leg."

So that means when I was touching him, the heart rate goes up, suggesting -- that sort of suggests to us it's painful.

Q. On your examination and according to your conclusions was there a link between this apparent pain in the right thigh and the long line?

A. That is correct.

Q. So did you draft a plan accordingly?

A. Yes.

Q. Take us through the plan, please.

A. The plan is stop the total parenteral nutrition via the

long line. We also noticed that the glucose was low at the time of -- just before the round, so repeat bolus of dextrose, giving extra glucose solution. And move TPN to peripheral line -- that means in the lines that we have only mentioned long line, so maybe there was a plan to put a new peripheral line and give the glucose through that -- and a new long line.

Q. So pausing there, stop the TPN via the long line because the long line was causing a problem, discomfort --

A. Yes.

Q. -- perhaps?

Repeat the bolus of dextrose. Would that be at the same time as stopping the TPN?

A. I suspect I might have, whilst I was doing this, if I have noticed this, because it's not documented there, but I might have put a peripheral line and asked them to give the glucose through the peripheral line, that is a smaller line and then said, stop the long line and we'll put a new long line.

Q. Right. The next line:

"Move TPN to peripheral line."

A. Yes.

Q. On a permanent basis or on a temporary basis?

A. Temporary basis.

Q. On a temporary basis.

A. Until we have the new long line.

Q. Which takes us to the next entry of the plan:

"New long line."

Is that shorthand for "fit new long line" or "attach new long line"?

A. Yes.

Q. X-ray the abdomen?

A. X-ray abdomen with the long line position. And then continue antibiotics.

Q. Yes.

A. "Review feeding later. If settles after new long line can restart feeds."

Which to me -- settles means if the blood sugars settle, that means they are within the normal range, then we can restart feeds. And:

"Send long line tip for microscopy, culture and sensitivity."

To look for infection, bugs.

Q. To see what was the cause of the problem?

A. If there's any infection there, yes.

Q. Thank you. So they are the instructions that you made. Then if we could just look further down the next page, please, Mr Murphy, 2936.

Because one element of your plan was to undertake an X-ray to confirm that the long line was -- new long line was placed in a satisfactory position. If we go to 2936, please, we'll see the review of that X-ray, timed at 11.40 hours on 5 August. In short, did this review record that the long line was satisfactorily replaced?

A. Yes.

Q. Thank you. Dr Saladi, does that record the extent of your direct dealings with the baby [Baby F] on this date?

A. Yes. I probably would have checked or seen myself the X-ray and then I probably would have gone to see the other babies if there is any further issues they might have discussed with me.

MR DRIVER: That's all I would like to ask you about. Could you remain there and answer any other questions, please?

Cross-examination by MR MYERS

MR MYERS: Just a couple of points, Dr Saladi, if you could help us. Mr Murphy, could we go back to what we were looking at with Dr Saladi, which was page 2935, and just the plan?

When you were talking -- can you see the entry that says "Move TPN to peripheral line"? You see that entry, do you, third line down?

A. Yes.

Q. You said that maybe there was a plan to put in a new peripheral line and then you said:

"I might have put in a peripheral line and I asked the glucose to go through that."

In fact, do you recall precisely whether there was or there wasn't a peripheral line or do you not know, just looking at this?

A. I don't know.

Q. All right. Thank you. The other thing I'd like it confirm, since you've referred to the question of testing the tip, is can you confirm in fact [Baby F] did have an infection as it happens? Do you recall that?

A. In the subsequent pages, there is a further entry that we did -- the CRP did go up and then we did grow a bug from the long line tip as well.

Q. That's right. In fact, can we scroll forwards to page 2938, Mr Murphy. If we go to the central entry marked 6 August 2015, 11.30, this is an entry by you, Dr Saladi. Do you agree we can see there the fourth line down:

"CRP increased from 1 to 40"?

A. Yes.

Q. And up to 10 is the normal range. 40 would be consistent with an infection developing?

A. That is correct, yes.

Q. And as you say also, it turned out when the tip of the long line was tested, there was bacteria on that consistent with infection?

A. Which is usually -- bacteria which are normally there in the skin are also noted.

Q. And they get into it through the long line?

A. It's possible.

Q. Yes, thank you.

And the presence of those bacteria were confirmed on

testing, weren't they?

A. Yes.

Q. I only asked that for completeness because we talked about the test for infection, we don't know what happened, and I just wanted to establish that. Thank you very much.

MR DRIVER: My Lord, I have no re-examination. Does your Lordship have any questions for Dr Saladi?

MR JUSTICE GOSS: I don't, thank you, Dr Saladi. I don't believe Dr Saladi will be giving evidence again.

MR DRIVER: May I just double-check?

MR JUSTICE GOSS: Yes, please do.

MR DRIVER: I think Dr Saladi may give evidence again.

MR JUSTICE GOSS: Right. My chart is obviously out of date that I have. All right.

Dr Saladi, thank you very much for coming and giving your evidence to us this morning. That completes your evidence at this stage. I understand that you may be having to come back some time later during the trial to give evidence. So that being the case, please don't talk to anyone about this case, the evidence that you've given or anything to do with the case or communicate in any way with anyone. We may see you again, we may not. All right? Thank you very much anyway.

A. Thank you.

(The witness withdrew)

MR DRIVER: My Lord, the next witness is Dr Ventress and my

learned friend Mr Astbury will call Dr Ventress.

DR ALISON VENTRESS (sworn)

Examination-in-chief by MR ASTBURY

MR ASTBURY: Could we start with your full name, please?

A. Alison Lois Ventress.

Q. I know, very politely, you are directing your answers to me for obvious reasons, but if you can try and direct them to the back of courtroom, please, we'd all be very grateful, so everyone who needs to hear you can then hear you. And if you can concentrate on keeping your voice up -- sometimes it is tempting when you sit to let it drop.

Your profession, please?

A. I'm a doctor, a paediatric doctor.

Q. Is it right that in 2015 you were employed in that capacity within the paediatric department of the Countess of Chester Hospital?

A. Yes, I was a registrar at the time.

Q. Do we take it you are no longer a registrar?

A. No.

Q. I'd like to ask you, please, about your involvement during July and into August of 2015 with a baby called [Baby F]. In order to help you I am going to ask you to look at some medical documentation, please. It'll come on the screen to your right.

If we can first of all have a look at tile number 14, please, Mr Murphy.

If we can look, please, at the document behind it, and zoom in a little. In fact I wonder if days 2, 3 and 4 could be captured on the same screen? We can see day 1 is blank. Thank you.

So we know that [Baby F] was a twin, born on 29 July, and we've also heard, if you could confirm it for us, please, that there is a form of nutrition, total parenteral nutrition.

A. Yes.

Q. And that babies in the neonatal unit begin with a Start-up bag; is that right?

A. Yes. If they're eligible for it, yes.

Q. If it's required?

A. If it's required and depending on the day of life, but yes.

Q. Thank you. Then there comes a stage when doctors prescribe bespoke TPN bags for individual babies if required?

A. If required, yes.

Q. Thank you. We've just seen that day 1 is blank, which would have been, of course, [Baby F]'s day 1 of life.

Day 2 appears to be, correct me if I'm wrong, your signature in the column towards the centre of the form?

A. Yes, that's right.

Q. Could you explain to us, please, what that form reflects?

A. So this is the prescription form for the total

parenteral nutrition. From reading the medical notes -- so all premature babies less than 32 weeks, I think, get started on parenteral nutrition; that's just standard care for them. Usually, we like to start it as soon as possible after they are born.

From reading the medical notes, I think there were issues with putting an appropriate line into [Baby F], so that's why it was started the next day, once he had a line. So it has to go via a central line, either a long line or an umbilical venous catheter.

So it was put in on day 2 of life. And then this is the prescription. So at the bottom of this page there's a little box that tells you how much --

Q. Let's pause. If we can go to the bottom of the page, please.

A. Yes. So as you can see there's a -- the second and third columns. The second column is if a baby had a birth weight of less than 1 kilogram and the second column is a birth weight of more than 1 kilogram -- sorry, the third column along. [Baby F] had a birth weight of more than 1 kilogram, so therefore we'd go by the numbers in the third column on the sheet there.

Q. So this is a ready reckoner to enable calculation of appropriate rates?

A. Yes.

Q. Okay. So if we can go back then -- anything else you'd like to say about that before we go back to what we were

looking at?

A. He was day 2 of life so his total fluid requirement would be 75ml per kilo per day.

Q. And these are all calculated specifically to the baby's weight --

A. Yes.

Q. -- in each instance?

A. Yes.

Q. Okay. If we can go back then to days 2, 3 and 4.

A. Yes. And as you can see by that chart they get an increasing amount of fluid with increasing days of life.

Q. Right.

A. So on day 2, he'd have a total of 75ml per kilo. So the first column is how many millilitres per kilo of each element he gets. The second is worked out for his own weight, the second column of numbers.

Q. We can see then, I think you mentioned it before, it's delivered intravenously?

A. Yes.

Q. That's the reference to IV. Then in the box is your signature?

A. Yes.

Q. Perhaps if we can just pull that box down so we can see what's at the head of that particular column so that we have the full picture. Not surprisingly, I think it says "prescribed by".

A. Yes.

Q. If we can go back to it. We can see a time and a date to the right of your signature.

A. Yes.

Q. Does that refer to at the time it's prescribed?

A. No.

Q. Is that filled by others --

A. That's filled in by others. I would have just written the 30th in the far left-hand column.

Q. Right. So you date it?

A. Yes, the practice is you'd prescribe it in the morning -- if it's a weekday you'd prescribe it in the morning and it would be delivered by pharmacy that evening to start that night.

Q. Just pausing there then. You write the prescription?

A. Yes.

Q. The prescription presumably is then sent to the pharmacy for that purpose?

A. Yes.

Q. They make up a bag in accordance with your prescription?

A. I have just thought: Start-up bags are kept on the unit. That's the case for the other ones.

Q. Okay. Because we can see on day 2 it's Start-up?

A. Yes.

Q. The one further down isn't. So this is a Start-up kept on the ward?

A. Yes.

Q. And who would in that case do the calculations that

appear in the two left-hand columns?

A. I would have done that.

Q. Right.

A. So all of them up to my signature to the left were me and then, from the next columns onwards, would have been the nursing staff who connected the bag of TPN.

Q. We were just dealing with not in the event of a Start-up bag, so perhaps if we go to day 3, the following day, 31 July.

A. So the second prescription down that actually says day 3, that's prescribed by Dr Davies, that was just an increase in the amount of fluids. But it says the same bag there so that wouldn't --

Q. Can we just pause then there? If there's an increase in the amount of fluid do we take it the bag remains the same --

A. Yes.

Q. -- but the rate at which it is being delivered is altered?

A. Up to a point. In that thing at the bottom, the table, there was a maximum amount of TPN you could give per day. If it's more than that, they'd give 10% dextrose on top of that.

Q. Okay. Does this assist in that regard (overspeaking) --

A. -- (overspeaking) row with 10% dextrose. So he's getting a little bit more of the Babiven than he was, he's gone from 70 to 75 on the second row, but he's also

getting 10% dextrose to make up the full volume.

Q. We've heard before -- if we look for example at these figures, I know it's not your prescription, but 75, 5, 10, makes a total of 90 below?

A. Yes.

Q. And if we look across to the right, as you've just indicated, it's got in brackets "same bag".

A. Yes.

Q. So the bag wasn't changed --

A. No.

Q. -- just the rate --

A. Yes.

Q. -- and some added dextrose; is that right?

A. Yes.

Q. Okay. If we move on then to day 3. In the context of day 3, when we're not a Start-up but we're a Maintenance bag --

A. Yes.

Q. -- you'd started to tell us about the process. You would write a prescription when?

A. Usually in the morning. If it's Monday to Friday you'd do it in the morning and send it to pharmacy.

Q. And pharmacy would receive, obviously, a specific prescription for a given baby?

A. Mm-hm.

Q. And your understanding would be that they would make that up and then I think you told us when it would be

taken to the ward.

A. I think it was -- the nurses would know more accurately than me, but I think it was the afternoon, at the end of the working day.

Q. All right.

A. They used to change it at 11/11.30 at night on the night shift.

Q. If we look at your entry on day 3, we can see, as you alluded to, that the volume has increased?

A. Yes.

Q. We're up to 110 and now 10 -- is that millilitres of lipid?

A. Milligrams per kilogram of body weight, yes.

Q. But no dextrose now?

A. No.

Q. We can read across and see that you have signed it as you have above?

A. Yes.

Q. Do you remember or have you checked what day of the week the 31st --

A. I think it was a Friday, wasn't it? Yes.

Q. All right, okay.

A. So on a Friday you would prescribe for the Saturday and Sunday as well because the pharmacy don't process the prescriptions over the weekend. So it was standard practice that you do the whole weekend on a Friday.

Q. We've heard Babiven bags were given every 48 hours.

A. Yes.

Q. So when you say "do it for the whole weekend", just explain what that envisages in practice or what that means in practice?

A. We do a prescription every 24 hours because often the fluid changes in the first few days. So I think when that prescription is up to 150 milligrams (sic) per kilo total fluids, so it's a different rate. But the Babiven bags are up for 48 hours, unless there's a problem. But the lipid gets changed every 24 hours, so you have a prescription every 24 hours.

Q. If we could go to tile 17, Mr Murphy, and have a look at the chart behind that tile.

So you would write the prescription on the Friday for both Saturday and Sunday; is that right?

A. Yes.

Q. Would that be separate bags or simply different rates but on the same bag?

A. They would definitely need one new bag over the weekend. It would depend whether they'd a new bag on the Thursday, in which case they would get a new one on a Saturday. If they'd needed a new one on a Friday, they'd get the new one on the Sunday.

Q. Are you able to tell from the chart what the situation was?

A. So it says "continuing 48-hour bag" on the Saturday, the 1st, so it was changed on the Friday and the Sunday,

looking at that.

