

4 July 2023 (Day 142)

Discussion, Judge's Summing Up Day 2: Babies D, E, F & G

Tuesday, 4 July 2023
(10.30 am)

(In the absence of the jury)

MR JUSTICE GOSS: Thank you, Mr Myers, for your note. I will mention that first of all.

MR MYERS: It's just one matter, my Lord, thank you.

MR JUSTICE GOSS: It did actually occur to me as I was speaking, but I will correct it immediately.

MR MYERS: We're grateful, thank you.

MR JUSTICE GOSS: Not correct, I'll make it clear. It's clarifying the situation.

(In the presence of the jury)

SUMMING-UP (continued)

MR JUSTICE GOSS: Just one further matter in relation to the case concerning [Baby C], which I had essentially finished yesterday. I did not make it clear, or certainly sufficiently clear, that in the case of [Baby C], when I was reminding you of the evidence of Dr Marnerides and Professor Evans (sic) relating to the massive gaseous dilatation of the stomach and bowel loops that Dr Marnerides relied on, they related to X-rays and clinical notes on 12 June and not 13 June, which of course was the time or which was when he collapsed at shortly before midnight on 13 June. I've been asked to make that clear and I do make it clear, I should have made it clear to you yesterday.

I turn then to [Baby D], count 4, an allegation of murder. [Mother of Baby D] gave birth by caesarean section to a baby girl, [Baby D], at 16.01 on Saturday, 20 June 2015 in the Countess of Chester. [Baby D] was her first child. She died 36 hours later at 04.25 on 22 June. The prosecution allege air had been injected into her venous system.

[Mother of Baby D] and [Father of Baby D] had married the previous year. She was fairly well during her pregnancy and [Baby D] was born at 36 weeks and 1 or 5 days' gestation and weighed 3.13 kilograms, nearly 7 pounds; a normal birth weight.

Her waters had broken in the early hours of 18 June and she went to the hospital later that morning, but was sent home. Julie

Robson was the midwife who saw and examined her and, following a discussion with Dr Finney, arrangements were made for an appointment for her the following morning. Julie Robson cannot recall why the decision was not made to commence on oral antibiotics. [Mother of Baby D] returned the following day, Saturday, 20 June, and birth was induced.

[Mother of Baby D] was very worried, scared and felt unwell. After a time, to see if the birth could happen naturally, it was decided by Dr Joanne Davies, a consultant in obstetrics and gynaecology with a special interest in maternal medicine, that an emergency C-section delivery should be undertaken. Dr Davies led the gynaecological and obstetric review after [Baby D]'s death to ascertain what had happened up to the point of delivery. She confirmed that when the membranes go, there is an increased risk of infection and that risk gets greater after 24 hours and she accepted that because [Mother of Baby D] was 12 hours under 37 weeks' gestation, so in other words there's a guideline, the guideline for her was to be given antibiotics and this had been missed and she said that infection in neonates is a leading cause of death. However, there was no evidence pre-birth that [Mother of Baby D] had an infection, nor was there any pathological evidence of her or the placenta having any infection.

The prosecution case is that although [Baby D] died with pneumonia, her cause of death was air embolus. The defence say you cannot be sure of that, she may have died of infection.

[Baby D] was delivered by C-section under an epidural anaesthetic at 16.01. Midwife Anna McManus, whose agreed evidence was read to you and who was involved in the birth, said [Baby D] was born in good condition, had an Apgar score of 8 at 1 minute, having quite a pale colour, but after 5 minutes started to pick up and was scored 9. She went back to her parents and Anna McManus noticed [Baby D] was grey and seemed quite floppy. [Mother of Baby D] described [Baby D] being quite limp and didn't have much movement and was grey in colour and seemed to struggle to breath, making a groaning noise and she was unable to breast feed her. Anna McManus took her to the Resuscitaire, where she conducted intermittent positive pressure ventilation for 2 minutes.

At around 5 pm, [Baby D]'s grunting became louder and she was showing no interest in breastfeeding, so she contacted Dr Rylance and it was agreed that she should be transferred to the neonatal unit for an infection screen. She was taken to the unit at around 7 to 8 pm and was put on CPAP.

Dr Sandie Bohin said that the routine delay in clamping the umbilical cord indicated that [Baby D] must have been in

reasonable condition at birth and told you about the common occurrence of babies' chins dropping to their chests and compromising their breathing when they are newborn, which may have accounted for her colour.

However, she said there were clinical signs in the operating theatre of her having an infection, namely her low temperature and grunting. She should have been screened, said Dr Bohin, at that stage.

Dr Sarah Rylance, who gave her evidence from Switzerland over a video link, confirmed [Baby D] was brought to the unit for screening. Her initial sats were 48%. She looked dusky, poor respiratory effort, as recorded on tile 14, J2214 and J2215. Dr Rylance agreed that she was an unwell baby. She was transferred to an incubator and given IPPV via Neopuff. She picked up quickly and started regular respirations. Her readings were abnormal and indicated acidosis and suggested difficulty with breathing, but an assessment had to be made in combination with the rest of her clinical examination.

Antibiotics were administered and she was transferred to CPAP at 20.00, given a bolus of saline of 31ml and started on a triple lights to bring her bilirubin level down to stop her becoming jaundiced.

Her heart sounds and capillary refill were normal, both femoral pulses were present, her pulse rate was okay, her chest was clear, her abdomen was soft and not distended. The plan was for [Baby D] to continue on CPAP, be given dextrose and to repeat gases.

Her parents were updated that it was likely sepsis because of the prolonged rupture of the membranes. Dr Rylance thought the most likely cause for difficulty with breathing and abnormal blood gas was infection. She wasn't well at that time.

However, she responded well and appeared to be stabilised on CPAP, so overall Dr Rylance was happy with progress but [Baby D] needed to be closely monitored and assessed.

Dr Andrew Brunton, now a neonatologist at the Royal Hospital in Glasgow, was an ST4 paediatric registrar at the Countess of Chester in 2015 and was on duty that night. He had a handover from Dr Rylance, read through the notes, and at 21.45 undertook an examination of [Baby D]. His notes, J2215, are behind tile 34. Although there was a slight clinical improvement in her readings, she was still on CPAP with 48% oxygen. Her respiration rate was sub-optimal and she had respiratory distress, though her oxygen saturation levels of 97% to 99% were acceptable. It was considered best to intubate and ventilate her to give her

medicine in the hope that she could be taken off the ventilator relatively quickly. The consultant on call, Dr Newby, confirmed that she was phoned by Dr Brunton and she agreed that, given that [Baby D] was requiring 48% oxygen and had a relatively high acidosis, this was appropriate. Following two unsuccessful attempts, which is not unusual, and having been given intubation drugs, she was successfully intubated.

A radiograph taken at 22.22 hours, which is behind tile 43, showed very little abnormal according to Professor Arthurs. He observed that there was gas in the stomach on the right side. [Baby D] was given surfactant, the brand name as you know is Curosurf, a protein that is involved in gas exchange in the lung and can be deficient in babies, at 23.00.

At 01.50, tile 69, all the blood gas results were an improvement and the clinical signs were good as she was being weaned off the ventilator. Dr Newby confirmed there was no sign of pneumothorax on review of the X-ray and that the Curosurf will have helped. Your reference is tile 107.

Dr Brunton extubated [Baby D] at 09.00. She seemed good, ventilating in air on her own and her sats were 100%. Dr Newby felt she was a bit quiet, as though her tone was a little bit increased, she was a bit tense and stiff to handle and her blood gas results 1 hour after extubation were not so good as they had been on CPAP. Moro, which apparently is a primitive reflex, was present and normal.

Dr Newby felt it likely there was an element of infection. Dr Bohin considered she clearly had an infection, pneumonia, but was getting better.

On that Sunday, 21 June, [Mother of Baby D] was told [Baby D] was up and down all night and needed to be on CPAP, but the female consultant seemed to think they had everything under control. She said she saw [Baby D] on the evening of Sunday the 21st at about 7 pm, 19.00, with her husband. In relation to the timing, she said she must have looked at her watch.

She was pushed into the room because she was in a wheelchair. There was only one nurse in the room. She drew a picture of where [Baby D] was, the left-hand incubator as you walk into the room. She said Lucy Letby, the defendant, was sort of hovering around [Baby D], but not doing much. She had a clipboard or something as she was looking at the machine. [Mother of Baby D] asked her if everything was okay and the defendant replied, "Yes, she's fine". She just stuck around watching over them.

[Mother of Baby D] asked her to go away or just give them some privacy. She said that [Baby D] looked a good healthy colour,

pink, tiny but she looked chubby, healthy, okay. [Mother of Baby D] said she did not know the nurse's name at the time but she saw her again when [Baby D] died and described her and later saw pictures of her.