Q. Okay.

A. Yes. Or due for change, yes.

Q. So again we can see increases reflected on the prescription for the 1 August?

A. Yes.

Q. Your signature again as having prescribed?

A. Yes.

Q. May I ask, was there any reason why you prescribed the majority of these bags as we can see on the forms?

A. I think, from looking at the notes and things, I would have been on the neonatal unit sort of Monday to Friday that week. So often, for continuity, it was good, if possible with shifts, that they had the same person for a week at a time. So it was practice that we might be there for a whole week.

Q. Okay. So you were telling us that you were able to -- looking at this prescription for 1 August, which would now be the Saturday --

A. Yes.

Q. -- that that particular bag continued from the 2nd into the 3rd; is that what you were telling us?

A. When I wrote the prescription on the Friday, I would -- you... You write it as you anticipate it would happen if there's no complications and no problems at all. In which case they'd have had a new one on the Friday, and a lipid every day changed, and a new bag of Babiven on

the Sunday.

Q. Okay.

A. The rates there are the standard rates that a baby of that age and that many days old would need.

Q. I hope it's not me, but I just want to make sure I understand this: days 3 and 4, there are separate prescriptions written --

A. Mm-hm.

Q. -- but it would be the same bag at differing rates; is that right?

A. The same bag of Babiven, yes.

Q. Plus, because the lipid only lasts 24 hours, a change of the lipids?

A. Yes.

Q. All right. So although it's written at day 4 as another prescription, it's not to create another bag?

A. No.

Q. It's to inform the nursing staff, in effect, of the change in rate?

A. Yes, but even if there wasn't a change in rate, we would still do a new prescription every 24 hours.

Q. Right.

A. You can see the next two are the same.

Q. Again it's probably me, but if the bag is staying the same for 48 hours, why would there be a second prescription for the second 24-hour period?

A. I think just to make it easier because we need a new

lipid prescription anyway, so yes, it's just for continuity, I think.

Q. Okay, thank you.

If we go down to 2 August please. We can see again it's your signature?

A. Yes.

Q. The same process, writing in the morning for what was anticipated to be needed on the new bag?

A. Yes, I think that's the Sunday, so I'd have done it again on the Friday morning.

Q. Okay. So this form would have been filled in in advance on the Friday?

A. Yes.

Q. Right, okay.

A. But this is more -- it's to order from pharmacy. This is what we expect the baby to need. If the clinical situation changed and something else was needed, the doctor on at the weekend could have written a new prescription with different rates on. But it's mainly so there is a bag available because pharmacy need a prescription to issue the bag.

Q. I think we might come ton that in a moment, but that's really helpful. This really prompts the pharmacy to produce a bag --

A. Yes.

Q. -- every 48 hours?

A. Yes.

Q. Which would be created on the morning after you'd written the prescription, transferred up to the ward as you understand it, later in the day?

A. Yes.

Q. Ready to be hung that night --

A. Yes.

Q. -- at a particular time?

A. And on a Friday they'd send the bags for the whole weekend on a Friday.

Q. Okay. When you say "all the bags", for any other babies that are on the ward --

A. Mm.

Q. -- is that right?

A. Yes. So anything that we anticipate needing over the weekend should be ordered on the Friday, yes.

Q. I see. The fact that there are -- you have written more than one prescription for [Baby F] on the Friday, the 31st, doesn't mean more than one bag has been created, it's just so the rates can be tracked by the nursing staff every 24 hours?

A. The pharmacy would keep track of when the bags were changed and so they would know at least one was needed for the weekend and create that one and have it on the unit ready to use for the weekend.

Q. All right, thank you.

Could we go next please to tile 145? If we look at the entry for day 6 of life on 3 August, you're in the

hot seat again --

A. Yes.

Q. -- writing a prescription. Another example, is this, of perhaps a change in what the baby was receiving but the same bag continuing over the 48-hour period --

A. Yes.

Q. -- but with a new -- in fact on this occasion no lipids required?

A. No. So the column that says "enteral feeds" refers to milk that the baby's receiving. So he's on over half his requirements of milk by this stage. So once they're on over half their milk then they stop the lipids.

Q. You mentioned a moment or two ago that if there is a change in the circumstances for any particular baby, the doctor on duty will simply change the prescription if it's required.

A. Write a new prescription, yes.

Q. Okay. I wonder if we could look at the next two entries, please. I appreciate you haven't written either of these prescriptions --

A. No.

Q. -- but looking at it and with your experience and knowledge of the system, could you just explain to us what appears to have happened in this particular case?

A. So the first one that's been crossed out looks like it would be a standard progression that the baby was on a bit more milk the next day, so needed -- still didn't

need any lipids, had more milk, so needed less Babiven. So it should be the milk plus the Babiven plus the lipids is the total amount that he needs.

So... So that was the initial prescription by Dr Beech and that would have been done in the morning of 4 August. So, ordered from pharmacy, but as I said, it wouldn't be put up until the night shift.

But then the one below, the baby's not on any milk feeds anymore so from reading the notes, I know there were some concerns and they stopped the milk feeds and therefore the baby needed more nutrition using the TPN.

Q. If we look in the first numerical column, when the prescription was originally written, the total volume required was 150 --

A. Yes.

Q. -- or the calculation, with 92.1 of that being from enteral feeds.

A. Yes.

Q. And if we look down, we can see enteral has gone to zero, and in fact the total's increased but it's had to be made up in a different way?

A. Yes.

Q. All right. We can see a second entry -- I think that says 3.20 on 5 August. What would you -- comparing the two prescriptions, what would you anticipate had been changed at 3.20? Is that the addition of lipids?

A. Which part do you mean, sorry?

Q. If we look in the bottom right-hand corner with manuscript, we can see it's been hung at 00.25, which is the same time as the entry above.

A. Yes.

Q. Does that suggest to you the same bag continuing?

A. It looks like they changed the bag on that -- signed it on the top prescription, but then continued that same bag on to the next one, yes.

Q. Yes. The difference at 3.20 being the lipid has gone from not required --

A. They added the lipids.

Q. -- to being administered at 3.20?

A. Yes, and they increased the rate of the Babiven, I would assume, then as well.

Q. Okay, thank you. Just for the sake of completeness, you told us that that bag we can see hung on 5 August in the early hours was a 48-hour bag.

A. Mm-hm.

Q. If we go next to tile 261, perhaps just the top two entries, please. Thank you.

Again, I think you've rather foreshadowed the next question. You said that it would stay for 48 hours until something changed.

A. Yes.

Q. And we can see there, can we, that in fact the bag that was started at just after midnight on 5 August ceased at around midday that day?

A. Yes.

Q. Just going back, please, just for the sake of completeness, you told us about your contact via prescriptions with [Baby F]. If we could go to tile 245, please.

We can see here, is this a document you're familiar with?

A. Yes, sort of, yes.

Q. Okay.

A. It's not exactly how it appeared on the screens to us as we would use the system, but yes.

Q. Okay. Can we go back to the previous page, please, Mr Murphy, first? Sorry, on that tile, the summary page.

So if we look here, the suggestion is that at 10.35 am [Baby F] received some sucrose by way of medication.

A. Okay.

Q. And if we look at the entry on the document that you were looking at, that you didn't seem entirely familiar with, at 10.35, please. It's the second one up. We can see there the administration of that sucrose and it appears that you're on the form as a co-signer.

A. Yes.

Q. What would that have involved?

A. So it would have -- sucrose is given for comfort really, so if you're doing a procedure for the baby like a blood

test or passing an NG tube or anything that might be slightly uncomfortable, you can give the baby sucrose as a comfort measure. As a co-signer I'd just be a double-check. It was already prescribed to be used when needed on there. So the nurse would always ask somebody else just to double-check before giving it, so usually it was another nurse but sometimes it's a doctor if they happen to be handy in the room --

Q. I was about to say, it doesn't have to be a second nurse, which we have heard of examples before?

A. Mostly it is a second nurse, but if I happened to be by the computer and she'd be like, can you just check this?

Q. Back in the hot seat, perhaps?

A. Yes.

Q. You told us how the process of prescribing TPN bags takes place in the pharmacy.

A. Yes.

Q. The nature of a prescription, would it be right to say it is specific to a particular baby?

A. Yes.

Q. And that would be clearly represented on what the pharmacy produced?

A. Yes.

Q. Would, in your experience, ever a nurse be required to add anything to a TPN bag?

A. No.

Q. Would, for example, a nurse ever add insulin

legitimately to a TPN bag?

A. No. If a baby needed insulin, it would be run as a separate infusion alongside the TPN. It would never be added to it.

Q. And would that insulin arise out of a prescription from a doctor?

A. Yes, always.

MR ASTBURY: Thank you. I have no more questions for you, doctor. I don't know whether anyone else has.

MR MYERS: Thank you, Dr Ventress.

My Lord, we didn't require Dr Ventress to give evidence, therefore we have no questions for her.

MR ASTBURY: May Dr Ventress be released, my Lord? I think she's required again later in the trial.

MR JUSTICE GOSS: Yes. Thank you very much. That completes your evidence at this stage, Dr Ventress. Thank you for coming and giving it. Please don't talk or communicate in any way with anyone about anything to do with this case until it's all over.

A. Okay.

MR JUSTICE GOSS: Right, thank you.

(The witness withdrew)

MR ASTBURY: My Lord, we'll need a screen, I'm afraid, for the next witness.

MR JUSTICE GOSS: That's all right. What we'll do then is treat this as our mid-morning break. I know we've only been sitting for an hour, but this will be our 10-minute

break. The next two witnesses will both be screened, so we'll get the court set up for that and just continue in 10 minutes? All right? Thank you very much.

(In the absence of the jury)

MR JUSTICE GOSS: Has any thought been given to what paper documents are going to be provided to the jury?

MR ASTBURY: We've been discussing it this morning between ourselves and we'll need to engage with Mr Myers. I think in principle, we were obviously anxious to minimise the amount of paper, but if there are key documents --

MR JUSTICE GOSS: There are certain key documents that keep being flicked backwards and forwards to and it is much easier -- whatever the merits of digitisation of them coming up on the screen and going off the screen, sometimes it's helpful to have them for comparative purposes and fitting one with the other in paper form. So that's what I would have thought the jury are going to need.

MR ASTBURY: We're thinking of it, we're working on it. We haven't yet engaged with the defence, but we want to keep it to a minimum, obviously with the defence's agreement.

MR JUSTICE GOSS: It'll have to be agreed, whatever it is, or if it's not agreed I can adjudicate upon any issue. But I agree, it should be the minimum, but there are certain core documents.

MR ASTBURY: And it will just take us a little bit of time to go back over the other cases and reach a view on those.

MR JUSTICE GOSS: That's fine. It's work in progress anyway?

MR ASTBURY: Yes.

MR JUSTICE GOSS: Thank you. Ten minutes please.

(11.29 am)

(A short break)

(11.40 am)

(In the presence of the jury)

MR JUSTICE GOSS: Yes, Mr Driver.

[NURSE B] (recalled)

Examination-in-chief by MR DRIVER

MR DRIVER: [Nurse B], as I'm sure you appreciate, you're still bound by the oath or affirmation that you took when you were first with us.

A. Yes.

Q. You have already given evidence to the effect that you were on duty, working a night shift, on 29 July 2015, the day when [Baby F] and his brother [Baby E] were delivered at the neonatal unit.

A. Yes.

Q. Is this correct that then you were off duty for a few days?

A. Yes.

Q. But then you returned to work day shifts on the 3rd and

4 August 2015?

A. Yes.

Q. Thank you. First I'll deal with 3 August, but we'll do this quite briskly, if we may, and then focus in a little more detail on the day shift of 4 August.

A. Okay.

Q. I wonder whether Mr Murphy could please put up [Nurse B]'s nursing notes at J2982 from 3 August.

We can see some notes recorded by you at or around 10.50 that morning --

A. Yes.

Q. -- in relation to [Baby F]. It records his mother's presence on the unit that morning, communication between yourself, Dr Ventress and [Mother of Babies E & F], and a plan for contact between mother and son during that day, and other matters relating to some investigations that were being undertaken as previously planned.

A. Yes.

Q. Thank you. Can we look at [Nurse B]'s next entry on this day?

In summary again, a little later, at 11.02, we see your note of what appeared to be -- could you confirm -- the protocols that you would always undertake at the beginning of a shift?

A. Yes, so I'd always carry out my equipment and safety checks at the start of each shift.

Q. Thank you. Tell us a little about [Baby F]'s condition that morning as noted by you.

A. So just to clarify that I will be reading mainly from the screen today as per my notes as my memory of this day isn't very good anymore due to the length of the time.

Q. We understand.

A. So, as I always done in my notes, I've clarified the care that [Baby F] was receiving from the beginning of the shift. He's been nursed in an incubator in 65% humidity, which to help with his -- maintain his temperature and to help his skin develop. He's on a Philips monitor, which is full ECG monitoring. He is self-ventilating in -- sorry, let me read the next line.

He is self-ventilating in 25% oxygen, which is [Baby F] breathing for himself but with extra oxygen circulating within the incubator. So he's in an extra 4% oxygen than you and I are breathing.

I've clarified that he's been taken off his CPAP respiratory support at 05.50 that morning. So that would be the night shift that's prior to me coming on shift at 7.30.

I've noted a desaturation to 81% at 08.15 and he didn't improve with increase of oxygen. He was also showing some signs of respiratory distress, which I refer to as intercostal recession, and tachypnoea, and so he's gone on to a different type of respiratory

support called Optiflow. This is a step down from CPAP. So he hasn't needed to go back on to CPAP, he's gone back on to a different form of respiratory support. Initially that was started at 6 litres. However, his oxygen requirement was quite large at 40%, so I will have liaised with the medical team and the flow has been increased to 7 litres and that's brought his oxygen requirement down to 30%. So that's a good effect.

And then I've said that a blood gas has been taken and I have said that result was satisfactory and his respiratory distress was settling.

Q. Thank you. So to summarise that, was it the position that that morning there was some transient respiratory distress displayed and so you amended the regime accordingly and it appeared to right the problem?

A. Yes. It looks like he's been taken off his CPAP because he's obviously been well enough to. However, he's shown that he's got a little bit tired so he's gone back on to another form of respiratory support, but that's a step down from CPAP.

Q. Thank you. Could we look at your addendum at 13.58, please, Mr Murphy:

"Lipid discontinued as now half enterally fed."

Could you help us understand that?

A. That's the night-time entry, sorry.

Q. It is, yes. Forgive me. So this is towards the end of your shift?

A. Yes. So do you want me to refer to the --

MR JUSTICE GOSS: There's one earlier on in the afternoon.

MR DRIVER: Sorry, my eyes ran to the word "lipid". Forgive me. Let's take it chronologically. 13.58?

A. So I've stated here which fluids [Baby F] was on, which was Babiven, which is another word for TPN, and lipid. And those fluids have been going via a long line in his right leg. The line seems to have been working fine. The feeds have been going up 1ml every 8 hours. Then I've referred to his aspirates via his -- it doesn't say NG or OGT, but one of the two, which are normal. He's weed and he's pooed and his abdomen is soft and non-distended, so no signs of any issues, so that's why his feeds have continued to increase.

I have given him his IV antibiotics and I've referred there to the gentamicin level, which is normal. That's a blood level that is taken from a baby if they are receiving the antibiotic gentamicin.

Q. I'm grateful. So that's the state of play throughout the afternoon into the early evening. And then towards the end of your shift, where I jumped the gun, at 19.01 you recorded the following. Could you help us understand this, please?

A. Yes. So at this time when babies were -- you do their fluid calculations, so if you -- shall I just explain about the calculation?

Q. Please.

A. So it depends on how many days old the baby is as to how many millilitres per kilo per day the baby is on. I'm not sure how old [Baby F] is here, but he's on 150ml per kilo per day, which is mean he's 5 days old or more. Then you work out how much fluid the baby has to have per hour.

You wean the IV fluids as the milk increases. So as [Baby F], at some point during this day, has received over half milk per hour, according to the IV you stop the lipids, so then the baby doesn't receive too many calories within the day. So that's what that refers to. So that's a good sign: he's tolerating his milk, so he's having milk instead of an IV medication. It's a good thing.

Q. So when under your care on the day shift of 3 August, his progress was such that he was moving away from intravenous fluid nutrition towards a more natural diet?

A. Correct, yes.

Q. Thank you. I believe that's your last entry in the nursing notes for this date. Obviously there would have been all the underlying charts that you've taken us through on other dates for other patients, indeed, but --

A. Yes.

Q. -- this is a summary of the events of 3 August.

A. Yes. I have said he stayed on his Optiflow, no further apnoeas, bradys or desats. So that's good, he's gone on

to the Optiflow and he has remained on Optiflow, he has not had to step back up to his CPAP again, which he was on the previous night shift.

Q. Thank you. I wonder whether Mr Murphy could take us to the carousel and take us to tile 49, please.

Now we're about to move to your day shift of 4 August, [Nurse B]. We can see on the previous tile, tile 48, it had been recorded that handover of [Baby F]'s cares moved to you when you came on shift that morning.

A. Yes.

Q. We'll now consider, in summary form firstly, your notes of the day. So if we could, please, go behind tile 53, Mr Murphy. We'll look at J2989.

Thank you. We can see a note here that appeared to be created quite late in that day.

A. It was a busy day, yes. The medical care will always come before the documentation.

Q. Right. So treat the patient and then record what you've done when you get the chance?

A. Yes.

Q. Thank you. Of course, by this stage, his brother [Baby E] had passed away --

A. Yes.

Q. -- which, of course, would have markedly affected the mood within the unit and the manner in which you would have to treat all concerned parties?

A. Of course, yes.

Q. And that's really what you've documented in the first part of this note; is that correct?

A. Correct, yes.

Q. There was a plan in place by this stage to, when possible, transfer [Baby F] from Chester to the different hospital as soon as was practicably possible?

A. Correct, yes.

Q. And thereafter, I'm sure we can all read the note for ourselves, the encouragement that you gave to the family to try and aid as best you could.

If we could look down to the bottom of this page, same side of the page, down to the bottom. Here again, early evening, you're recording all that you would have done at the outset, which follows the protocol that you took us through for the previous day. And then we look at the actual measurements and data collected in relation to [Baby F] that day.

In summary, how were things going in terms of his respiration?

A. So he remains on his Optiflow with the same level of 7 litres. So he's remained constant from the previous day. However, his oxygen requirement through -- because you have the pressure and you have the oxygen through it, there's two different parts of the Optiflow. So the flow has remained the same but he has actually decreased on the amount of oxygen that he's needed, which is

really good. I've put "mainly in air", which is 21%, and I've written:

"Occasionally requiring 23% to maintain oxygen saturations."

So that's good.

And I've said:

"No signs of any respiratory distress."

So good.

Q. Thank you. His feeding?

A. So his total fluids have remained the same. He's now just on Babiven. There's no mention of lipid here. Still going via the same long line in his right leg, which I've said seems to be working fine. He's got a spare cannula in his left hand for his antibiotics, and caffeine which are both given as prescribed, and feeds have been increased to 1ml, six-hourly, I think. The previous note was 1ml, eight-hourly. So he's increased the timing which -- he was increasing on his milk, so that's a good sign.

Q. So at this point in time the right leg long line was working satisfactorily?

A. Yes.

Q. No adverse effects that you could see at that point?

A. No.

Q. But you note that, at this point in time, there was already sited a cannula in the left hand, a peripheral cannula?

A. Yes.

Q. Does this record the siting of that, the act of placing it, inserting it into the baby, or is this just you confirming its presence?

A. I'm confirming its presence.

Q. Thank you. Let's look at the remainder of the note, which is in the top upper right part:

"16.59 (continued)."

So you're continuing here to note the feeding observations?

A. Yes.

Q. And you noted that there were some -- one medium and one small vomit in that afternoon?

A. Yes. So I've got to a certain point with the milk and [Baby F] has shown that he will not tolerate any more at that time so I have not increased the milk any further during that shift. I've confirmed within the vomit that there's no bile and the vomit had some partially digested milk. So it's likely that the vomits are a sign that he does not want any more at that time rather than an underlying problem. So I have maintained at the same amount I have been giving, I've not had to stop the feeds.

Q. So on your assessment, just a volume issue rather than anything more problematic?

A. From my notes, it appears that way, yes.

Q. Thank you. Could you continue to take us through the

note, please?

A. Yes. I have said that the aspirates have remained minimal to 2ml. I've said that [Baby F] has passed urine and had his bowels opened. And I've put there "yellow seedy stool" and that's a really good sign that he's moved on from the poo within the first few days, which is the meconium, which is the black poo, so this is a sign that his bowel is acting appropriately and I've confirmed that his abdomen is soft and non-distended.

Q. Pausing there, so notwithstanding the two vomits that you noted, there's the best evidence possible that the digestive process is ticking over as it should?

A. Yes.

Q. Thank you. Take us back to the note, please.

A. I have said he handles well. I've referred to that previously where it's not just what the baby looks like, it's not just the numbers that are written. If a baby is showing signs of being unwell, they can then sometimes have apnoeas when you handle them or have bradys, bradycardias, or desaturations when you handle them, they can become very irritable. So by just writing "handles well" that's covering all of those bases, that that is a normal response that's good.

Eyes remain fused, which can be a normal occurrence at [Baby F]'s gestation.

Q. Could you just explain that to us?

A. Yes, of course. So I actually can't remember off the top of my head at what gestation it happens, but when the baby is developing inside of mum the eyelids are completely stuck together, they're fused, and at a gestation they will open. It's around -- I actually can't even speculate -- it's the end of the second to the beginning of the third trimester.

Q. So does it follow that the fact that [Baby F]'s eyes were still fused on 4 August was just a consequence of the prematurity of his birth?

A. Yes.

Q. Thank you. I think, could you confirm, the remainder of this note refers to the plan to transfer if possible and you completing the administrative necessities to enable that?

A. Yes, that's correct.

Q. Thank you. I wonder whether we could go to tile 49, please. We've just considered your summary of this shift and we'll just look at some aspects of the more detailed observations that enabled you to arrive at that summary.

If we could, please, look at J3190 beneath this tile. We can scroll to the bottom to show the witness her initials, which we can see begin there. That's from the previous shift, as it were, and then pick up here, largely you but with, I think, Nurse Tomlins assisting in one regard.

Let's look to the top and let's see where this corresponds in terms of time. This is 8 am on 4 August?

A. Yes.

Q. That's your day shift on this date. We can see your record of the heart rate from 8 in the morning until 5 pm-ish in the afternoon.

A. Yes.

Q. And in summary, what does that data inform you as to the state of this baby's heart?

A. At the beginning of the shift the heart rate is the higher end of normal. And then within the middle part of the shift, from 10 till 3, is completely within normal range. And then from the 4 pm and 5 pm, has rised (sic) again slightly, but still within normal parameters.

Q. Thank you. The remainder of the observation chart for the latter part of your shift is behind a different tile. So we'll deal with everything recorded on this page and then we'll pick up the themes on the next to save causing any unnecessary delay. So let's scroll down to the next set of observations for the same time period and under respiration could you please talk us through that?

A. Yes. So the first couple of entries, 8 and 9 am, are the high end of normal. And that fits with what I've said within my documentation that [Baby E] had some signs of respiratory distress. I mentioned the word

tachypnoea. Now I can see them both together, quite often what happens is the heart rate will rise with the respiratory rate, so that looks like what's happened here.

Q. You're pointing to the corresponding dips, as it were, at about 10 or 11 am, or thereabouts?

A. That's when the Optiflow has been commenced. So the Optiflow has helped [Baby F], so his breathing rate has come back down within completely normal range -- although, as I say, 8 and 9 is normal range, it is just the higher end of normal range. You can see from the previous trend of data that's higher than what it has been for [Baby F] previously.

Q. Thank you. Could we consider the temperature record for the same period of time?

A. Yes. So the first one that I've taken is ever so slightly out of normal range, it's 37.2. Would you mind just scrolling down a little bit, please? Then I can see what change I've made.

So at that point I've reduced the amount of humidity from 60 to 55% and checked his temperature an hour later and it's come back within normal range.

Q. Thank you.

A. And it's remain within normal range for the --

Q. Are you there taking our attention to your first two entries, if we look at your initials down at the bottom?

A. Yes.

Q. So his temperature was elevated?

A. Ever so slightly, yes.

Q. So you corresponded --

A. By turning the humidity down, yes -- the extra temperature going in, not the overall heat temperature, the humidity going in.

Q. And in so doing you were able to bring his temperature down?

A. Yes, so it looks as though it's an environmental cause of his temperature going up rather than anything else.

Q. So we can see there at digits 37 on the column to the left there's a black bar that runs through the chart; am I right?

A. Yes, that's 37 degrees.

Q. Is that a target line, effectively?

A. That would be within the normal range, yes.

Q. Thank you. If we could then, please, go to tile 104, Mr Murphy, which I think has the continuation of this document for the remainder of your shift. So we are looking for exhibit J3191.

Just to orientate ourselves, we can see your initials in the bottom left corner --

A. Yes.

Q. -- for observations undertaken at 18, that is to say 6 pm, and 19, 7 pm?

A. Yes.

Q. Let's just take these one by one. Let's look at the

heart rate, please, let's look at all of that chart, heart rate. Magnify it a bit.

A. Yes, thank you.

Q. We know you're at 18.00 and 19.00 hours.

A. Yes. Heart rate is normal. Respiratory is normal. And temperature is normal.

Q. But you, I'm sure, can read this chart to confirm that some time after your shift ended, there was marked elevation in both heart rate and rate of respiration?

A. According to the charts, yes.

Q. But you were elsewhere by now?

A. Yes.

Q. Thank you. Let's consider the blood gas chart for your shift, please, and let's look at tile 55, please, Mr Murphy.

Scroll down because this begins on 1 August when we know you were on leave. As you told us, you returned on 3 and 4 August. We can see some entries there alongside your initials.

A. Yes.

Q. Firstly, on 3 August for 09.45.

A. Yes.

Q. Then 15.54 in the afternoon for that same day.

A. Yes.

Q. Mr Murphy, can we concentrate on the blood sugar levels there, please? Thank you.

So let's just ensure that we're right in terms of --

satisfy ourselves we're looking at the right column there. Do you agree?

A. Yes.

Q. So glucose and lactate next to each other there. And a reading at 09.45, 5.4, and at 15.54, a reading of 3.9.

A. Yes.

Q. Would those levels cause you any cause for concern?

A. No.

Q. Then we can see the next entry is not yours because it's at 21.48 on 3 August, by which time you were not in work, having taken two consecutive day shifts. So let's go to 4 August when [Baby F] was under your care again.

At 08.16 hours, early into your shift, did you take that measurement of 3.8?

A. That's my signature, yes.

Q. Again, would that be a satisfactory blood sugar level reading?

A. Yes.

Q. Thank you. Let's move on, please, then to tile 50 and consider the fluid charts from the underlying document at J3203.

There we can see your initials?

A. Yes.

Q. Predictably beginning at 08?

A. Yes.

Q. So 8 in the morning. We can see the fluid regime that [Baby F] was subjected to at the time. So can you take

us through that as it evolved during the day, please?

A. Yes. So I'm recording the total volume per hour. The score on the long line for the site and the pressures I've recorded as zero. And there's a tick there to say I've checked the site and the limb and that's all normal.

I have given milk every 2 hours apart from -- there's a gap, I've given one at 9 and then one at 12. I can't see a reason for that. However, it might have been because I've said in my notes there was a small vomit and a medium vomit, so it might be that there was a small vomit after the 9 o'clock one.

Q. If we look at the output part of the page and --

A. Yes, the medium vomit is recorded for 3 pm.

Q. Yes.

A. But the small vomit isn't recorded there, it's only recorded in my written notes. That could account for why there's been a gap of 3 hours.

Q. Thank you.

A. So the milk has increased at midday and the recordings are there in the output. PU, passed urine, and BO, bowels opened, yellow, which is, as I say, a good thing.