[Father of Baby D], whose evidence was read to you, did not mention this visit. That day was Father's Day and he had received a card which the staff had put together with a photograph of [Baby D] stuck inside with her on CPAP and intubated. Later in the day, he thought, he was given a welcome card and another photo of [Baby D] looking a lot healthier and showing signs of getting better and not on CPAP.

[Father of Baby D] made many visits to see [Baby D] and remembered two specially trained neonatal staff working in the ward, called Caroline and Ailsa. He said they were both friendly and warm and what you would expect from nurses working in a baby unit. They comforted him and made sure everything was okay for him and made him feel welcome when he went to the ward.

At 9 to 9.30 that evening, Dr Brunton came round to her room and was happy with the results of the latest tests. The jaundice was clearing and he promised that they would be able to cuddle her the following day.

Dr Rylance made a note at 14.00 on that Sunday; it's tile 133. It was agreed that umbilical lines should be added. Although it was intended that [Baby D] should have a UAC and a UVC, the UVC only advanced a short distance and was removed. The UAC, in fact, went into the umbilical vein where it was or became a low-lying UVC. However, it could still be used to take blood samples for tests.

Although there were still signs of acidosis from blood gas readings at 10.14 and 12.10 hours, her gas readings were much improved. The plan was to continue with CPAP in air and repeat gases at 18.30.

A radiograph taken at 13.32 that day, which is behind tile 132, showed two features according to Professor Arthurs. The first was obvious: the umbilical venous catheter had been pushed up too far and needed withdrawing. The second was more subtle and it was at the bottom of [Baby D]'s right lung: there was a little bit of opacification, some opaqueness. Dr Arthurs agreed it could represent a right-sided infection or pneumonia, but the magnitude of the infection was nothing like that in the case of [Baby C].

Dr Rylance reviewed [Baby D] at 19.00, tile 158. Her CRP, a marker for sepsis, was 1, which was normal and did not indicate sepsis, the normal range being 1 to 10, but they would still

treat her for infection. Dr Rylance and Dr Newby confirmed that infection is a leading cause of death in neonates, it can develop very quickly and antibiotics, which are intended to treat and prevent infection, should be given as soon as possible and a four-hour delay fell below the required standard for a baby in [Baby D]'s condition.

She was saturating well on CPAP in air all day. There were big improvements at 18.44 on previous gases. From a respiratory perspective, she had made good progress.

Fluids. She had been given a bolus of saline earlier in the day to try and improve her perfusion. She'd just passed urine, her blood glucose was normal and her blood pressure was unremarkable. In relation to sepsis, a repeat CRP had just been taken. She was not stable enough at that time to have a lumbar puncture.

On examination, she was responsive on handling, she was stable, handling well and responding well to treatment with fluids, antibiotics and respiratory support. Her tone was reasonable, she was not particularly floppy. She was stable on CPAP but when they tried taking her off her respiratory rate became irregular and she desaturated a few times. The nursing notes record that she dropped to the mid-80s so they put her back on CPAP.

Dr Rylance did not attach a great deal of significance to this. She had been taken off a ventilator that morning and it takes babies time to settle. She just considered she needed a bit more time and a bit more respiratory support. She was not needing oxygen, just a bit of pressure to help with her breathing. The plan was essentially to continue as before. Dr Rylance was very happy with her clinical condition: she had had a very satisfactory day, generally improving in terms of needing less respiratory support, handling well, was a good colour and wasn't needing any oxygen. She was then, she said, a stable baby making good progress.

Dr Brunton was the registrar on the night shift. He confirmed [Baby D] was now off the ventilator. He noted the blood gas results at 21.00, which are on J2222 and J2223 behind tile 174. The sodium level was low and the creatine level was high. Some treatment was potentially required, but she was not critically swollen and there was no evidence of a fluid-related issue. She was saturating 100% and was clinically improving. There were no signs of increased work of breathing or respiratory distress. Her chest was clear, her heart sounds were normal, her abdomen was soft, bowel sounds were normal, and there was no enlargement of organs, femoral pulses were present and normal. The plan was to commence enteral feeds of milk at 1ml every hour and increase

as tolerated. There would be repeat blood and gas tests at midnight.

Caroline Oakley, a senior neonatal band 6 nurse with 20 years' experience at that time, was acting as shift leader that night on the 21st to 22 June. She was also [Baby D]'s designated nurse and she was also the designated nurse for a child in nursery 2. She accepted that occasionally babies can deteriorate quite suddenly.

She arrived at the hospital in good time for her shift, swiping in at 19.23 on the 21st. Tile 168 in the sequence of events sets out the staff on duty that night and their allocations to the various babies on the unit, one of whom, EH, came into the unit late in the shift. The defendant was the designated nurse for two babies in nursery 1.

Understandably, Caroline Oakley was dependent on notes made at or shortly after the time of readings and events during the shift, but she had some recollection of what happened. She said she will have had a full handover and will have been aware of the increased acidosis.

Tile 107, behind which is J2241, is her note of events from the start of the shift at 20.00. She observed that [Baby D]'s lower limbs were a little bit dusky and her feet were bruised, which may have been from heel pricks and about which she was not worried.

Her circulation was not 100% perfect. She was on nasal CPAP in air, so no added oxygen. Her gases were satisfactory, she didn't require phototherapy treatment for the jaundice and her CRP was fine.

Behind tile 169 is the observation chart J2291. Caroline Oakley described the readings from 19.30 to 00.30 as all completely normal, although [Baby D]'s heart rate and respirations were up at 01.15, which she explained may have been a change. She remembered being very happy with her. She was stable.

Behind tile 170 is J2285, about which Caroline Oakley commented [Baby D] was breathing beautifully in air and saturating her blood with 100% oxygen. Her fluids were going in completely fine.

In relation to aspirations there was a minimal aspirate of 1ml that was acidic and discarded and a moderate amount of gas. At 00.30 there were 4ml of mucky, clear, acidic aspirate. She wasn't being fed and these aspirates did not worry Caroline Oakley. She attached minimal importance to them.

Behind tile 203 is J2250, the neonatal infusion chart. At 01.25, [Baby D] was given 31ml of saline. Both Caroline Oakley and the defendant signed for it. Because she was her designated nurse, Caroline Oakley assumes she infused it, but she said the handwriting of the time of 01.25 was not her handwriting.

The first event. Behind tile 207 is J2241, in which Caroline Oakley described an event at 01.30, when she was called to the nursery from the resus room, where she was on a break, by Kathryn Percival-Calderbank, then known as Percival-Ward, and the defendant.

Kathryn Percival-Calderbank was a senior neonatal practitioner of 22 years' experience, having qualified as a nurse in 1988 and worked in the neonatal unit at the hospital since 1993. On that night shift she was responsible for three babies in room 3 and one in room 4. She was aware Caroline Oakley had been on her break and went to look at [Baby D], who was nice and stable and settled, and checked her monitoring, saturations and heart rate.

She was okay when she popped back in about 10 minutes later. While she was at the computer around the corridor, she was alerted to the alarms having gone off, went into nursery 1, and found the monitoring was showing [Baby D] was desaturating and her heart rate was dropping. She thought she was assisted by someone and had a feeling it was the defendant and one of them went to get Caroline Oakley.

[Baby D] started to respond to Neopuffs. She noticed that she had a rash on her trunk and arms from her chest downwards. It wasn't like a normal rash, like when a baby becomes septic, it was mosaic, brown/red and not a spotty rash or petechiae, which are little spots like a rash, red and raised. It seemed to be vessels of blood meeting up with each other, oval-shaped. She had not seen it or anything like it before.

In her interview by the police before she made her witness statement, which is dated 9 January 2018, she stated:

"Her trunk and her legs went a mottle-y colour and was odd."

This was unusual discolouration, she said, and blotchings over her body. She discussed it with Dr Brunton when he arrived. [Baby D] responded to treatment and settled back into a normal pattern of breathing and, after a while, the discolouration seemed to disappear and dissipate.

Caroline Oakley wondered what was happening. She wrote on the fluid balance chart behind tile 231:

"Desaturated to 70s. Required oral suction as was bubbly and had lost colour."

Which was something she was told had happened at 01.05, so wrote "PP LL". Then she saw and wrote:

"Discolouration to skin observed trunk, legs, arms, chin."

She couldn't remember the exact rash but it was something she had not seen before. It was dark and unusual, it was like a deep red-brown, different to mottling and different to what she had seen before:

"Sometimes [she said] when they are poorly, babies can look white and have a mottled appearance."

She remembered thinking this was an unusual rash. She did remember that there had been talk about an unusual rash that had been seen recently.