Q. For the sake of completeness, can we look at your entries for 09.00 hours in the output column?

A. So I have just recorded the pH of the NG tube, which clarifies that it is in the stomach, it's in the correct place, and there's a 2ml aspirate, and the R in the

circle is that I've replaced the aspirate.

Q. Right. And replaced in this context means?

A. Put back into the baby.

Q. Because it's of value to the baby?

A. Yes.

Q. Thank you. Does that, on that page, capture all your data re fluids for the entirety of that shift?

A. It does, yes.

Q. Thank you. So taking a step back, in summary -- perhaps we should look at the other part of this page out of completeness because it's a single page, isn't it --

A. Yes.

Q. -- into which two different sets of data are inputted?

A. Correct, yes.

Q. Thank you, Mr Murphy.

Again we can see your initials in the same corresponding period. Day shift, 4 August. Just take us through these in general, please.

A. Sorry, would you be able to make them a little bit bigger, please?

Q. I'm sure Mr Murphy will be able to help us in that regard.

A. Thank you.

Q. We have the ventilation as per your narrative in your nursing notes.

A. Yes, Optiflow.

Q. The next entry, where we see lots of --

A. Clarifies he is being given 7 litres.

Q. Thank you. The more variable entries towards the bottom?

A. Sorry, I can't see what it correlates to. I need to be shown the left-hand side of the screen. Thank you. So that's [Baby F]'s breathing rate.

Q. All satisfactory, although not constant?

A. So what I've already referred to on the observation chart.

Q. Thank you. Scroll down that page, Mr Murphy, please. These are further entries which tell us the story, effectively --

A. Yes, so the ticks are to say that [Baby F]'s had equal air entry on the right and left-hand side and I have been able to come up with that conclusion by looking at the baby's chest rise and fall, so that would be symmetrical, and I have also listened in with a stethoscope to determine equal chest sounds on both sides. That clarifies there that he's been in air via the Optiflow, not needing any extra oxygen. Oxygen saturations are below and humidifier temperature isn't -- the Optiflow is humidified oxygen in air, so we have to record that the humidifier is working correctly and that's always around about the 37 mark.

Q. Thank you. So that sets out in detail that which you summarised in your nursing note. Could you summarise yet further, even more pithily, how was [Baby F] doing

under your care on the day shift of 4 August?

A. I would say, based on all of the notes and the observations that I viewed here today, there was slight concern for the respiratory status in the morning, which was corrected by the Optiflow. I can't see that there's any other concerns.

Q. Thank you.

A. That aren't outside of normal prematurity.

Q. Thank you. And did that conclude your direct dealings with [Baby F] during his time at Chester?

A. I can't remember, sorry.

MR DRIVER: Thank you. That's all I wish to ask you about anyway. Could you remain there and answer any questions?

MR MYERS: Thank you, [Nurse B]. My Lord, we didn't require [Nurse B] to attend to give evidence and we have no questions for her.

MR JUSTICE GOSS: All right. Thank you.

Thank you for coming and giving your evidence, further evidence, in this case. I haven't checked the schedule. Do you believe you're coming back?

A. I do.

MR DRIVER: Yes.

MR JUSTICE GOSS: All right. What I've said to you before then still applies: don't speak or communicate in any way with anyone about anything to do with this case until it is all over. Thank you very much. You remain

seated.

Sorry, you can't remain seated. You have to slip out for a few minutes and the next witness will take a seat in the witness box.

(In the absence of the jury)

MR JUSTICE GOSS: Can everyone who is not a lawyer in the case please leave the courtroom now, and Ms Letby as well, please. This is just for a minute or two.

(Pause)

(The witness withdrew)

MR DRIVER: The next witness also has the benefit of screens.

MR JUSTICE GOSS: I'd anticipated that.

(Pause)

(In the presence of the jury)

[NURSE A] (recalled)

Examination-in-chief by MR ASTBURY

MR ASTBURY: My Lord, I recall [Nurse A], please.

Could we begin for the record with your full name, please?

A. [Nurse A].

Q. We have heard from you before. We know that you, at the time we are interested in, were a specialist neonatal nurse, being a band 6, employed at the Countess of Chester Hospital --

A. Yes, that's correct.

Q. -- throughout 2015, certainly?

A. Yes.

Q. You know you have come here today to answer questions about a night shift that you conducted on the 4th into 5 August 2015?

A. Yes, that's correct.

Q. I'm going to ask you about your treatment of a baby named [Baby F].

A. Yes.

Q. I think -- was this your first night shift on this particular run?

A. Yes, I believe it was, yes.

Q. So you hadn't worked the night before, the 3rd into the 4th?

A. No.

Q. So you were made aware, can you recall, when you came on duty on 4 August about the death of [Baby F]'s twin brother, [Baby E]?

A. I can't recall the conversation, but I do know that I was aware that [Baby E] had died the previous night.

Q. All right. Well, to assist you, could we go, please, first to tile 100 and the document behind.

We can see there the list of staff who were on duty at the outset of that night shift, 7.30: the paediatrician of the week and the on-call consultant, with the medical staff on the ward, if I can put it that way, David Harkness and Christopher Wood. And then moving on to the nursing staff, the shift leader was

Belinda Williamson, as she now is --

A. Mm-hm.

Q. -- yourself, Lucy Letby and Sophie Ellis. And then we can see two nursery nurses assisting, Valerie Thomas and Cheryl Cuthbertson-Taylor?

A. Yes.

Q. Does that accord with your recollection?

A. I... I couldn't recall, but --

Q. Okay. Let's go on to the next tile then, please, Mr Murphy, and have a look at the allocation.

We can see, if we look at the central lower box representing nursery 2, you were the allocated nurse for [Baby F] that night?

A. Yes, and I remember -- I do recall [Baby F] being in that room and where he was in that room.

Q. In nursery 2?

A. Yes.

Q. Okay. We can see, while we're there, the allocations for the other nursing staff that we've just looked at. On this occasion Nurse Williamson was supernumerary, as she was the shift leader; is that right?

A. Yes.

Q. So no allocated baby but able to supervise the entire unit?

A. Yes.

Q. All right. Do you recall now, or having seen the notes even, whether any concerns were raised with you about

[Baby F] during the course of the handover?

A. No. Yes, I recall no concerns were raised.

Q. Okay.

A. Nothing stands out to my memory from the handover other than it would have taken place and nothing of concern was --

Q. Right, okay. Your recollection of this shift, is it based on the notes that you've had the opportunity --

A. Largely based on the notes, yes.

Q. All right. Let's go then to your first note, which is behind tile 103. We can see this is a note that you made between 6.16 and 6.29 the next morning --

A. Yes.

Q. -- with your initial alongside?

A. Yes.

Q. And it covers the period from 8 pm until 1 am?

A. Yes.

Q. Could you take us through it, please?

A. So I've written it in retrospect, I imagine, because we became busy --

Q. Yes, understood.

A. -- (overspeaking) midnight as we're going to discuss.

So what I'm doing is summarising between the start of my shift, so 8 o'clock, the end of handover, and 1 o'clock in the morning, that he remained on the Optiflow, that he was in air, so not having additional oxygen, that his oxygen levels, that's the SaO2, were

above 95 all the time, so where we'd want them to be, and that his breathing was all satisfactory.

Q. I think that's respiratory rate and --

A. Work of breathing. That they were satisfactory, so he wasn't working hard and his rate was within normal limits. So the "remained on 12ml two-hourly" will be referring to the amount of milk feed he was having.

Q. Right.

A. And that he'd just had a small vomit following his 8 o'clock feed. He must have been out having cuddles with mummy at the time, from that, which wouldn't be the cause of his vomit, I'm just making the observation.

Q. Any concern at that small vomit at that stage?

A. No. Lots of babies sort of might burp and bring up a little bit of milk or just vomit a little bit of milk.

Q. The note continues?

A. The aspirate of 9ml would indicate that, at just before his midnight feed, I just aspirated, via the feeding tube, so withdrawn how much is in his tummy, just to make sure that he is digesting it fine, and he is because I only got 9ml and he's 12ml two-hourly.

Q. And indeed your note says "part-digested milk?"

A. It does, yes. So that's all good. His tummy was nice and soft. That's an important observation because one of the first signs if they're unwell with a bowel infection is their tummy isn't soft.

All his observations are within normal limits, so

temperature, heart rate, breathing, pulse. Then I gave him the aspirate that I'd taken out, so I gave him that 9ml back --

Q. Right.

A. -- I didn't discard it, and then I fed him his next 12ml as well.

Q. So the fact that the feeds are continuing, does that suggest that you were (overspeaking) --

A. I was really happy with him. He was --

Q. -- (overspeaking) with what you had found? All right.

You mentioned the observations that you maintained up until -- well, let's look at the observations for that period you've written here, if we may, and we'll find them, I hope, behind tile 104. Let's concentrate for now on that time up until midnight, please.

So the first, I think, five columns, please, Mr Murphy, on the form, if that's possible. If it's possible to go as low as the initials on the bottom to confirm.

I just want to check firstly that you recognise the signature on the bottom or the initials on the bottom.

A. Yes. So the first two, which are 6 and 7 o'clock on there, are [Nurse B]. And then the 8 o'clock, 10 o'clock, midnight, 1, 2, 3 and 4, 6 and 7 are mine, and the one at 5 o'clock is Lucy Letby's.

Q. Okay. So can we concentrate, then, please, on those first five columns up to midnight, the last three of

which you have just identified you entered on the form.

Up until midnight we can see the heart rate, first of all, which appears up and down, but would you agree pretty well in the middle of the acceptable range?

A. Yes, it's between 130 and 150. That's perfectly acceptable. Heart rates vary a little and that's within the acceptable range of a baby of this gestation.

Q. If we go down to respirations in the row below.

A. Again that's between... between 50/55. That's nice and steady. Nice and stable. Not much variation and perfectly, again, within normal range.

Q. Right, okay. For that same period up until midnight we're going to look at the neonatal fluid chart, which is behind 105. We're becoming familiar with this form finally and there seems to be two sides to this form, so if we can look at the left-hand side first, please. The whole of the page for now.

If we look to the right on the bottom row, do you recognise those signatures?

A. Yes. They're mine from 8 o'clock onwards.

Q. Right, okay. If we look at that first column at 8 o'clock, please. Can you help us with what's been written in the free text alongside respirations?

A. "OM", that he's having cuddles. So because he was out with mum, that would mean it was hard for me to see him, count his respirations.

Q. And that's what you put in the note that we read before,

that at 8 o'clock he was out with mum?

A. Yes.

Q. So you have entered, I think, a couple of values further down the page. Firstly, that he's in air; is that right?

A. Yes.

Q. 99 -- unfortunately the hole punch takes out what that refers to.

A. That's his oxygen saturation level.

Q. And then is that humidifier temperature?

A. Yes, so the Optiflow, the respiratory support he was on, has a humidifier on it, so the air he is breathing in is warm and slightly humid.

Q. Right. If we pause and we look across from that figure 99 on his oxygen saturations, we can see up to midnight there, they're maintained at a pretty high level. Would that be right?

A. Yes. Between 96 and 99, so that's perfectly --

Q. Right.

A. -- acceptable.

Q. Go back to the whole of that page again, please. That would have been the form. Bearing in mind where your signatures are -- in fact it's the second half of the page that has the date, isn't it?

A. Yes.

Q. Sorry, that's me getting confused. We can just check the date of that form and we can concentrate now on the

right-hand side.

Just confirming the date, 4 August, hence your signatures coming towards the end of that particular chart?

A. Oh yes, there you go.

Q. Looking at fluid requirements, is it right that [Baby F] was receiving a combination of TPN and EBM?

A. Yes. So EBM is expressed breast milk, so that's mum's milk.

Q. Right, okay. And if we again just scroll down, please, to the entries that you've made. The times here, of course, are on the left-hand side, so you'll be towards the bottom of this particular document. Thank you.

So similarly to the other side of the form, we can see [Nurse B]'s initials in the first two of those entries and then do you recognise the signature from the remainder on the form?

A. Yes, they're all mine.

Q. Okay. Again, not surprisingly, this reflects what you have already told us that the feed is 12ml per hour?

A. It's 12ml two-hourly.

Q. Right. It's via NGT; is that right?

A. Nasogastric tube, yes.

Q. There's a couple of remarks written. Can you make them out?

A. I can. At 8 o'clock, from left to right, you've got my

drip readings and then the 12ml is the milk feed, the feeding tube, and then in the next column it says 2ml and then in the little circle, that's an R.

Q. Yes.

A. Which means I'd aspirated the tube just to see that he was digesting the milk and at that point there was only 2ml, which I then replaced.

Q. The R means you put it back because everything's okay?

A. Yes. So it looks from that that we were checking every 6 hours how well he was digesting his milk.

Q. Okay. We then go down to 10 o'clock. We can see another 12ml; is that right?

A. Yes.

Q. With a note of a small vomit?

A. Yes, which I think is -- looking at that, I would say that that's sort of more around 9/9.30, because it's higher up in the box.

Q. Is that the one that you referred to in your note, do you think?

A. That will be the one I referred to in my note.

Q. Then as you've talked us through we can see in the midnight row, 9ml, an R. As you said, you returned it?

A. Yes.

Q. Can you confirm what the handwriting says?

A. "Part-digested milk."

Q. Thank you. Again just looking at that period up until midnight, are any of those observations or entries on

the fluid balance chart a cause for concern?

A. No, none whatsoever.

Q. Right. We can look, please, next at tiles 130 to 133. Maybe we don't need to go behind them, but we'll have a look.

We can go behind it if necessary but it may not be. We can see that at 21.33 -- and we know something now about the system with two nurses, one administering, one co-signing, but not necessarily --

A. In that order.

Q. -- in that order -- yourself and Nurse Williamson administering benzylpenicillin.

A. Yes.

Q. Which is, am I right, an antibiotic?

A. It is an antibiotic, yes.

Q. We can then see, a minute later, administering sodium chloride?

A. That would just be a flush, what we call a flush, so we've gone to give the penicillin. I will have -- or Belinda, whoever gave it, will have flushed first with a little bit of sodium chloride to check the line's patency and also to make sure that anything else is flushed through. We've then given the medication so you're not cross-mixing medications in the cannula or the line. Then we've given a little bit of a flush to make sure that all the medication has gone out of the line into the baby.