The oxygen had been turned up on the CPAP machine before she arrived and [Baby D] had responded and her saturation levels went back up to 100% by the time Dr Brunton arrived. So, said Caroline Oakley, [Baby D] had had an episode but had responded very quickly and was back to normal. The gas tests were repeated and the results were all good.

[Nurse C], who was a senior neonatal level 6 nurse with postgraduate qualifications and the shift leader that night, was the last nurse to give oral evidence on these events. She had a limited memory of them and was careful to say so when she was asked if she could remember specific matters. She remembered [Baby D] being stiff and having a rash on her trunk and abdomen in this first event. There was mottling, patches of circular white skin and a reddy-brown colour around. It was an odd, unusual rash. She had not seen that colour before.

Dr Brunton arrived at 01.40 to review [Baby D]. His notes are behind tile 214. From the information from the nurses, he recorded extreme mottling and [Baby D] had tracking lesions which were dark brown/black across her trunk, the oxygen level she was given had been increased from air to 60%. There was slight subcostal recession, which means the muscles between the ribs were coming in and out, which they had not been doing before. She was working to breathe. On examination, the lungs, heart and abdomen were all normal. There were areas of skin discolouration across her trunk that were light brown. The plan was to take a blood gas, give a fluid bolus and contact the consultant on duty, Dr Newby.

The changes in the skin were a completely new situation he had never encountered before. Tile 215 is the pathology sample taken at 01.51. The lactate level, at 2.75, was slightly on the high side, which could be indicative that she was unwell or it could be indicative of nothing at all.

Dr Emily Thomas, a senior house officer, saw the rash and in her statement, which was read to you, said it almost had the appearance of a meningococcal-type rash. It was purple in colour and mainly over the abdomen and seemed to settle down and the rash appeared to fade after Dr Newby arrived.

Dr Newby's note is behind tile 218. By the time she arrived, [Baby D] was saturating well on CPAP in air. Peripherally, her feet had prolonged refill time. There were two "bruised" areas to her abdomen, like evolving purpura, which is a big bruise under the skin. They were like elongated areas, linear bruises. It was almost like a brown discolouration. They didn't know what to make of it. They added sodium chloride to the fluid and increased the dose of antibiotics to cover infection and added another one, cefotaxime.

[Baby D] was picking up and seemed more settled. She, Dr Newby, stayed for about an hour. The UVC, said Dr Brunton, was low-lying but there was nothing else to note. At 02.40 the blood clotting factors were slightly abnormal but there was no evidence of bleeding. Clinically, she had much improved and the areas of discolouration had completely disappeared. Dr Newby advised to leave the UVC and plan as previously.

Professor Arthurs examined the radiograph taken at 01.57, which is tile 216 in your sequence. He could see that the line had been withdrawn and was in the correct place. There was nothing unusual to be seen. The left lung base at the top of the diaphragm looked pretty clear. The three radiographs were consistent with a baby breathing in air and not needing any treatment for the infection that was present.

At 03.00, there was a second event, tile 234. At that time Caroline Oakley said [Baby D] was crying and desaturated again. She was commenced on 100% on oxygen via CPAP. Her skin was discoloured again, but less than on the previous occasion. Dr Brunton was called. He remembered [Baby D] being agitated and upset, which was unusual for her and he felt at the time it was something to do with the face mask. The skin discolouration again became more prominent, but was not as obvious as previously. She had improved by the time he arrived.

Clinically, she appeared very well. She was now in air and there was no increase in breathing difficulty. The plan was to trial her off CPAP, give her extra fluids to increase the perfusion of

her skin and take gas readings in 1 hour. Although he had encountered babies with a fluid deficiency before, he'd never encountered this skin discolouration before.

In relation to the discolouration, Dr Newby said bruising and purpura, bleeding under the skin, would not disappear in an hour and then reappear.

The neonatal infusion chart behind tile 237 records that at 03.20 a prescribed saline bolus was signed for by Caroline Oakley and the defendant, and at tile 239 the same chart records that at 03.30 they were to start donated expressed breast milk.

Caroline Oakley said that the medical staff were happy with [Baby D] and to restart with milk and continue with fluid through the cannula and they were happy with the UVC site. Caroline Oakley changed [Baby D]'s nappy, she had a nice wet nappy, and had passed meconium. She said if she thought she was unstable she would not have changed her nappy because if babies are unstable they do not like to be handled.

Tile 240 fronts a record that [Baby D] was settled and handling well. Tile 241, the observations chart, records that at 02.30, her heart rate was fine, her respirations were high but were fine by 3.30.

The third event. At 03.45, [Baby D]'s monitor was alarming. Tile 251 fronts the notes. Caroline Oakley found [Baby D] had desaturated and stopped breathing. She was apnoeic. She called the defendant for help. She stimulated [Baby D] to no effect and bagged her with Neopuffs at 03.52.

Dr Thomas heard shouts for help and stated that [Baby D] was being bagged as she was struggling to breathe and her oxygen levels had dropped. Dr Thomas asked one of the nurses to put out a crash call for Dr Brunton.

Tiles 253 and 254 record that Dr Brunton was bleeped at 03.57 and ran when he was crash called.

[Nurse C] said she went into the room before Dr Harkness arrived and she did full resus with Caroline Oakley and the defendant. Dr Harkness said Caroline Oakley and Dr Thomas were around [Baby D]'s bed space providing emergency treatment when he arrived. He joined in, taking over the airway. Her heart rate was less than 60, there were no chest movements, there were secretions +++ from her nose or mouth.

[Parents of Baby D] had been woken up and rushed downstairs to [Baby D] and saw Dr Brunton trying really hard to resuscitate her. A phone was held to Dr Brunton's ear to speak to Dr Newby,

but the person to whom he spoke was not Dr Newby. [Baby D] was intubated and the chest wall then moved, showing air was being pumped into her lungs.

Dr Newby arrived during the resuscitation at 04.07. Full resuscitation was in process. [Baby D] had been intubated and was receiving full CPR. She was given repeated doses of adrenaline, fluids and sodium bicarbonate, all of which were necessary as [Baby D] was dying in front of them.

At 04.18, after 28 minutes of resuscitation, during which time there had been no response and no heartbeat, it was decided to stop. Her parents were told that they had to let [Baby D] go and at 04.25 [Baby D] was pronounced dead.

At 04.50, tile 280, Dr Newby had a discussion with [Baby D]'s parents in relation to the unexpected and very sudden collapse and the need for a post-mortem. Dr Newby agreed that babies can sometimes suddenly collapse, but was surprised [Baby D] did because, although she was concerned when she'd been in at 1 o'clock that morning after the first episode, she did not appear to be a baby in extremis. She was saturating well, in air, on CPAP, she'd had a normal gas after that episode, she was handling okay. [Baby D]'s collapse was not what she was expecting to happen that night.

After the incident, [Nurse C] had a conversation with the defendant about volumes of the drugs for resuscitation that were administered because the laminated A4 sheet with the calculations on it, that you heard about, that's there for resuscitation purposes, was not on the resuscitation trolley. The defendant asked [Nurse C] how she knew the amount of fluids to be given. [Nurse C] explained that she knew the doses because she had worked in the ICU for a long time and had learnt them and recommended that she, the defendant, did so as well.

Dr Jo McPartland, a consultant paediatric pathologist, conducted a post-mortem examination of [Baby D] at the Royal Liverpool Children's Hospital at 11.15 on 23 June. In her report, made on 3 August, corrected by a further report on 13 May 2019 -- those first two reports were in 2015 -- as set out in paragraph 22 in section 4 of the agreed facts, Dr McPartland identified her findings of fact:

"In relation to the lungs, there was patchy acute pneumonia, most prominent within one of the right lung samples, with some hyaline membranes present, indicating diffuse alveolar damage [the alveoli being the tiny air sacs in the lung which allow gas exchange]."

This indicated, said Dr Marnerides, that there had been a response to infection.

He, Dr Marnerides, agreed that pneumonia was likely to have been present at birth.

Professor Arthurs examined and referred you to a standard lateral radiograph, that is taken from the side, taken of [Baby D] after her death. What was striking, he said, was the black line from left to right, just in front of the spine, which was gas in the aorta or the inferior vena cava, the IVC, the great vessels that carry blood from or back to the heart or in both of them. So both of the great vessels.

This was an unusual appearance and not typical of what they see in children who have died without an explanation. That amount of gas is seen in babies who have died of sepsis or overwhelming infection or sudden unexpected death in infants, which would not in any event apply to a neonate, in trauma, road traffic accidents and the like. It was present in two other children in this case, one of whom was [Baby A]. There was more air in [Baby D] than in [Baby A].

One of the explanations for this finding was that someone was injecting air into the child. In the absence of any evidence that suggested that [Baby D] died of overwhelming sepsis or any of the other explanations that have been put forward, Professor Arthurs concluded that the radiographs were consistent with but not diagnostic of external intravenous air administration.

It was one of the explanations. The images identified the presence of the gas but cannot give an explanation for its presence, but the clinical history can.

You'll remember, I said at the very outset, his specialty is confined to the interpretation of the radiographs, you have to look at all of the evidence relating to the case in question.

Dr Marnerides said that the presence of air in a large intra-abdominal vessel was significant. Decomposition played no part in its presence and there was no evidence of decomposition and the interval between the death and the time of the post-mortem was not long enough for gaseous production to start and decomposition could be excluded.

To make the assessment of whether she had died from or with pneumonia was, he said, for the clinicians. Air bubbles could not be identified on histology, so from the pathology point of view it could not be proved that air embolus was the cause of death. If you see air bubbles in histology, that is something in keeping with it, that is in keeping with air embolus. If you

don't see them, you cannot say that it is not a case of air embolus. He concluded that the infection that was there, which appeared to have been a congenital infection, so explicable on the basis of the premature rupture of the membranes, would not sufficiently explain the death.

In his opinion, it did not explain the death because of the clinical assessment. There was no other natural disease that could explain the death, nor was there any other morphologically evident natural disease from the post-mortem examination. So in his view [Baby D] died with the pneumonia rather than dying from the pneumonia.

The post-mortem examination and his findings from the review could not positively confirm or refute the cause of death. On the findings of the post-mortem and the radiology and the findings and assessment by the clinicians and the absence of any other evidence of disease which could account for the prematurity of this death, Dr Marnerides concluded that the likely explanation for [Baby D] dying was air embolism by the injection of air into a vascular access line.

Dr Evans, having considered the medical notes, including the post-mortem report of Dr McPartland, the medical photographs and X-rays and having heard all the evidence from the neonatal clinicians and the nursing staff, except for the latter part of the evidence of Caroline Oakley, said that the first episode at 01.30 was very surprising and unusual. [Baby D] was responding to treatment, her only support was CPAP, and clinically there was no increased work of breathing; she was a stable baby.

Suddenly changing so rapidly was incredibly unusual for someone dealing with neonatal babies. He had seen the witness statement of [Mother of Baby D] and thought that her condition was consistent with early onset pneumonia. She was grunting and cyanosed, which indicated a respiratory problem, and raised bilirubin was a non-specific marker for infection.

She was initially an unwell baby and in very poor health. He was of the opinion that she had developed pneumonia before birth; so another clinician saying that she was born with pneumonia. However, by the next morning she was making a recovery and was, in Dr Evans' opinion, recovering from the pneumonia, so it was reasonable to remove the ET tube.

She stabilised very promptly when back on CPAP and again it was reasonable to try her off CPAP given that she had had pneumonia, was recovering from it and her oxygen levels were 100% in air.

Her first collapse was very rapid. The speed and nature of her response was inconsistent with a pneumonia or sepsis by way of

generalised infection. The abdominal discolouration was intriguing both as regards its appearance and it disappearing within 35 minutes. It could not have been bruising or purpura, which spread and don't disappear, and there is continuing deterioration of the baby.

It was the discolouration and pattern never seen previously by experienced neonatologists which came and went and none of the known discolourations or rashes that are seen in a neonate are anything like approaching what was described by the staff treating [Baby D].

Although there were some individual fluctuations in her readings, all the markers and trends were of recovery at that time. Dr Evans considered that none of the other issues that affected [Baby D] were relevant and he couldn't think of any conditions that would lead to events that ended with an unsuccessful attempt to resuscitate at the third incident.

His opinion was that the events were consistent with intravenous air, an injection of air or gas into her system, causing an air embolus. This was the only cause that explains her collapse and death.

In relation to her recovery in the first two episodes, he explained that the greater the volume of air that goes in and the greater the speed at which the air goes in, the greater the risk of death, and the method of administration is unknown and you do not always get death with an air embolus. For obvious reasons clinical trials cannot be undertaken.

Air can get into the venous system either by accident or deliberate administration. He couldn't think of any other conditions that make babies unwell leading to a presentation of this nature. "Other than that", in other words air embolus, "it just doesn't happen", he said.

Dr Bohin peer-reviewed Dr Evans' views and conclusions. I've already reminded you of her comments on [Baby D]'s clinical notes up to the first event at about 01.30 on 22 June. The striking feature of all events, she said, was that they were sudden and unexpected and came out of the blue and the first two were associated with unusual mottling of the skin. She found them perplexing and had no clear cause.

In the second episode it was a concern that [Baby D] was distressed and crying. Full-term babies often fight CPAP because they find it uncomfortable, but [Baby D] had tolerated it well up to then. Although she considered antibiotics were administered late, she was treated appropriately in the unit and there was nothing to indicate death was imminent. She was

clinically well, she was in air, had normal blood gases, she had no respiratory compromise at all and this was not a picture of a baby with a pneumonia severe enough to kill her.

Usually, babies will show a gradual decline and deterioration and an increase in the kind of care that they need, so their respiratory rate will continue to climb, they will not tolerate being on CPAP, and their blood gases will decline, so they will need to move from CPAP to more invasive ventilation. Their blood parameters will alter and become abnormal and they may need extra drugs to help with their blood pressure. There is an altogether slow clinical decline rather than a sudden collapse.

Taking into account the suddenness of the collapses and the very quick recovery of some of them she was clear it wasn't the infection that had caused the sudden collapse, it had to be something else that had to be unusual and odd.

The suddenness of the collapse and the clinical condition also showed that she had episodes of this unusual skin discolouration, which the medical team described and which does fit with previous cases of air embolus seen in adults and, to a lesser extent, in children but she acknowledged that there is very little literature on neonates. There was also the issue of air in the great vessels found on post-mortem radiographs.

Excluding other things, making a differential diagnosis, that is crossing-off things that don't fit with that clinical picture, and the scenario, she came to the conclusion that [Baby D] had air administered to her intravenously, either through the UVC or the peripheral cannula that she had in her hand.

Dr Bohin speculated that [Baby D] recovered so quickly from the first two episodes because, as they know from animal studies, with air emboluses it is the volume of gas and the speed at which it is delivered that is fatal or can prove fatal. So she thought if the volume of air administered in the first two cases was small that wouldn't have been enough to kill [Baby D]. What they do know is if a large volume of gas is administered into a vein, when it gets to the right side of the heart, if the volume is sufficient, it causes a gas lock within the heart and then causes sudden circulatory collapse. She thought that in the third collapse the volume of air was larger than it had been previously and caused the circulation to stop.

Under cross-examination, Dr Bohin denied that she had minimised the clinical factors in [Baby D]'s case and denied having been influenced by the allegation rather than the medical facts that she was looking at.

Lisa Walker, a neonatal assistant, band 4, which meant she could only look after special care babies and not intensive care or high dependency babies, told you about an incident when she was in room 3 on a day shift when there were three babies and her and the defendant were feeding two of them. The defendant was feeding a baby on the right-hand side of the room by a nasogastric tube through a 10ml syringe that was screwed on to the very end of the tube. Milk is fed by gravity, but if Gaviscon or a fortifier is added to the milk, making it thicker, it can be pushed by the syringe. The alarm on the portable monitor that only records heart rate and saturation levels was going off.

It was the desaturation alarm.

Lisa Walker went over to help. The defendant stopped the feed and gave the baby gentle stimulation and some facial oxygen. At first, the baby didn't respond. She saw Kate Bissell walking past the door, so she shouted for help, that is Lisa Walker shouted for help, because the baby was not picking up. Kate responded and a doctor who was working on the computer came in.

They gave the baby gentle stimulation and the baby recovered. The doctor and Kate left the room and the defendant then asked Lisa Walker quite firmly why she shouted for help. Lisa Walker was quite shocked because you can't have enough help in that situation but didn't respond because she said, "You don't question colleagues, do you?" She said the defendant was quite cross. In her witness statement she had said:

"Lucy's demeanour when she said to me what she did wasn't really being annoyed, I don't think, I think it was saying she would have been fine and didn't need any help."

Between tiles 286 and 349 on the sequence, a very long section of tiles, there are details of a number of WhatsApp messages passing between the defendant and [Nurse A] following [Baby D]'s death, and also with Caroline Oakley and Minna Lappalainen. The dates and terms of the messages are to be seen from the tiles and I shan't refer to them in detail. They contained references by the defendant to the full resuscitation, it being upsetting for everyone and the parents being distraught, the number of deaths and their circumstances in the short period involved, possible causes of [Baby D]'s death, and her thought that there was an element of fate involved. You've heard evidence as to the messages and the arguments in relation to them.