Q. So it goes in before, then the antibiotics, then flushed through again?

A. Yes.

Q. Okay. I think the next two tiles show that you then, having administered these particular medications, update the computer to that effect?

A. Yes.

Q. Can we go to tile 139, please, next, only because we've been through these charts generally between 8 o'clock and midnight, they appear at each hourly entry and we have looked at them already. If we look behind 139 next. A blood gas record --

A. Yes.

Q. -- from the unit? If we scroll down, please, to 4 August. We can see -- is that your signature on the right-hand side of that row?

A. It is for the bottom four entries that I can see.

Q. Just look at that entry first, please, timed at 11.32.

A. Yes.

Q. And reading across to the third column from the right -- I think I can lead you on this -- this is the blood sugar level where you entered the blood sugar?

A. The 5.5.

Q. And it's 5.5. Tell us how those readings are arrived at? Is there a sample taken from the baby?

A. Yes. So the C in the third column from the left indicates it was a capillary blood sample, so that will

be a blood sample acquired from a little -- what we call a heel prick. We have special lancets that make an incision in the baby's heel. We then collect a small amount of blood into a capillary tube, that's then taken to the blood gas analyser, and that one little sample would give us that whole line of results.

Q. Okay. Is there another way that blood sugar can be measured?

A. It can be collected by the same method, if need be, but into a little pot, for want of a better word, but then gets sent to the lab to be analysed. So there can be a slight difference between the two, but they usually correlate quite well and because it's a much smaller sample of blood then generally we will use the one on the --

Q. Just excuse me a moment. When you take the blood gas readings, is there a printout of any sort or is it simply read off the machine?

A. No, there will be a little printout, if I remember rightly, because I've used several different blood gas machines since then. But I seem to remember this one did do a little printout that then we would take back and write the results on that chart.

Q. Okay. Was there a means of doing it where there wasn't a printout or would there always be a printout from the machine? In other words, would both methods produce the printout?

A. Oh, if it went to the lab then that would be -- you'd be able to read that on the computer system --

Q. Right.

A. -- as well. This gas machine didn't talk to the computer system so it was recorded on the paper.

Q. Okay. Just looking across the line here, this entry with 5.5 on, is that all your handwriting right across the row?

A. I would say so, yes.

Q. Right. I ask simply because if we look at the very first figure 7 and the very last figure 7 across, one's got a little tail, the other hasn't, but it matters not perhaps.

A. But then the seventh box where it says 26.7, that hasn't really got a tail either, has it?

Q. That's all your handwriting?

A. I think that is my handwriting. The last two columns look slightly less like my handwriting but I couldn't be certain.

Q. Okay. 5.5 in your experience, is that an acceptable blood sugar level?

A. That's a good blood sugar level, yes.

Q. All right. We've looked at the observations up until midnight. I'd like to look next, please, at tile 140. Just bringing us up to speed, that's the note you made at midnight?

A. Yes.

Q. You told us that despite that, you had no concerns about [Baby F]'s condition?

A. No, he was -- all his chart looks fine.

MR ASTBURY: Thank you. We go next, please, to tile 144.

My Lord, I'm about to move on to a subject that may occupy a little time, it's the administration of the TPN bag. I don't know whether I start now or...

MR JUSTICE GOSS: It's up to you. If you wanted to start it in a general form or do you want to do it all in one piece?

MR ASTBURY: I'd like to do it all in one, if I may, please.

MR JUSTICE GOSS: All right. There we are. We'll finish a bit earlier but we'll start a bit earlier. If you just remain there, please. You know that you mustn't talk to anyone about your evidence.

A. No.

MR JUSTICE GOSS: Can you be ready to come into court again at 2 o'clock? Thank you very much indeed.

(12.55 pm)

(The short adjournment)

(2.00 pm)

(In the presence of the jury)

MR JUSTICE GOSS: It's a query that I'll hand to you to look at and see if the answer can be given. It relates to bowel assessment. (Handed)

MR ASTBURY: My Lord, I'm not sure that's necessarily to do with the evidence, given the date on the form. We think

it's...

MR JUSTICE GOSS: Sorry?

MR ASTBURY: We think it's a personal note from one of the jurors.

MR JUSTICE GOSS: I'm sorry.

(Pause)

What time do you think you'll be able to be here then?

JUROR: I can still come, it's just a phone consultation.

MR JUSTICE GOSS: So if we start at 11 o'clock then?

JUROR: That'll be fine.

MR JUSTICE GOSS: I'm sorry, I'm being very slow.

JUROR: It's all right, it's Monday!

MR JUSTICE GOSS: As far as tomorrow is concerned, we'll start at 11 o'clock.

You were going to resume.

MR ASTBURY: With my Lord's consent, yes.

I'm going to look next at tile 144, please and a document that lies behind it. I have taken you through the shift up to midnight and we had looked at the fluid balance chart and you'd told us that, by way of nutrition, at that stage [Baby F] was receiving TPN and expressed breast milk.

With that in mind, could we scroll down, please, to days 7 and 8 on this particular chart. A chart you are familiar with?

A. Yes. I'm re-familiarising yourself.

Q. Of course. Please take your time. Would you like to see the top of the form as well before we go on?

A. If I could, yes, because it's some years now since I've worked there.

Q. Yes.

A. Okay.

Q. So we have heard how -- taking Dr Beech on the first line that you can see here by way of an example.

A. Yes.

Q. After initial Start-up, Maintenance -- Maintenance bags are prescribed to specific babies?

A. Yes.

Q. Those prescriptions are sent to the -- please correct me if this is not consistent with your recollection -- they're sent to the pharmacy, usually in the morning?

A. Yes.

Q. Received on the ward, having been made up specifically in the pharmacy, in the afternoon?

A. Yes.

Q. And stored in a fridge in the ward; is that right?

A. Yes, that's right.

Q. Marked for the specific baby subject to the prescription?

A. Yes.

Q. And the target is to hang them round about midnight; is that right?

A. Yes.

Q. For a period of 48 hours ordinarily?

A. Yes.

Q. Unless something else happens?

A. Yes.

Q. All right. So can we look, please, at day 7, 4 August. It gets complicated, I suppose, when it's either side of midnight, but certainly the form is dated 4 August.

For now if we can ignore the fact there's a line through it, it's a prescription from Dr Beech, dated -- "time and date" -- I think that should say, it is just knocked out -- "begun" or "commenced". If we can lower that lower portion, Mr Murphy, please. Thank you.

"Time and date started"?

A. Yes.

Q. So this refers, does it, to a Babiven Maintenance bag started at 00.25 on 5 August?

A. Yes.

Q. Do you recognise the signatures underneath the column entitled "given by"?

A. Yes, I do. The top one is Lucy Letby and the lower one is myself.

Q. You told us in respect of the computer that whoever's the co-signer or the inputter isn't always relevant to who did what; is the same true of this sort of form?

A. Yes. Completely one of us has signed first, it just happens to be Lucy.

Q. Do you have any recollection of this specific event?

A. No.

Q. All right. I suppose we're dealing, really, with both at the same time because if we look down at the second prescription, the time and date started remains the same. Are they the same two signatures --

A. Yes.

Q. -- alongside?

A. Yes, they are on the Babiven. The lipid underneath it, the bottom signature is mine. I think the top signature may be Belinda's.

Q. Okay. Just looking at those two entries in tandem, just generally of hanging the bag, what does that tell you about, firstly, the time the bag was changed and what, if anything, changed thereafter?

A. So looking at that, I would say the bag was changed at 00.25, so just into 5 August --

Q. Yes.

A. -- which would fit with that midnight. So if you look at the whole prescription, where it says daily millilitres per kilo, there's 57.9 there, so we know that he was having milk as well.

Q. Right. If we read down, we can see 92.1 in the milk column.

A. Yes. So the total added together would give you --

Q. 150?

A. Yes, that would be his total fluid. So we know from that that he's having roughly two-thirds of his

requirement enterally. So milk, which we know is mum's milk from the other chart, and then the rest of his fluid requirement is being given by the Babiven through the long line. And where the lipid is, where Dr Beech has signed it and written "not required", she's prescribed it but they got prescribed in the morning, so basically she's prescribed that on the morning of the 4th. But by the time we came to put it up, he was over halfway on milk feeds, so we didn't as a rule give the lipid if they'd reached that amount of milk feeds --

Q. Okay.

A. -- which is why we've written -- I believe that's Lucy's writing, not mine -- "not required" in the lipid. That's why it's not required.

Q. So at the time the bag was hung at 00.25 on 5 August, the prescription, as it was, was correct with no requirement for lipid?

A. Yes.

Q. All right. Then we might -- well, we will come to it in a moment. Did something then change for, firstly, the quantity to be amended, the constituents to be amended, and the lipid to be added?

A. Yes, something has changed.

Q. We may come to that in a minute. Can we concentrate for now on the process of putting a bag up, as we've heard people put it.

I think you mentioned a moment ago it would come via

the long line.

A. Yes.

Q. Is it physically hung up?

A. Physically hung up on a drip stand.

Q. Okay. All right. Is there a pump to maintain the flow and the pressure of the bag?

A. There is, yes.

Q. Is that an Alaris pump?

A. I believe that was what we had at the time, yes.

Q. But there's certainly a pump through which it flows --

A. Yes.

Q. -- in order to maintain the flow?

A. Yes.

Q. All right. You mentioned earlier that the bag was kept in the fridge once it was delivered to the ward.

A. Yes, that's right.

Q. So depending on what time it had been delivered, it's been in the fridge for a few hours; is that right?

A. Yes.

Q. So is there any process for removing it from the fridge or letting it warm again? What happens with the bag before it's hung?

A. I mean, it would be taken out of the fridge, maybe a little bit in advance because somebody might get it for you, not necessarily a set time in advance. He was on quite a small rate by that point so by the time it had travelled down the line it wouldn't be fridge-cold

anyway.

Q. Okay. So it would have time to warm up to room temperature?

A. Yes.

Q. Even if it was put up fairly quickly?

A. Or you might get it out an hour in advance just to give it time to warm slightly.

Q. You mentioned that you wouldn't necessarily get it out?

A. No. I mean, because Chester at this time, we tried to change all our fluids around midnight, 48-hourly. It might be that there was more than one baby due fluids change. So if somebody went to the fridge, they might get two or three bags out and deliver the right bag to the right room or it might be whoever was allocated to look after that baby just went and got their bag out, but it could be somebody -- you'd say to somebody, "I need to change my fluids, could you get it for me as well?" There's no way of knowing, it would just depend on the workload.

Q. So we have heard there were keys for the fridge.

A. Yes.

Q. And the fridge -- the keys would change hands from time to time; is that right?

A. Yes.

Q. So it could be anyone who got the bag out of the fridge?

A. Correct.

Q. It wasn't necessarily the designated nurse?

A. No.

Q. So would the bag, once it was retrieved from the fridge, go through a checking process?

A. Yes. It would be, like all our medications, would be double-checked by -- two people would check it together.

Q. And what would those checks, in the case of a Babiven bag, entail?

A. So the Babiven comes in a plastic bag that can't be seen through because it's light sensitive, so you take the bag out of that, check that the labels matched, that they were specifically for that baby, if it had the baby's names on. There was -- also what was in them might vary slightly from baby to baby depending on blood results. So you'd just check -- there would be a piece of paper that came with the bag and you'd check that everything married up so you were certain that was the bag for that baby at that time.

Q. The piece of paper was that a copy of the prescription itself or was it something else?

A. No, this was more... It was, from what I remember, the same as the label that was stuck on to the bag and the bag that covered the bag of fluids, just saying exactly what was in there in what amounts.

Q. So obviously the first check would be the name of the baby --

A. Yes.

Q. -- on the bag matched the name of the baby to whom you

were about to administer?

A. Yes.

Q. You would check the calculations and the amounts on the bag?

A. Yes. We wouldn't necessarily check every little tiny calculation, but we'd just check that everything matched up.

Q. And two people would do that?

A. Yes.

Q. To reduce the risk of an error, presumably?

A. Yes.

Q. Would a nurse ever add anything to a Babiven bag at that stage?

A. No.

Q. So tell us then, please, about the process of hanging it. You told us there's a pump. You've checked -- the two of you who've checked, presumably would it have been the two who signed? Can you say that?

A. Oh yes, that would be --

Q. So the two of you would have checked that it was the right bag and the numbers entered on the piece of paper that's in the bag with it, the covering bag. So physically the process, please, in a nutshell.

A. Because it was a long line, the one of us that was actually physically changing the bag would have sterile gloves on and would have washed because it's a central line, whereas a cannula is peripheral, so just want to

be even more sure you don't introduce infection.

You've done your checks, you'd have your gloves on, the person checking with you would lift the old bag down -- you'd have stopped the infusion at this point because you're handling the line. And the old bag would be removed and the new bag would be connected.

Q. Okay. What would happen to an old bag?

A. As a general rule it would be emptied and put in the bin.

Q. So whatever liquid was remaining in would be disposed of?

A. Yes.

Q. And the plastic went in the bin?

A. Yes.

Q. Right. So you stop the old bag. Is that by using the pump to stop the flow?

A. You'd stop -- yes, the pump.

Q. Okay. And then?

A. You tend to clamp the line off as well.

Q. Then you would disconnect from the long line; is that right?

A. So it... It would depend. If you were just changing the bag of fluid, so the actual lines for the Babiven have a 96-hour filter on, so the actual line can stay connected to the baby for 96 hours/4 days maximum. But the bags need changing 48-hourly. So if it was just a bag change, you'd stop it, the line would remain

attached to the baby. Whoever was changing it would have an alcohol wipe in each hand, so that it was sterile, so they weren't actually handling the line and the bag. They would pull the bag spike out of the bag, discard the old bag and attach the new bag.