At 21.51 hours on 25 June, the defendant searched for [Mother of Baby D] and [Father of Baby D] on Facebook. Over 3 months later, on 3 October, she made two Facebook searches for [Father of Baby D]. When interviewed by the police on 4 July 2018, you know it's

in the [Baby D] section in your records of interviews, the defendant said she did not then remember [Baby D] or her colleagues (sic) or anything about that particular shift.

When taken through the notes, she agreed she was involved in her care and assisting with medication where two people were required.

When interviewed a year later, on 11 June 2019, she did not remember calling Caroline Oakley back or being in nursery 1. She denied having administered any air into [Baby D]'s body or doing anything deliberately harmful to her.

She was interviewed a third time on 10 November 2020. She said she couldn't remember doing Facebook searches in respect of both [Baby D]'s parents 3 days after her death. She didn't know what she was looking for but she wouldn't have been looking for photos of the babies. That was a suggestion that was being put to her.

In relation to the messages she sent to [Nurse A] after [Baby D]'s death, she said she could not recall why she said that [Baby D] looked like she was suffering from overwhelming sepsis or 20 minutes later saying to her:

"I think there is an element of fate involved, there is a reason for everything."

In relation to the message sent later that evening to [Nurse A], saying that Liz Newby was suggesting it may have been meningitis, she said Yvonne Farmer had said that Dr Newby felt it may have been meningitis. She could not remember if Yvonne Farmer had said that to her.

In relation to the message chat, she had no recollection of the messages, the message conversation with Minna, who suggested to her in a message that she have counselling and her responding saying she couldn't.

In her evidence the defendant said she didn't really remember the shift on which [Baby D] collapsed and died. She was the designated nurse for two babies in nursery 1, MRE and JE -- you'll remember I've referred to JE in relation to other incidents with which we are concerned -- and will not have come on duty until 19.30, referring to the swipe card data behind tile 163, showing that she entered the unit at 17.26 (sic), so she could not have been on the unit by 7 pm, as [Mother of Baby D] had timed her contact with her.

She was taken to line 116 of the neonatal review at 1.25 showing an infusion of [Baby D] that commenced at that time undertaken

by her and Caroline Oakley. She said that she didn't recall that taking place. She said she would have been caring for the babies that she was allocated and helping anybody else on the unit that needed any assistance with their medications.

There were also jobs to do at night, equipment checks and various things. She didn't remember being called into the nursery by anyone at 01.25. She didn't remember [Baby D] desaturating at 03.00 or collapsing at 03.45.

I move on to [Baby E]. Count 5, another allegation of murder. [Baby E] and [Baby F] are the subject of counts 5 and 6.

On Wednesday, 29 July 2015 at about 18.00, [Mother of Babies E & F] gave birth by caesarean section in the Countess of Chester at 29 weeks and 5 days' gestation to identical twins, [Baby E] and [Baby F]. She had been transferred there from the Liverpool Women's Hospital for capacity reasons. The hospital there couldn't take her. So this meant that she was over an hour's drive from the home of her and her husband, [Father of Babies E & F]. The twins were their first babies.

It was a routine caesarean section according to the agreed evidence of the consultant obstetrical gynaecologist who delivered them, Dr Simon Wood, and both twins were born in good condition.

[Baby E] was born first. He weighed 1.327 kilograms, just under 3 pounds, and was not a growth-restricted baby. [Baby E] died less than 6 days later at 01.40 hours on Tuesday, 4 August. There had been bleeding into his upper gastrointestinal tract, which Dr Evans said was caused by a trauma, and the prosecution case is that [Baby E] too died of air embolus.

[Dr C], the consultant paediatrician present when he died, confirmed in answer to general questions that [Baby E] was very premature, making him inherently unstable, was diagnosed with twin-to-twin transfusion syndrome, which can increase the overall risk of death after birth, but was something that they see routinely with identical twins and, according to Dr Bohin, was in its mildest form and was not requiring any treatment. [Dr C] also agreed that, like all babies they look after in the unit, he was capable of quite a dramatic change of condition.

[Mother of Babies E & F] thought both boys were in good condition for their period of gestation. They were transferred to the unit shortly after birth and placed in nursery 1. The medical notes show that [Mother of Babies E & F] went to the unit the following day and cuddled [Baby E] because he wasn't on CPAP. She was very keen to express milk for her boys and would take it down to the unit. You'll remember she was saying that

was the one thing she felt she could do for them. She took down some milk on 31 July. The boys were progressing really well. [Baby E] was doing better than [Baby F].

On that day, because his glucose level was raised, [Baby E] was given insulin intravenously for 3 hours; the prescription is behind tile 94. The following day, Saturday, 1 August, [Mother of Babies E & F] gained the impression that the twins were managing fine and were fit enough to be transferred to a hospital nearer to their home by ambulances that had neonatal facilities.

Both continued to do well. [Baby E] was stable and put on a smaller dose of insulin from 19.30. He was breathing well. The next day, Saturday, 2 August, he was again stable, on 23% oxygen and had time out of his incubator.

On the unit observation chart behind tile 56, J2654, the readings over the 24-hour period from 18.00 on 2 August to 17.00 on 3 August were an extremely satisfactory pattern of well-being according to Dr Evans.

[Nurse B] was the designated nurse for both [Baby E] and [Baby F] on the day shift of 3 August. She took over from Melanie Taylor. Behind tile 61, J2586, is her note, made at 10.44 that morning, in which she confirmed that mum was on the unit from 09.00 and had long periods of skin-to-skin. She and [Baby E] could have as many cuddles as they wanted. She did a top-to-toe assessment of [Baby E], who was self-ventilating in 25% oxygen air, he had no signs of respiratory distress, he was pink and well perfused and his capillary refill rate was 1 second. His respiratory and circulatory systems were normal and his long line and pump were normal. He was on a cautious feeding regime. He handled well, which meant that his tone was normal. Everything remained well. There was a minimal to 1ml of partially digested milk found on the NGT, which was normal. Intravenous caffeine was given as prescribed.

I'm just looking at when it would be a good time to have a break, and there's really no natural convenient break point because I'm into the narrative of events leading up to a significant event, so I think we'll break off now, we'll have our ten-minute break and then you've got equal slots of 1 hour 10 minutes for each session this morning. All right? Thank you very much. A ten-minute break then.

(11.39 am)

(A short break)

(11.49 am)

(In the absence of the jury)

MR MYERS: My Lord, there was one matter that maybe just came at the beginning of the break, but one matter we had asked your Lordship to consider, but it can be dealt with at a later point, if possible, just arising out of the evidence of [Baby D].

MR JUSTICE GOSS: Yes, certainly, up to you. If it's easier to do it now or later --

MR MYERS: We're in your Lordship's hands. Whenever is convenient for the court is when it matters, as long as your Lordship is able to consider it. We sent a message just as the break came so it may well not have reached you. It came quite late and I expect that's why --

MR JUSTICE GOSS: I'm sorry, I haven't seen that.

MR MYERS: I'd rather your Lordship see that before I ask your Lordship to entertain it.

MR JUSTICE GOSS: Shall I just continue then?

MR MYERS: By all means do, I just identify it.

MR JUSTICE GOSS: Thank you, Mr Myers. I was checking my emails and nothing... All right, thank you.

(In the presence of the jury)

MR JUSTICE GOSS: Dr Emily Thomas, now a consultant paediatrician, then an ST1 doctor in general paediatric training at the Countess of Chester, confirmed the notes indicated that she was asked to review [Baby E] that morning. Behind tile 78, document J2553, it is noted that Dr Ventress did a ward round at 11.45.

Dr Thomas said she may have been on that round but, if she wasn't, she would have been fully aware of the notes. She could see that [Baby E] had opened his bowels. She examined [Baby E] at 14.10. Tile 86 fronts the note in her handwriting. [Baby E] had had skin-to-skin, his sats were now 95% in 25% oxygen, which was a small amount of oxygen. He had good tone and movements, he was handling appropriately, there were no signs that he was unwell or in discomfort or distress. This will have been confirmed, she said, by nursing staff. There was no increased work of breathing. His heart sounds were good and he had good femoral pulses. His CRT was normal. His abdomen was soft and not distended, normal. He had not further opened his bowels and bowel sounds were normal. There were no suspicious aspirates. He

had a soft fontanelle, normal. Her condition(?) as well as that he was well and stable and she was happy to proceed and continue with the plan.

[Nurse B] wrote a further retrospective note at 17.24, a continuation of J2586. [Baby E]'s heart rate and respiration were stable, but his BM, his blood sugar, was high at 18.4 and he was passing urine at a higher level than normal, though it was not a very high volume. His insulin infusion was restarted but at a lower rate than he had been given previously. He'd not been receiving insulin that morning.

Dr Thomas noted this in a note timed at 14.50. Tile 94 relates to the administration of insulin at 15.00. At tile 96 the fluid balance chart records it was recommenced at 15.30, being signed for by [Nurse B]. Tile 95 relates to the results of the blood test taken 24 hours after [Baby E] was started on antibiotics: the result was completely normal, so there was no indication of infection.

Intravenous antibiotics were being given as prescribed, the cultures were negative, which indicated the absence of bacteria. He was self-ventilating in air, his respiratory system seemed fine. Dr Thomas made a note at 19.30 that [Baby E]'s CRP was less than 1. The amount of oxygen he was needing was now improving, his neutrophils having improved.

She said they tend to look for trends. In relation to his BM, his sugars were now settling. They would closely check fluids and increase fluids if necessary. There was no sign of bacterial infection. Dr Thomas' clinical assessment at that time was that [Baby E] was definitely stable and, if anything, showing some signs of improvement.

[Nurse B] said [Baby E] was doing well on that shift apart from his high blood sugars. She did not consider the various recorded readings to be a worrying trend of inflammation.

[Dr C], when asked in evidence about the readings that afternoon, said they were all within normal and did not cause any clinical concern. The blood glucose levels were higher than they would like and may indicate stress, but were what they commonly see in babies of his gestation and were not an unexpected part of their clinical course. The problem they cause is dehydration, which is why they treat them.

Although the blood glucose was outside normal limits, they would not expect that to lead to the clinical collapse like the one seen in [Baby E] several hours later.

In relation to the blood gas pH reading at 14.38 of 7.293, [Dr C] explained that preterm babies aren't normally managing their own pH, so clinicians accept readings of above 7.25, whereas the natural range in adults is 7.35 to 7.45. [Baby E]'s deterioration thereafter was well outside what they would expect, she said.

On that Monday, 3 August, [Father of Babies E & F], who was commuting from home, left the hospital at about 5 pm, 17.00 hours. [Mother of Babies E & F] was having skin-to-skin contact with [Baby E], which finished at about 18.30, and changed his nappy and did his cares. She then went upstairs to the post-natal ward to express some milk and have something to eat. This was between 19.00 and 20.30.

The shift changeover that evening was, as usual, at 19.30. The relevant tile is 114. The registrar on duty was Dr Harkness. The senior house officer was Dr Christopher Wood. [Dr C], the consultant paediatrician on call, was in hospital accommodation, a five to ten-minute walk to the unit. The shift leader was Caroline Oakley. The other nurses on duty were the defendant, Belinda Williamson and two nursery nurses Lisa Walker and Valerie Thomas.

Tile 115, which is also reproduced on paper as the first page in tab 5 of your large neonatal review file, shows the locations of the babies and allocations of nurses from the start of the shift. The alterations during the shift are depicted on page 11 at the end of that review.

The defendant was the designated nurse for both [Baby E] and [Baby F] in nursery 1. Belinda Williamson could not now recollect having any contact with [Baby E]. She was referred to the neonatal fluid balance chart behind tile 125 on which she accepted she had made a series of entries in relation to [Baby E]'s fluid balance at 22.00 and with her signature at the bottom of the column.

Towards the bottom of the adjacent column for the 21.00 aspirate, there are the words "omitted, discarded 16ml mucky". The defendant said that the feed at that time was omitted because there had been 16ml of mucky aspirate. She said that senior house officer was informed by telephone and told them to omit the feed. She didn't in her nursing note name the doctor who was asked. She said they didn't always write the doctor's name. There would only be one SHO on duty, so it could be checked.

In the 22.00 hours column, there are written the words "15ml of fresh blood". The defendant accepted she wrote this. She got fresh blood and Dr Harkness attended.

Belinda Williamson would guess that the other 22.00 entries written by her were as a result of someone asking her to do some of the observations for them, which was not unusual.

The defendant said she couldn't answer why Belinda Williamson was carrying out observations at 22.00. She denied she had got Belinda Williamson to put the entry on [Baby E]'s chart for 22.00. The neonatal review chart in the A3 file, to which she was taken, identified that at 21.59, lines 58 and 59, Belinda Williamson was engaged with Caroline Oakley in administering medication to JE and feeding JE, who was in nursery 2, and for whom Lisa Walker was the designated nurse.

She was also referred to tile 131 and the document behind it and confirmed that she co-signed for the administration of medication for [Baby E], timed at 22.27, and also co-signed for other medications behind tiles 132 and 133.

At 22.38, she was engaged in checking the prescription for [Baby E] for insulin, making sure that everything was right, making up the concentration and the syringe and connecting the syringe to the cannula or port for infusion.

Dr Christopher Wood, now a GP on the Wirral, was at the very end of a four-month placement at the hospital as part of his GP training and was working as the on-call senior house officer in the unit for that night shift. He had been present at the birth of the [Surname of Babies E & F] twins. He was asked whether at some point on that evening, it was suggested around 9 or 10 in the evening, he recalled receiving or was informed about -- receiving a call or was informed about an aspirate, a bile-stained aspiration, not a bleed, on the unit. He said he didn't recall. He didn't remember whether it definitely didn't happen or he just couldn't recall being informed about it. He did say if he had received information from a nurse that required him to see a patient on the unit, on seeing the patient he would make his assessment and record this in the medical notes and, if needed, would seek further advice from his registrar.

Behind tile 128 is J2556, which is Dr Harkness' note made at 22.10, recording that he was asked by the defendant to see [Baby E]. He thought he had been bleeped. That would be the normal way. When he got there, the defendant was in room 1. He was told that there had been a large, very slightly bile-stained aspirate 30 minutes before he had been called. He accepted that that event could or would have been around 21.30.

When he got to the room, he was shown a sample of bloody aspirate, mainly stomach contents containing small amounts of

flecks, tiny minuscule amounts of blood that was not fresh. His recollection is that while he was there:

"A sudden large vomit of fresh blood, a 14ml aspirate, occurred."

That was what he wrote in his note. He noted the background. There was reference to potential background markers for the heightened risk of NEC, namely reduced end-diastolic flow to the uterus and intra-uterine growth restriction --

(12.03 pm)

(No audio feed from court)

(12.05 pm)

MR JUSTICE GOSS: There was nothing in the notes about a possible blood transfusion, but Dr Harkness said he will have considered it and [Dr C] believes they discussed that in at least one of the pre-collapse conversations.

[Baby E] had been due a feed at 21.00. [Mother of Babies E & F] said she took some expressed milk down to the unit, arriving a touch before 21.00, 9 pm. She didn't recall seeing anyone else at that time. Her twins were, she thought, the only babies in nursery 1. [Baby E] was in the incubator to the right as you entered the room and [Baby F] was to his left against the back wall. They were indeed the only babies in the room.

The defendant was in there at the workstation, busy doing something, not near [Baby E]. [Mother of Babies E & F] could hear him crying from the corridor. It was nothing like she had heard before, a sound that shouldn't have come from a tiny baby. She couldn't describe it: it was horrendous, more of a scream than a cry. She immediately went to [Baby E] and saw he had blood coming out of his mouth. There was blood on his face and around his mouth. It was not on or going on to anything else.

In her witness statement, made on 27 July, she said it was:

"Like a dribble pattern. It didn't look like it was completely fresh. It was blood."

She was asked if it was possible that it was some sort of dark liquid with flecks of blood in it around his chin. She said it was not, it was blood.

In re-examination, she said:

"It wasn't dripping, it was smudged and didn't look completely dry and was darker, it wasn't bright red."

You have seen the drawing, J2324, with the marked areas round the mouth, with the blood mainly below the lower lip down towards the tip of the chin.

She was panicking, thinking there was something wrong. She used the containment technique of putting her hands on his head and tummy. She asked the defendant why he was bleeding and what was wrong. She said the feed tube from the back of the throat will have been rubbing and that will have caused the blood. This was something the defendant said she had no recollection of saying when she was interviewed by the police.

In her evidence, the defendant said she didn't recall [Baby E] screaming. He was unsettled at times but not screaming, nor did he have blood around his mouth when his mother, who she thought had brought expressed milk, came down at around 21.00.

When cross-examined about this, she said she thought [Mother of Babies E & F] brought milk down at 21.00 but couldn't be sure. She did not tell her the bleeding was the insertion of the NG tube and she would not tell parents to go away. She agreed that, in her interview relating to [Baby N], she did say that an NG tube can cause bleeding from trauma. She said she had not fallen out with [Mother of Babies E & F] and the first time she, the defendant saw blood, would be at 22.00, in nursery 1, and she called Dr Harkness down.