Q. Right.

A. If it was at the end of -- you know, if that was the second bag that had been on that line, so you've come to the end of 96 hours, then you would run a whole new line, a whole new giving set through, and hang that and then the change would come at they baby, you would disconnect closer to the baby, the whole line, and reconnect the new one.

Q. We've heard a little bit about giving sets.

A. Right.

Q. The giving set, I think -- please correct me if I'm wrong -- connects the bag to the port into the long line; is that right?

A. That's correct.

Q. Okay. You described it as a filter. Is that the same thing?

A. So you've got your giving set and then the filter is a separate piece of line with the little filter built into it. So you connect that to the line so you --

Q. So am I right, there's something between the giving set and the port?

A. Yes.

Q. That's a filter?

A. Yes. Yes, it's about that long (indicating).

Q. So you indicate with your fingers about 6 inches?

A. About 6 inches and it's got a little round white disc midway that is the filter.

Q. Okay. Do you know what the filter is designed to filter out?

A. Very small particles.

Q. What is the filter made of, the device, the piece of kit?

A. Plastic, the same as the giving set.

Q. Okay. So you change the bag. Would you change a giving set with the bag as a matter of course?

A. Only if it was 96 hours since the whole giving set was changed, otherwise you'd just change --

Q. So it's the giving set and the filter that last for 48 hours?

A. Lasts for 96 hours and the bag of fluid that lasts for 48 hours.

Q. Okay. Can you tell, by looking at this form, whether the filter was 24, 48, 72 hours old? Any way to tell from the form?

A. Um... Not on that bit, no.

Q. We have the preceding ones, but they're all pretty well the same type of form.

Perhaps we could see the whole form, please, Mr Murphy. Perhaps if we have a look at the top half.

I just want to see if there's anything you can see that indicates how long the filter or giving set has been in place.

A. On the day before, the 3rd, where you can see Dr Ventress has prescribed it, and then at 25 past -- no, it doesn't say what time. So it's been prescribed but just written by Lucy as continuing a 48-hour bag.

Q. You recognise that signature?

A. The signature, yes.

Q. Okay.

A. And if we had the previous form for day 5 for 2 August --

Q. I'm sure we can have a look at in a moment once you've finished telling us about this one.

A. I imagine there'd been a bag change there. So what Lucy is signing for there and the reason it's just one signature is she's looked at the prescription, she knows the bag doesn't need changing because it's a 48-hour bag, so she's just -- there's not an empty box, she's just written --

Q. It's been hung 24 hours before and it has 24 hours to go, so it's just marking the day?

A. That tells me why I'm changing that bag. On the previous day, the 2nd, is might say "lines changed" or there might be something in the nursing notes saying lines were changed.

Q. If we can just take a moment, we'll have a look at the

preceding one.

A. I think from what I'm looking at on that chart I just changed the bag because I would usually document somewhere if it was a full line change.

Q. Okay. Bear with me a second, I'm sorry. Tile 17, please, or the preceding page if you have it. Thank you.

So can we look at maybe days 5 and 6 to start with. In fact, days 4 and 5 because 6 is an error, isn't it? If we look at those two.

A. So again, yes, day 5, which is 48 hours before, I have signed to say I have changed a bag.

Q. Yes.

A. You can see that's a bag change, there's two signatures.

Q. Right.

A. One is Lucy's. I don't recognise the other, but I wasn't on that shift.

Q. No. What I'm interested in, sorry to interrupt you for a moment --

A. That sign there, if you look at the day before on 1 August, again it says "continuing 48-hour bag". So if you continue to go backwards I would expect that on 31 July there were two signatures to say they'd checked a 48-hour bag, but I can't see anything there saying line change.

Q. That's what I was interested in the form doesn't seem to accommodate it, there isn't a box to fill in. Is it

just something that you might expect to be done as a matter of practice?

A. When you open the filters, the 96-hour filters, they have a strip of stickers in them, which say -- each one is a different colour and they say "change on Monday", "change on Tuesday", "change on Wednesday". So if you were changing on a Monday, you'd go Tuesday, Wednesday, Thursday, Friday, and you'd peel the "change on Friday" sticker off and stick it on to the filter, which would then say "change on Friday", so any subsequent members of staff would know that the line was due to be changed that Friday. You might -- I think I tend to write "bag and lines changed" in my nursing records if I've done it --

Q. Okay.

A. -- but I don't know.

Q. We can't see it on the forms because there isn't a box and you have not been on duty, you told us, until the night of the 4th.

A. Yes.

Q. So -- okay.

So the plastic filter, from your recollection, and the giving set would stay in place for 96 hours?

A. Yes.

Q. Depending when that 96 hours began?

A. I feel -- unless it's documented later in the night in my nursing notes that I changed the lines, I would feel

that that was just a bag change.

Q. Right.

A. But I've... I can't say for...

Q. We'll go back to the document if we may. Back to tile 144, please, back to the two entries on 4 August, please.

So we've dealt with you hanging the bag at 00.25, yourself or Ms Letby. The lipids not being required at that time but clearly being required later on --

A. Yes.

Q. -- at 3.20. And we can see in the left-hand numerical column an increase in the fluids being received?

A. Yes.

Q. In the total column, it's actually been crossed out 150, which is what was being received, and it's gone up to 165.

A. Yes, because there's 10% dextrose been added as well.

Q. Right, okay. Now, when we looked before midnight, we saw that the milk and the Babiven were the two forms of nutrition.

A. Yes.

Q. Is dextrose another form of nutrition?

A. It is. So Babiven is made up in a solution of, if I remember correctly -- that's 10% dextrose, the Babiven. I say that, but where I am now is slightly different.

MR JUSTICE GOSS: Well, that's the evidence we heard.

A. It's just where I work now it's in a slightly different concentration.

MR ASTBURY: Would that be an additional infusion?

A. Because of all the additives in Babiven, you sort of reach a limit of how many millilitres per kilo you can give of that. So if they need more fluid and dextrose on top of that, then you'd give it as straight 10% dextrose.

Q. Is that an additional infusion via another port?

A. Yes, it's another line, yes.

Q. Okay, all right. And again, does that go with what you told us before, that you can't add anything to the Babiven?

A. Yes.

Q. Could we go next, please, to tile 146, and the document behind, please.

That's headed "prescription confirmation". Is that a document you recall from your time at the Countess of Chester?

A. Yes, that's the piece of paper I was saying that comes up with the bags.

Q. Okay. So that actually comes with the bag?

A. Yes.

Q. And by the sound of it, inside the outer bag that protects it until such time as it's hung.

A. Yes. And the labels on the bag pretty much have that information on as well.

Q. Okay. If we scroll down, please, we can see just pausing there:

"For administration up to 48 hours commencing 11.30."

I think that the change comes because of confusion over midnight, is that right, or potential confusion over midnight?

A. Yes, because when it says midnight -- you have a midnight at the start of a day or at the end of a day, it depends which way you view it.

Q. That gives you a clearer idea of the night-time of the 4th into the 5th?

A. Yes.

Q. If we can scroll down again, please. Again, we have the two signatures?

A. Yes, myself and Lucy.

Q. Is that the practice to endorse this particular sheet?

A. Yes, it's just saying we've checked that sheet against the labels on the bags, so we didn't necessarily check that every single content in there was right because that was the pharmacist, but what we were saying is that paperwork that's come with it matches --

Q. Matches what's on the bag?

A. What's on the bag.

Q. Great, thank you. And if it didn't?

A. Then you wouldn't infuse it.

Q. Okay. I'd like next, please -- we looked at the events

up until midnight. We've now seen what happened at 00.25. Can we look at events of what follows on the remainder of your shift, please, beginning at tile 149?

Again I don't think we need to go behind this. This suggests that you provided a medication named nystatin --

A. Yes.

Q. -- together with Ms Williamson round about 1 o'clock in the morning?

A. Oh yes, it says at the top "Belinda", yes.

Q. And then if we can look next, please, at your nursing note. Thank you.

It should in fact be the next page, that's the one we've looked at. If we can come out of that, please, Mr Murphy. Just check the tile number on the front, please. Thank you.

If we look perhaps next at the -- that's it, thank you very much. Your next nursing note summarises the next few hours, if I can put it that way. If we can have a look at that in a little more close-up, please. In particular -- yes, the top half, thank you.

So we've got your note made at 6.56, helpfully identifying the period between 1 am and 4.30.

A. Yes.

Q. I'm going to go through that with you now, please, if I may, by way of summary. The Optiflow remained unchanged?

A. Yes.

Q. But you have recorded a large milky vomit?

A. Yes.

Q. And an increase in heart of between 200 and 2010?

A. Yes.

Q. The respiration rate increased?

A. Yes.

Q. To 65 to 80?

A. Yes.

Q. But saturations remained the same in air?

A. They did, yes.

Q. Could you carry on, please, and just -- what the notes remind you of in respect of [Baby F]?

A. When it says "became quieter than usual", that would indicate that [Baby F] had been quite active earlier in the night, sort of moving his arms and limbs around, and at this point he'd gone stiller, he wasn't as active as he had been.

Q. Okay.

A. That his abdomen was still soft and not distended, so I've had a good look at him and checked his tummy because babies can be prone to a bowel infection, the early signs of which would be a distended abdomen and it can feel fairly rigid.

Q. So you would have satisfied yourself that wasn't an issue?

A. I was satisfied that was fine. He's slightly jaundiced.

So that's not unusual in a premature baby anyway, they can be jaundiced, but can also be increased if they're becoming unwell, they can look more jaundiced. I notice I haven't commented on that earlier. I have put "no loss of colour", so he's not looking pale.

Q. The next line suggests that you contacted Dr Harkness; is that right?

A. Yes. So the RV is to review. I've asked Dr Harkness to review him. So at this point he's re-screened. So what that means is we've taken a blood sample to send off to the lab to test for infection and we've changed his antibiotics, so he was on antibiotics, because we'd seen that prescription, he'd had benzylpenicillin, I think it was about 10 o'clock, wasn't it? And we've changed his antibiotics to cefotaxime and teicoplanin, two different antibiotics. They're what we call our second line.

Q. The next line concerns his glucose.

A. Yes. So his glucose level is 0.8, which is dangerously low.

Q. Right.

A. And we've given extra bolus of dextrose at that point to hopefully bring his blood sugar back up.

Q. How would you give that dextrose, that bolus of dextrose?

A. So we know he had a long line, but if he's just been re-screened then Dr Harkness probably left that cannula in, so I probably gave it through that cannula.

Q. Using what?

A. It could either be given as a slow -- we say bolus, so image I've just used a syringe and pushed it in over a few minutes.

Q. So it's a boost of sugar given the reading at 0.8?

A. Yes, in addition to all his other fluids.

Q. Okay. All right. We can see saline as well. Is that a similar rationale to what you described before?

A. Yes. I don't know whether we did a blood gas or something at that time but we would give a saline bolus to help with circulation.

Q. Just dealing with the note:

"Due to tachycardia, 12-lead ECG."

We've heard from Dr Harkness about that.

A. Right.

Q. And you've indicated Dr Harkness discussed it with Dr Gibbs. There was a repeated saline bolus because there was concern about dehydration; is that correct?

A. Sorry?

Q. That's all right. There's another saline bolus because you were concerned about dehydration?

A. Yes. So we've had some U&E results, urine and electrolyte results, which are blood results that -- whatever the levels were in those indicated that [Baby F] was slightly dehydrated.

Q. Dr Harkness explained to us the significance of adenosine.

A. Yes.

Q. So we'll move on to your note, please:

"Heart rate improved after second bolus."

A. Yes.

Q. And you did a repeat blood sugar; is that right?

A. I did. That's usually 30 to 60 minutes after you have given the dextrose bolus to check that the sugar's coming up.

Q. It says 2.3.

A. So that's a lot better than 0.8, but it's still low.

Q. Right. That's after the bolus of dextrose, of course?

A. Yes.

Q. And then we touched on this with the Babiven prescription, but:

"Maintenance fluids increased to 165ml/kg."

With the extra 10% dextrose"?

A. Yes.

Q. You've recommenced phototherapy because, presumably, of your note, that he looks slightly jaundiced?

A. We must have had a blood result because the bili, the bilirubin -- oh, we've done it on the gas machine and it was high, so we have started the phototherapy for that.

Q. This is the machine in the ward rather than sending it to the lab?

A. Yes.

Q. Okay. Blood sugar dropped again to 1.9?

A. Yes.

Q. You gave a second bolus of dextrose; is that correct?

A. Yes.

Q. "With effect", what does that mean, please?

A. So there will be a blood result on the gas chart, I imagine, saying that it had come up higher than 1.9 following that.

Q. You have entered his heart rate thereafter?

A. Yes.

Q. 190?

A. Which is still high but better than over 200.

Q. And you have observed he became more lively after the last bolus?

A. Yes.

Q. Could we go then, please, to the fluid chart just to look at the first-hand notes, perhaps, if that's a fair way to put of what you summarised there.

A. Yes.

Q. Tile 151, please. If we can look at the right-hand form, please.

So signatures down the right first, please. Do you recognise those as your own?

A. Yes, mine at 1, 2, 3 and 4, Lucy's at 5, and mine at 6 and 7.

Q. Let's concentrate for now on the entries that you have made. We've got at 1 o'clock -- is that, in the vomit column, four plus signs?

A. Yes, which matches. So that says "gastric tube

aspiration/vomit", but I've documented in my nursing notes for that time that he'd had a large vomit, so it's four pluses to indicate it was large.

Q. You told us that he'd had one early in the shift when he'd been having a cuddle with mum.

A. That was just small. I documented that as a small vomit. That hadn't concerned me at all.

Q. So not the same thing this time?

A. No.

Q. And that he had opened his bowels as well at 1 o'clock?

A. Yes. And that says "yellow and seedy", which is a normal stool for --

Q. Okay. And urine passed?

A. He's passed urine, there's a tick in that box.

Q. Concentrating on the vomit, was any decision made about his feeding as a result of that?

A. I can see he's stopped feeding because on the previous chart there was a column for TPN and a column for EBM. And there we've got the TPN, the lipid and the dextrose but no feed.