[Mother of Babies E & F] accepted what she says she was told by the defendant, but was concerned. The defendant told her to go back to the ward. She did as she was told because the defendant, Lucy Letby, was in authority and knew better than her and she trusted her completely. She returned to the post-natal ward and rang her husband because she knew there was something very wrong and she was frightened. The call data, J2431, shows that there was a call at 21.11 for 4 minutes 25 seconds. She told him about her concerns. [Father of Babies E & F] said that his wife was upset and very worried about [Baby E] because she had seen bleeding from his mouth. It was definitely in that call, said [Father of Babies E & F], that there was reference to bleeding and not in a later call.

[Mother of Babies E & F] said she was upset and spoke to the midwife, Susan Brooks, who was administering medication to her. Susan Brooks wrote in her patient care notes:

"Care since 20.00 hours, [Mother of Babies E & F] was post-natally well. I had given her some medication and she asked to

let her know if there was any contact overnight from neonatal unit as one of the twins had deteriorated slightly."

Susan Brooks said that at 23.30, there was a call from the neonatal unit, asking [Mother of Babies E & F] to go down in 30 minutes as [Baby E] had a bleed and required intubating and that he was very poorly. Susan Brooks noted that [Mother of Babies E & F] was obviously very distressed and wanted to go straightaway. [Mother of Babies E & F] said the midwife came and asked her to call her husband, which she did, and the midwife spoke to him on the phone. That call, according to her phone data, was, she said, at 22.52.

She was taken down to the unit, the time being recorded by Susan Brooks at midnight, where she sat in the corridor, watching the team of people around [Baby E]'s incubator working on him and was allowed to go in and see [Baby E] around 10 minutes later.

I pause in the narrative of events at this point to remind you of what the defendant said when first interviewed about [Baby E] on 4 July 2018 in the section [Initials of Baby E]. She recalled caring for [Baby E], he had been started on insulin earlier in the day on 3 August, but was otherwise doing well. He was starting to have enteral feeds, but after some feeds she got aspirate back from his NG tube and his abdomen was becoming distended. He was reviewed by doctors and medication commenced but his abdomen continued to distend and became discoloured. He then required respiratory support and began bleeding.

It was on the second time she fed him that she obtained a large aspirate back from his NG tube that contained bile and was usually a sign that he was not digesting feeds or potentially there was an infection. She showed Belinda Simcock, now Williamson, and they decided to omit the feed. Prior to this large aspirate she had no concerns about [Baby E].

It was about an hour after this that his stomach began to distend. When she got blood back in his NG tube she thought she had shown Belinda Simcock but was not sure Belinda was there when she obtained it. She could not remember if she found the blood before or after his deterioration. It was fresh blood and she believed it was from his abdomen. She looked at her notes and stated that if she had seen blood on [Baby E] prior to the large vomit of fresh blood then it would have been in the notes and charts. She confirmed that she would have told a doctor if at any time she had found blood on [Baby E].

In the second interview, on 11 June 2019, she said she could not remember what [Baby E] was like when [Mother of Babies E & F] attended the ward and whether he had blood on him at that time or telling [Mother of Babies E & F] not to worry and go back

upstairs. She also said she did not know why she would say that it was the feeding tube irritating his throat and that was not a normal reason for a baby to have blood in his mouth. She said she must have made an error in putting it was at approximately 10 o'clock that [Mother of Babies E & F] attended, it must have been earlier. She could not specifically remember any bleed.

In her evidence she said that so far as the events from 22.00 were concerned, referring to tile 38, that 14ml of fresh blood at that time was very concerning. I've already reminded you that in her evidence she said that the first time she noted blood will have been at 22.00. She called the doctor and Dr Harkness came; tile 128.

There are, therefore, significant conflicts between the evidence of [Parents of Babies E & F] and the defendant and you've heard submissions as to the significance of those conflicts in relation to the circumstances, the nature and time of the bleeding and what is said to be the evidential link to the later case of [Baby N], and you have also heard the defence arguments in relation to why you should find the evidence of [Mother of Babies E & F] unreliable in relation to her timings.

The significance of this evidence and the resolution of those conflicts are, of course, matters for you.

Dr Harkness made a further clinical note at 23.00. He didn't think he had left the unit. There had been a further GI blood loss and desaturation to 70%. [Baby E] needed immediate medical assistance. There was 13ml of bloodstained aspirate from the NGT on free drainage, which was a mixture of blood and stomach aspirates. His blood pressure was stable and very good and his heart rate was very good, his saturations remained at 60% to 70% in 100% oxygen. He was making a good respiratory effort and so it was not as a result of a breathing problem that he was not maintaining his oxygen saturations: something was interfering with oxygen getting into his bloodstream. This was a significant desaturation and there had been a loss of some fluid and a loss of blood.

[Dr C] said something dramatic had happened. It was, she agreed, a very serious situation, an emergency. The plan of Dr Harkness was to replace the losses with fluids, maintain strict checks on fluid balances, electively intubate [Baby E], administering a sedative and painkilling drugs, the plan being to get him stabilised on a ventilator, take chest and abdominal X-rays and discuss them with the surgeons at Alder Hey.

[Dr C] agreed to this plan and told you that she was happy with it and, in hindsight, she wishes she had got there sooner, but she didn't think she would have made any different decisions to

the ones that had been made had she been present. Both of them were thinking [Baby E] may have NEC and were addressing that in the way they believed to be appropriate.

[Baby E] suffered a sudden deterioration at 23.40. The clinical note of Dr Harkness was written at 01.45. It's behind tile 149 and is J2557. He was just getting ready to intubate [Baby E] electively, the drugs having been prepared. The defendant was in the room, as was another nurse. Dr Harkness noted that [Baby E] had:

"Bradycardia of 80 to 90 beats per minute, saturations 60%, poor perfusion."

Which was a sluggish blood supply to the limbs. There was also colour change over the abdomen with purple discoloured patches, which in his evidence he described as:

"A strange pattern over the tummy which didn't fit with poor perfusion. The patches were in one area and then in another. It was unusual and not fitting with a baby that had shut down with poor perfusion. His head and upper legs and arms were pink, normal colour. It was hard to give a clear description."

He'd seen this in [Baby A] as I have already reminded you. That was the only other time he had seen it before and he said he has not seen it since. The patches were of different sizes, in the region of 1 to 2 centimetres, possibly bigger, and were just over the abdomen. He carried out an emergency intubation, inserting a 2.5-millimetre tube and establishing a good airway.

[Dr C] arrived, checked the radiograph and saw the ETT and NGT were in the right places, there was no evidence of gas in the bowel or of any intraperitoneal gas, which would have been indicators of NEC. She saw no discolouration of [Baby E]'s abdomen. They were discussing [Baby E]'s situation when he collapsed at 00.36.

Dr Wood attended the unit on the crash call. Resuscitation attempts had already begun when he arrived. Being the most junior doctor he acted as scribe noting events and times as they occurred and then writing them up in the notes. Behind tile 164 is J2560, which is the note of the personnel present and timings that he wrote up at 01.25 on the morning of the 4th.

In interviews the defendant was taken to her medical note, which are behind tile 206, and a reference to a purple band of discolouration over the abdomen, which she thought was a purplish area around his umbilical area which she didn't think she had seen before.

In her evidence she said that at 23.40 his stomach was distending and there was a very red band on the abdomen. She wondered if he was bleeding into his abdomen. The discolouration stayed throughout. He had declined. He was actively bleeding into the free drainage port at the end of the NG tube.

The defence challenged the clinical decisions of [Dr C], including the failure to give an earlier blood transfusion. [Dr C] explained that [Baby E]'s cross-matched blood wasn't ready by that time. They had emergency O negative blood that they could access on the labour ward if needed. She didn't feel his collapse was due to blood loss because there wasn't the deterioration in his observations over a period of time that would have fitted with that. She didn't believe that not having blood until his resuscitation led to his collapse and death. A blood transfusion is not without its risks and he wasn't showing clinical signs of significant blood loss at that point. So they did consider it but she didn't think, even with hindsight, that he should have had a blood transfusion at that point.

[Baby E]'s oxygen saturations dropped and he had no detectable heart rate. The resuscitative measures are set out in the documents behind tile 197, J2258 and J2259. [Baby E] had good bilateral airways throughout and there were no problems with ventilation. He was given five doses of adrenaline and other medications listed and 20ml of blood. There was a detectable heart rate from 01.01, but [Baby E] was still not breathing.

The tests from the blood sample taken from him all indicated an extremely poor clinical condition that was not compatible with life, but could not tell them anything about the cause of the collapse. The heart rate started to drift down again and it was not felt that continuing to treat him was in [Baby E]'s interest. He was transferred to his parents where he died by 01.40.