Q. Okay.

A. Whether that was solely because he'd had that vomit or a combination with his sugar being low... But yes, a decision was made to stop feeding him at that point.

Q. We can see in a bit more detail the timeline looking at this. If we read across from 2 o'clock, is that the bolus that you were telling us about in the first

instance?

A. Yes, that's a bolus of roughly 2ml per kilo because he was just under a kilo and a half.

Q. Okay. At 3 am, is that the saline bolus that you told us about?

A. Yes. The times that these are given will be more accurately recorded on the medication chart. Because of the limited space, I've had to write them one under the other. But I think from my nursing notes they were all given a little closer together.

Q. We'll come to that because what I was actually going to ask you was, at 4 o'clock or thereabouts, we've got "commenced" under the 10% dextrose.

A. Yes.

Q. Is this the infusion you were telling us about?

A. Yes.

Q. 5 o'clock's entry, I don't think that is your signature.

A. No, that's Lucy's.

Q. All right. Can you recall why that was the case?

A. I would think that I was on my break.

Q. Right.

A. We know from the chart earlier, Lucy had a baby -- was looking after a baby in the same room as me, so it would fall naturally that we would cover each other's breaks.

Q. Reading across to the blood sugar result, did she show you that at any point or is that just entered on the chart?

A. I think I've probably come back from my break and seen that. I would have asked anyway. With having low blood sugars, I'd have wanted to know what it was.

Q. Then we read down again and we can see before 8 am no further boluses, but the dextrose continuing to infuse.

A. Yes, and the PN and at that point the lipid because we had stopped the milk feeds.

Q. Could we go next, please, to look at the observations for that period at tile 160.

A. I think on that chart, just before you go off it, some of the blood sugars before that 2.9, they must be on the gas chart.

Q. Yes. We'll go back to that because there are four entries.

A. Yes.

Q. Thank you. Sorry, the observation chart. I was just going to look at that same period of time, the remainder of the shift on the observations chart, please.

You showed us up to midnight where it was, certainly in respect of heart rate -- and if we can also have respirations in, a little bit lower down. You were happy with those readings at midnight?

A. Yes.

Q. It may be fairly obvious but tell us what followed in the hours after midnight.

A. Well, as you can see, he'd been nice and stable for me in the evening and in fact the earlier part of the

evening when I wasn't there, you can see his -- the recordings are all within a similar level that we're happy with. Then suddenly, at some point between midnight and 1 o'clock in the morning, he suddenly become tachycardic, so his heart rate's gone up, he's become tachypnoeic, so his respiration rate has gone up, his breathing rate has gone up, and both to a concerning level that would just -- that's why it's banded in yellow because that is -- at that point sort of you need to be reassessing, thinking about getting a review looking to see what else has changed. It's just there, the yellow band, as a prompt if you like.

Q. We can see that the heart rate stays up in that yellow range for some hours thereafter --

A. Yes.

Q. -- even when you (overspeaking) --

A. Until 6 o'clock, it's beginning to come back down, isn't it? But then briefly dips but is consistently in the yellow for -- it's 12 hours, isn't it?

Q. Yes. Looking at the respirations, they too increased --

A. Yes.

Q. -- from 1 o'clock onwards; would that be fair to say?

A. Yes. And then settled more quickly.

Q. We've read in your note that you alerted Dr Harkness to the position. Is that the type of information that you'd have been concerned about and passing on to him?

A. Yes, so he's -- I'd have contacted Dr Harkness, either

bleeped him if he wasn't on the unit or if he was on the unit, just gone and had a discussion with him, and just to say sort of, [Baby F]'s been fine all night and now he's had a vomit and his heart rate's gone up and his respiration rate has gone up, can you come and have a look. I think that was probably the order of events and as a result of that we've probably done a blood gas and found his sugar was low.

Q. If we can go then next please to tile 161, but we don't need to go behind it, just for the sake of the timeline.

Dr Harkness first sees [Baby F] on that shift at 01.30 --

A. Okay.

Q. -- consistent with your recollection of alerting him. Okay?

And then we can go to tile 163, please, and look behind that. Back to those entries on the blood gas record.

So I think you told us earlier all four at the bottom of the page --

A. Yes.

Q. -- were your signature?

A. Yes.

Q. So if we can read down, please, we've got that 23.32 at 5.5, which you told us was good. At 1.48 a series of readings but no sugar.

A. No, and no lactate. So whether it didn't record them

for some reason, I don't know.

Q. If we look at the next line, only 6 minutes later at 1.54, they are filled in.

A. And they're both venous, so what I think is sometimes if you didn't have quite enough blood in the capillary tube or there was a problem with the machine, it didn't give you all the readings, so we've almost immediately taken another tube and repeated and got those results.

Q. Well, unfortunately, the lactate reading is not visible, but at the moment I am interested in --

A. It's 2 point something, isn't it?

Q. The sugar, 0.8, which you told us before, from your note, was worrying.

A. Yes. Especially in context that they've -- you can see from above that they've been nice and steady and stable for a while.

Q. So you're looking at the column above?

A. The blood sugar column.

Q. So we can see, just keeping the cursor where it is, we can see, 2 August, which is the highest at about 9.12. It's not in the right column, but I think that's what it's supposed to be. We've got 6.1, 6.7, 5.4, reading down, 3.9, 5, 3.8, 5.5, and then, 2 hours later, 0.8.

A. So that's... Just over a 48-hour period and they've been fine.

Q. You told us he'd improved a little bit at 2.55 which is

the entry on the very bottom of the record.

A. It's still low but it's near acceptable -- nearer to acceptable.

Q. What did you consider at the time acceptable?

A. We want it over 2.6 really.

Q. If we could come out of there and go to 167.

We can see, I think, that 10% dextrose bolus. I don't think we need to go behind it. That's 02.05. As you rightly pointed out, not necessarily on the hour it was put in.

A. Yes. So that's been given quite quickly after that 0.8 blood result. Obviously, a priority to...

Q. Okay. If we go along next then, please, to tile 191. There's the commencement at 03.50, so again not too far away from your entry, for the dextrose infusion?

A. Yes.

Q. And if we -- sorry, you were going to say something?

A. Yes. It's just a little bit later, isn't it, that we've given the bolus and then commenced extra?

Q. Yes. And then 192. We've looked at this form. This reflects the dextrose that you told us about.

Can we go to 194 next, please. If we go behind that. Can you help us with the initial on the top right-hand corner?

A. Mine.

Q. So this is another blood gas chart, just a continuation of the one that we've been looking at a couple of

minutes ago. So another entry at 04.02 where the glucose has fallen again to 1.9; is that right?

A. Yes.

Q. So at least one bolus. He's been connected to the infusion and it's fallen from the 2.3, which was promising at --

A. Yes. We've increased the total volume of fluid to 165ml per kilo from 150. And we no longer are giving him enteral feeds at this point, everything's going IV. So a more definite route. If he was -- you know -- because he'd vomited, you know he's definitely getting the glucose. We'd had a near normal glucose following a bolus but now it's dropped again.

Q. Okay. Of concern?

A. Yes.

Q. Can we go next, please, to tile 198. Again, that I think is the next bolus that you entered on the form, timed 04.20?

A. So that's following the 1.9 result.

Q. Yes. If we can go into that particular form, please. I think the form you were suggesting before would help you with exactly when and what was given.

A. Mm.

Q. Just orientate yourself for a moment, please. The first two likes, 29 July and 30 July, then everything else is on 5 August in the early hours going through to the afternoon.

We dealt with the 10.30 saline, I think, when you were telling us about the antibiotics being administered and a flush before and afterwards; is that right? Sorry, that's 30 July. My mistake.

A. That's different to the --

Q. So your first -- well, do you recognise your signature on any of those entries?

A. I do.

Q. Bit difficult perhaps.

A. The third, fourth, fifth, sixth, seventh, eighth. Yes, that's all me.

Q. All right.

A. Yes. The bolus earlier, that is documented on the electronic prescribing because it's a little flush either side of intravenous medication. These are a different bolus for a different reason.

Q. These are an individual bolus as opposed to that?

A. To help correct something rather than to check line patency and --

Q. Thank you. So can we just go through these in order because these probably draw together what the fluid chart was representing a little less accurately because of the time constraints in the boxes.

A. Yes.

Q. I think the first is a dextrose --

A. Saline.

Q. At 2.05 -- the second of your entries is timed at 2.05?

A. Oh yes. The other one's been prescribed first but given second, yes. So 3ml. That's, yes, 2ml per kilo of dextrose to bring his sugar up from that 0.8.

Q. Right. Then we've got some saline, a bolus of saline, at 02.55?

A. So that was mentioned. We...

Q. I think we heard Dr Harkness explain why that was prescribed.

A. Why that was given, yes.

Q. Thank you. Your next entry is 03.35, I think.

A. Which is saline again, which was -- we saw in my nursing notes some blood results that indicated he was dehydrated so we gave --

Q. So that's the purpose of the second bolus, dehydration?

A. That's the purpose of the second one, yes.

Q. The next entry in time -- I think they now flow in time. So 03.50 is the infusion; is that right?

A. Yes. That's the --

Q. The commencement of that?

A. -- additional 10%.

Q. Next line at 04.10 is a third bolus of saline?

A. Yes.

Q. And then the next line, a second bolus of dextrose in addition to the infusion that you started half an hour before?

A. That's following the sugar of -- the glucose results of 1.9.

Q. Thank you. Again an attempt to raise that sugar level?

A. Yes.

Q. Right. Can we go next then, please, to your notes for the remainder of the shift, which are behind tile 210. Thank you.

So this is a note made between 07.07 and 07.14?

A. Okay.

Q. Because it's under "family communication", it's more focused on the parents and your contact with them?

A. Yes, we had a separate little bit that we could specifically --

Q. Right, okay. If I take you through it, you correct me if I get anything wrong:

"Parents on the unit for skin-to-skin at the start of the shift."

A. Yes.

Q. "Both parents had cuddles. Mum anxious after [Baby F] was a little sick while she was holding him."

That's I think what you described to us earlier:

"They asked to be informed [not surprisingly] of any changes during the night."

A. Yes.

Q. They were updated after Dr Harkness' initial examination; is that right?

A. Yes, review, yes.

Q. And they'd been present at the cot side since?

A. Yes.

Q. So that was -- the first was 1.30, so they were there through the night?

A. Yes. I can't remember exactly when and I can't remember if I went to get them, but somebody's gone because they'd asked, understandably, with [Baby E] the night before. Somebody will have gone and got them once I'd asked for the review. So I don't know whether they were there at the time of the review or soon afterwards.

Q. Thank you:

"Understandably very concerned and anxious. Kept up to date throughout. Seemed reassured that he's responded to fluid bolus. Understand that tachycardias can be caused by a combination of factors."

A. Yes.

Q. So this is all part, as the title suggests, of the family communication --

A. Yes.

Q. -- discussing what's going on, what it might be?

"Parents also aware that [Baby F] is not stable enough for transfer today."

Was that the plan?

A. Mum and dad were booked to have the boys at Ormskirk, but had been moved in utero to deliver at Chester, for bed pressures I presume. I know there'd been talk of them going back. I don't know whether there was a definite plan for them to go back the next day, but I think just because he was unstable I've said he's not

going to be well enough to go today.

Q. Okay.

A. I can't remember the conversation exactly, but --

Q. All right.

A. -- but it's just part of keeping them as fully in the picture as possible.

Q. And we can then see mum then expresses views about staying where they are.

A. Yes.

Q. All right. If we could go to that other note, please, Mr Murphy, thank you.

This is made, I think, around about the same time and is perhaps more to do with your responsibilities as a nurse. Very clearly indicates from 4.30, so we've had your note from 8 to 1, then 1 to 4.30, and this is the final third, if I can put it that way, of the shift?

A. Yes.

Q. "Optiflow continues unchanged. Respiratory rate at 60"?

A. Yes.

Q. "Work of breathing satisfactory but remains tachycardic at 175 to 185."

So still just, casting our mind back to that chart, still skirting with that too high a level?

A. Yes. Just as I went off, he was sitting on the line between just about acceptable and the yellow band.

Q. Then this probably endorses what you said earlier:

"Lively but generally settled and handled well."

So he'd improved so far as his handling was concerned:

"Phototherapy continues."

Then this:

"LL patent but positional at times."

A. So long line. That's an abbreviation for long line. So it was patent, as in everything was flowing through it. I can't remember what limb this line was on, it'll be somewhere in the notes, but especially if they've been in for a few days -- they're a very, very tiny line so it doesn't take much to occlude them. So if a bit of the line is over a joint or the ankle, it's positional that if the limb is in a -- changes position it might cause the pressure to go up on the line.

Q. If I break this down a little. Patent means open?

A. Yes, the fluid's going through it.

Q. Occluded means blocked?

A. Yes.

Q. You couldn't use open and blocked?

A. Sorry.

Q. Positional. Was there a problem with the line that you'd identified?

A. Not a problem as such. Like I say, these lines are minute, they are so thin, because they're threaded up a peripheral vein that is very small and the tip of them sits in a bigger vein. And then they've got fluid going through them but by the morning, as we've identified,

there was a greater volume of fluid going through --

Q. Yes.

A. -- which increases the pressure, if you like, going through that --

Q. Okay.

A. -- very narrow line. So they can be on a leg or on an arm and, depending where they are, if there were just a change in position, you know, the baby moves their foot and it's in a slightly different position because the line's so tiny, it can just cause it to narrow or dip more, which may then cause the pressure alarm on the pump to go off. So you check. So what I'm saying is that in certain positions it wasn't flowing quite as freely, but --

Q. Okay. I think you put at times.

A. At times, yes.

Q. So he had had some problems in other times, it was (overspeaking) --

A. Yes, which would make me think -- I can't remember which limb it was in, but if he moved his arm or his leg, wherever it was slightly, I might just need to go in and adjust his position slightly and check -- I'd always check the site to make sure it was still fine.

Q. You said we identified it. Who did you identify it with?

A. I don't know. I think I'm just talking generally.

Q. Would you have pointed it out to Ms Simcock perhaps?

A. I don't think specifically. I think that's just me talking in general terms as a nurse.

Q. All right. Then you've summarised:

"TPN/lipid, 10% dex to continue through it."

Which follows on from the charts we've been looking at, and you put down one of the repeat blood glucose results?

A. Yes.

Q. Which I think was the last one before you went off duty?

A. Yes.

Q. Right. Can we turn next please to tile 222. If we can go into these messages, please. These are a reproduction of some messages, WhatsApps specifically, between yourself and Ms Letby. Do you have any recollection of receiving that message now?

A. No. Not specifically.

Q. Okay.

A. It wouldn't be an unusual message to receive.

Q. "Did you hear what [Baby F]'s sugar was at 8?"

This is at 08.47, after you've finished your shift.

A. Yes.

Q. So do you know who she's talking about?

A. I would guess [Baby F].

Q. Yes. Look at the next message, please:

"No?"

You have gone off duty by this point presumably?

A. Yes. I must have handed over and gone before there was

another sugar done. I could see on the chart there was one done not long after the end of my shift.

Q. Okay. So at 8 o'clock when it was done, some people still there, some people not?

A. I'd gone, yes.

Q. Okay. Next one, please.

That's the result?

A. Mm-hm.

Q. If we can go on again. It's all right, don't worry. I just wondered what you meant by:

"I feel awful leaving it 3 hours."

Can you remember what you were thinking?

A. We'd had an okay result. As I said, we take blood sugars from the baby's heels, the capillary samples, we make a little incision each time in their heel to take blood. So he's obviously had a lot of samples taken overnight. Heels can become quite sore.

Q. Yes.

A. So sometimes it's a balance of: I've had a good result so I'll just maybe leave it a little bit longer before I do it... It's balancing -- everything is a balance.

Q. Why did you feel awful?

A. Because it was too low.

Q. 0.8?

A. So I was wondering if I'd done it an hour earlier it might not have been as low.

Q. Blaming yourself?

A. Yes.

Q. Okay. Next message, please.

A. Is that to me?

Q. Yes. That's to you from Ms Letby. You told us that his fluids had been increased to that 165 per kilo --

A. Yes.

Q. -- in the early hours of the morning. Then she makes a similar observation to you about the heels.

A. I mean (inaudible) heels sometimes these little -- I mean, you are talking about a little baby and you've got to do it on specific parts of the heels, so there's a lot to consider.

Q. This is the capillary sample you were telling us about before?

A. Yes.

Q. You have to pierce the heel?

A. Yes, it's more of a little cut, almost like a little paper cut. It's not paper, but that's almost what it looks like. If you're doing multiple ones, then they've not got very big heels and...

Q. Understood. Next message, please.

In fact that's the last message.

A. Okay.

Q. Thank you. Okay, let's have a look at that. So this is your response at 09.09:

"Exactly. He'd had so much handling."

So you're agreeing with the point you just made to

us:

"No, something not right. HR and sugars."

A. Something wasn't right, was it? His heart rate was high and his sugars were low. That's an indication to me that in a baby that's been stable, something's changed.

Q. Yes. All right, thank you. Next message, please. I think there's a few more.

Ms Letby to you:

"Dr Gibbs came so hopefully they'll get him sorted."

Next, please. That's Ms Letby again:

"He's a worry [though]."

And I think you're replying to both of those:

"Hope so."

In respect of Dr Gibbs; is that right?

A. Yes, I would.

Q. And agreeing that he's a worry?

A. Yes. I mean, it was sudden.

Q. You said it was sudden?

A. Yes.

Q. Sorry, your voice dropped ever so slightly.

A. Yes, it was sudden.

Q. Carry on:

"Hope you sleep well."

You've obviously not gone to bed yet after a night shift?

A. No, even if I got off on time, I didn't get in until gone half 8.

Q. Okay.

Carry on, please. Now, you were due to be on the next night, is that right, because you told us earlier this was your first night?

A. Yes, I think I was probably on for two more.

Q. Do we assume from that Ms Letby was not on duty with you that night?

A. No, she wasn't.

Q. Next message, please, promising you'll let her know. I think -- is that the last of the texts? Yes. Thank you.

Thank you. Just this, really, to conclude. Did you put anything in the TPN bag that you hung for --

A. Absolutely not, no.

Q. -- [Baby F]?

A. No.

Q. Did you give him any insulin --

A. No.

Q. -- at any stage during that shift in any way?

A. No.

MR ASTBURY: Thank you.

Cross-examination by MR MYERS

MR MYERS: [Nurse A], could I ask you first to help with a little bit more information about testing the blood glucose.

A. Okay.

Q. You've told us of two ways in which you could test blood

glucose. One of them was by way of a heel prick --

A. Yes.

Q. -- which you have just been talking about.

A. Yes.

Q. And that's done when you are getting a capillary sample and testing generally for blood gas, isn't it?

A. Yes, or you might use a heel prick for a lab sample as well.

Q. Right. So you can use a heel prick and go to the blood gas machine and get a readout from that?

A. Yes.

Q. You could use a heel prick and then send that off to the lab for a formal analysis for blood glucose; is that right?

A. Yes. There is actually a third way, which is capillary as well, which is a little blood glucose monitor that would just give you a blood glucose, which you might use if you didn't --

Q. Yes.

A. -- want any other tests doing at the time.

Q. That's what I was going to ask you.

A. Sorry.

Q. There's a third way: you had a little handheld blood glucose machine, didn't you?

A. Was it called Accu-something, Accu-view or something.

Q. Whatever its formal name was, was it a small handheld blood sugar monitor that you had?

A. Yes, that had a little -- I think they were called curettes or curvettes, a little -- that took, again, capillary-wise, but a tiny -- like a drop of blood, whereas to do just a blood sugar in a capillary gas tube you would take more blood.

Q. Right.

A. So again, to conserve blood, if you didn't need any other tests, you would use one of those.

Q. Just pause there for a moment. Thank you for telling us that. That's a third way and that takes a far smaller amount and that's just for the blood glucose, is it?

A. Yes.

Q. And it's less of an interference for the baby, if I put it that way, is it?

A. Only in terms of the amount of blood taken, which when we're talking about little babies, you still have to do a heel prick to obtain that blood.

Q. Right. And the blood glucose machine you're describing, that third item, is that kept near to the cot? At the time it was something in the nursery close to the cot?

A. We had a couple on the unit, yes (overspeaking) --

Q. All right. That wouldn't measure all the other readings which you get on a full blood gas sample, would it?

A. No, it would only do a blood glucose.

Q. We've seen on the blood gas charts where all the readings are put down -- written in the different columns for different things that make up blood gas.

A. Yes.

Q. And obviously, if you take a blood gas -- a heel prick for a blood gas sample with a blood gas machine you'll get all those readings, won't you?

A. Yes, you could deselect some, but yes, you could get all those readings.

Q. If you just use the blood glucose machine that's just measuring the glucose, isn't it?

A. Yes.

Q. So if you wanted to record the reading from the blood glucose machine, it's not a full blood gas reading, where might you record that?

A. In the same place on the blood gas form or I think you could see on the ITU chart and I actually highlighted that my blood sugars I hadn't put on the ITU chart as well as on the gas chart, but you could put them in both places. So long as they were in one place, they were recorded.

Q. Right. So just to remind us what we mean by the ITU chart, could we put up slide 203, please, just so we can see what you're talking about, [Nurse A], that's all. If we go behind that. This is what you mean by the ITU chart?

A. Yes, it is. And on the right-hand side, if you look down the blood sugar column in "output", you can see the first thing in that column is a 2.9 circled, recorded at 5 am.

Q. Perhaps we can highlight that.

A. It's got Lucy's signature next to it.

Q. Thank you, Mr Murphy. Now we can see, yes, that one.

A. Yes. When we looked at that before, I said actually my blood sugars aren't -- my other blood sugars aren't recorded there, but they are on the gas chart. I guess for completeness I could have put them in both places, but we were busy and they were recorded, so --

Q. So it might go on one, it might go on the other, or it might go on both?

A. Yes.

Q. All right, thank you.

A. So long as it's recorded.

Q. So long as it's recorded. We can take that down, thanks very much, Mr Murphy.

The next thing I would like to ask you about is just a couple of questions about the TPN bags. We don't need to go back to the charts. We know the prescription bags are brought up from the pharmacy after the doctor has written out the prescription in the morning if that's on the same day; is that correct?

A. Yes, we have to have the prescriptions in the pharmacy for midday.

Q. Right. They go in there to be prepared, is that right, by midday?

A. They would prepare them in the afternoon and they used to come up about 5 o'clock.

Q. All right, that's what I was going to ask about the times.

A. About 5 or 6ish, some time around then. It might be 4 and 5. But around 5 o'clock. End of the day.

Q. As to who does precisely what with the TPN bag when it comes to be hung, you've explained to us it should take two nurses to do that because one is sterile and the other one is assisting; is that correct?

A. That's correct.

Q. But when one looks at the paperwork and who has signed what, your evidence is you can't tell who did what just by the order of the signatures?

A. You can't tell 100%.

Q. You were taken to some messages, we've just looked at them now, between you and Lucy Letby, about the day.

A. Yes.

Q. And there's nothing unusual, is there, in, for instance, her contacting you to say what had been going on at the unit?

A. No. Myself and Lucy were good friends as well and --

Q. And you would sometimes contact her to update her on what had happened?

A. Mm-hm.

Q. And you wouldn't just contact each other about what had happened on the unit, you'd contact each other about social events, what had happened outside work?

A. As you could see, we didn't read it out, but there was

personal stuff in those messages as well.

Q. Yes. Just as friends might communicate as to what they're doing in the course of day --

A. Yes.

Q. -- or an evening?

A. Yes.

MR DRIVER: Right. Thank you, [Nurse A].

MR ASTBURY: Nothing further, my Lord. Does my Lord have any questions?

MR JUSTICE GOSS: I don't. Thank you very much. Thank you.

I don't think that this witness is required again on the chart that I have.

A. I am.

MR JUSTICE GOSS: But that's proving to be very inaccurate!

A. Yes, it's inaccurate.

MR JUSTICE GOSS: I think I'd better have a new chart, actually.

MR ASTBURY: I think so.

MR JUSTICE GOSS: Otherwise I'm going to repeat this mistake.

MR ASTBURY: We'll get an up-to-date version.

MR JUSTICE GOSS: All right. I have a different one to Mr Johnson, I think.

Anyway. You've heard me say this before: please don't talk or communicate in any way with anyone else about in case until it's all over. You will be coming back at some time, so until then, just keep your

thoughts to yourself. All right?

A. Yes.

MR JUSTICE GOSS: Thank you very much.

We have to have a break now.

MR ASTBURY: Yes, my Lord. Just for logistics.

MR JUSTICE GOSS: Yes. For a new witness to come in and for this witness to leave the courtroom. I'd say a few minutes.

MR DRIVER: My Lord, after we've reconfigured the court, the remainder of the evidence this afternoon will be uncontroversial. It'll be the reading of some statements and the playing of a 22-minute recording.

MR JUSTICE GOSS: Right. I have to leave this room at 4 o'clock, no later.

MR DRIVER: We can defer --

MR JUSTICE GOSS: Just before 4.00 in fact. We'll get as far as we can. I'm sorry about this, but I've got to attend a long meeting at 4 o'clock.

So this should only be 2 minutes now, I'm hoping.

(The witness withdrew)

(Pause)

MR JOHNSON: What we'll do with the witness orders, my Lord, is -- with the running orders, we'll simply put in whether a witness is coming back or not.

MR JUSTICE GOSS: Thank you very much.

MR JOHNSON: It's not always easy. Another thing that may have thrown you off the scent is that the overarching

comes at the beginning, whereas a lot of those witnesses are actually coming back at the end.

MR JUSTICE GOSS: Have I been looking at the overarching ones?

MR JOHNSON: No. There's an overarching column at the beginning, which highlights some witnesses, and so --

MR JUSTICE GOSS: No, I'm wrong. It's quite clear, back very soon, in fact, that witness.

MR JOHNSON: It's an easy mistake to make. What we'll do, for our own benefit as well, when we send the running orders through to you, my Lord, we will just put after their name "final appearance" or "returning".

MR JUSTICE GOSS: That would be very helpful, thank you.

MR JOHNSON: That would be much easier than going back to this.

MR JUSTICE GOSS: Thank you.

MR JOHNSON: And we can build in the differences between this document and what in fact is the present position. It helps us all, I think.

(In the presence of the jury)

MR DRIVER: As your Lordship knows, tomorrow we will be calling a witness, a Mr Ian Allen, who is a pharmacist from the Countess of Chester Hospital, who will give evidence, amongst other things, about the systems, protocol and procedure adopted within his unit for the manufacture of prescribed TPN bags.

There is an accompanying video which, if played this

afternoon, we believe would assist the jury in better digesting his evidence when he gives it because it's a little technical, his evidence. It's 22 and a bit minutes long. If we could play that now?

MR JUSTICE GOSS: Certainly. Thank you.

(3.24 pm)

(Video played to the court)

(3.47 pm)

MR DRIVER: My Lord, we intend to replay that with Mr Allen tomorrow so he can elaborate on anything that needs further explanation.

MR JUSTICE GOSS: Yes.

MR DRIVER: Would that be a convenient moment?

MR JUSTICE GOSS: Certainly, yes. There are some statements to be read, but they're short, aren't they, in fact?

MR DRIVER: They are. I could happily read them now if time permits, but I'm sure there will be another window of opportunity at some point tomorrow.

MR JUSTICE GOSS: I think we'll leave it to where we've got to. Thank you very much.

So 11 o'clock tomorrow, please. Will that be all right for you?

JUROR: It'll be fine. If there's a problem I'll let you know (inaudible).

(Pause)

MR JUSTICE GOSS: I'm just making sure you can be provided with a room to be in on your own. Thank you very much.

Remember your responsibilities, ladies and gentlemen, and 11 o'clock tomorrow, please. Be ready to come into court then.

(3.49 pm)

(The court adjourned until 11.00 am on Tuesday, 29 November 2022)

I N D E X