I return to the defendant's evidence. She said that the discolouration she saw was not the same as what Dr Harkness described. She said it was like a solid block of purpleness over his abdomen. [Baby A] was different, he had pale and whiteness and more like a mottled look. [Baby E] was bleeding from his mouth and nose when chest compressions were performed. She assisted with the resuscitation. It was not something that she wanted to happen and she was there when he died. She found his death very traumatic. She completed a Datix form at 05.53 on 4 August, which is behind tile 218, reporting:

"An unexpected death following a GI bleed. Full resus unsuccessful."

She said that collectively, the medical team were late in giving the blood transfusion after the profuse bleed at 22.00, she denied having done anything to harm him.

After [Baby E] had passed away, [Mother of Babies E & F] had contact with the defendant, who she said asked her if she would like to bath [Baby E]. She did not feel able to, she was broken. The defendant bathed [Baby E] in front of her in the unit and he was then put in a white gown and given back to them and went into the incubator, where he stayed. In her evidence the defendant said that the parents bathed [Baby E].

Shelley Tomlins, now living in Australia, then a band 5 neonatal nurse, came on shift at 07.30 that morning, taking a handover from the defendant. She provided emotional support for [Parents of Babies E & F] and was present when there were discussions with the consultant, [Dr C], about a post-mortem.

At the time [Dr C] felt that [Baby E] had died of NEC. She discussed having a post-mortem with the parents. [Mother of Babies E & F] said [Dr C] told them that it wouldn't tell them very much and wouldn't be able to tell them any more than what she was telling them as to how he died. It would delay their transfer back home and they just wanted to take [Baby E] home.

[Dr C] discussed her conclusion that [Baby E] had NEC was the most likely explanation for the cause of gastrointestinal bleed at the time for a baby of his gestation and condition with the coroner and [Dr C] agreed with the coroner that they would put on the death certificate that as the cause of death. No post-mortem was carried out. Although she felt at the time NEC was the most likely explanation, [Dr C] completely agreed that with hindsight she should have requested a post-mortem. She was keen to avoid any further distress to [Baby E]'s parents and she apologised to them that she didn't push for a post-mortem.

The defendant had an exchange of Facebook messages with [Nurse A] from tile 222 onwards, in which she said in a message behind 229 that [Baby E] had a massive GI bleed and she guessed he was a very high risk:

"It was just awful because he was bleeding from everywhere during resus."

In the third interview on 10 November 2020, she confirmed he was bleeding from his nasogastric tube, his mouth and, she thought, rectally. On 4 August there was an exchange of messages with Jennifer Jones-Key in which the latter referred to them being:

"On a terrible run at the moment."

And the defendant responding:

"He had massive haemorrhage. Could have happened to anyone."

And in a later message:

"This was abdominal. I've only seen pulmonary before."

You have all the messages and their contexts set out in the sequence of events.

When interviewed by the police on 10 November, the third time, 2020, she said she was aware it was an abdominal bleed because they were getting blood back from the NG tube and he passed blood rectally, indicating an abdominal issue.

She made searches for [Mother of Babies E & F] on 6 August and 14 September, followed by further searches in October for both [Mother of Babies E & F] and one for [Father of Babies E & F], going up to 10 January 2016. They're all in the sequence of events.

In her evidence she confirmed having made the searches, again now saying that that was something she does quite often. [Baby E] and [Baby F] came into her mind. These searches did not apply to just babies on the indictment. Looking more than once was more than a normal pattern of behaviour for her.

In relation to agreed facts 39 and 40, which concern the photographs that were found on her phone, she said that she took the photograph of the thank-you card for the [Family of Babies E & F] at 03.40 on 20 November 2015 at the hospital because it was something she wanted to remember. She quite often took photos of cards, it was nothing unusual. She also took a photo of her shift pattern, which is J233225. You will remember it was put up on the screen.

Professor Arthurs considered the available X-rays in [Baby E]'s case and confirmed that there was no evidence on the radiograph of an air embolus in his circulation, but said that there would have to be quite a lot of air for you to see it on the radiograph and that would have had to be done quite close in time, so the radiograph would have had to have been taken almost immediately were that to have happened. So he could not exclude the fact that it may have happened, it was just not demonstrated on the X-ray. So the fact that one can't see air in the great vessels or other part of the circulation doesn't help either way in determining whether that was the cause of death.

There were no features of NEC on the X-ray. If the baby were to die of NEC within hours of the X-ray, you might expect to see some of those features. That's of NEC.

It was in [Baby E]'s case, and not [Baby A]'s as I erroneously stated yesterday, you remember I corrected it in the afternoon -- in which Professor Kinsey confirmed there was no explanation in his blood properties for spontaneous bleeding. That did not mean that he might not have had a gastrointestinal haemorrhage for some other reason unconnected with blood clotting or haematology, and her assessment did not establish the cause of the bleeding, but she was simply saying from a haematological point of view he didn't have a blood clotting problem.

Dr Evans reviewed all the medical records in [Baby E]'s case, including the material from Alder Hey, photographs, radiographs and extracts from witness statements. Taking all that information into account, together with the evidence that he heard, he concluded that [Baby E]'s condition between his birth on 29 July and the time of the handover on the nursing shift at about 20.00 on the evening of 3 August was incredibly stable and his blood tests accorded with that. He was at increased risk of NEC because of the absent end-diastolic flow. His treatment was managed appropriately following his birth, he was not given oral feeds for the first few days, and he did not develop NEC.

If a baby has NEC to any significant degree they become gradually unwell. You might find a bit of abdominal distension, the usual markers of tenderness, heart rate might go up, the respiratory rate might go up, the baby's oxygen might drop, [Baby E] would not have coped with handling in any way. These initial markers are pretty non-specific but if you're used to dealing with premature babies, Dr Evans said, you would pick up these signs of early NEC.

Abdominal distension is a well-known symptom of NEC. In an aspirate taken from a baby with NEC you might expect an increased amount of aspirate, which on the whole is usually of bile and watery juices. Dr Evans didn't consider that NEC was a viable explanation for what happened to [Baby E].

He said there were two major issues in [Baby E]'s case. The first was a significant haemorrhage from the upper gastrointestinal tract, somewhere between the mouth and the stomach. Something had caused this significant haemorrhage. [Baby E] had lost a lot of blood in a short period of time, sufficient to destabilise him generally.

The second was the discolouration, the very unusual pattern of patches, which, Dr Evans said, apart from in this case -- this

case as a whole -- he had seen only in literature presentations as a marker of an air embolus. He thought [Baby E] was suffering from an air embolus. These two major problems were why resuscitation was not successful. His initial thought, as set out in his report of 31 May 2018, was that there had been some sort of trauma due to an NG tube. Having more recently seen the type of NG tube that was used at the hospital, he didn't think it could have caused any trauma.

He thought [Baby E] suffered trauma from some other form of injury and referred to a number of bits of equipment that are relatively rigid, plastic tubes used for suction or an introducer, which is a thin wire surrounded by plastic, which are used to intubate a baby, which would be more than sufficient to cause trauma if it was used inappropriately. Whatever it was, there was no potential innocent explanation for the degree of bleeding.

The other option was a bleeding ulcer. Dr Evans had never seen a bleeding ulcer causing this sort of presentation and [Baby E] was not a baby experiencing distress.

In relation to other possible issues about which he was questioned by the defence, Dr Evans said [Baby E]'s raised glucose was a result of him not producing his own insulin. The dilatation of his bowel was due to a lack of oxygen and would not be an issue 5 days after his birth. There was no evidence that he was acidic. His massive haemorrhage was not something that occurred as a natural phenomenon. In his opinion it was caused by trauma. There was no evidence, he said, of a natural cause.

Dr Bohin was asked to review the reports of Dr Evans, but formed her own opinion, she said, and refuted the suggestion that she was merely going along with the suggestions of Dr Evans. She studied the medical records and said there was nothing in the records of a tube being inserted after 29 July.

So far as insulin was concerned, the records showed that [Baby E] received insulin between 07.00 and 10.10 on 31 July. It was then stopped and he was restarted on a lower dose between 16.00 on the 1st and 07.00 on 2 August at less than half the previous dose, and then at the same dosage from 15.30 on 3 August until his death.

She examined the feeding chart. He was given half of 1ml of milk every 2 hours from the night of 31 July. The feeding charts setting out precisely what he was given and when are J2718 to J2720.

On 2 August, at about 09.30, [Baby E] developed a very mild oxygen requirement of 24%. Clearly, the clinical team were concerned that he might be developing an infection and, as per normal practice, he had what was regarded as a partial septic screen. Blood tests were taken and a blood culture to look to see if there were any bugs in the blood. He was started on antibiotics, cefotaxime, just in case he was showing early signs of an infection. His blood gases were normal and there was no increased work of breathing.

At 09.00 on 2 August, [Baby E]'s feeds were increased to 1ml every 2 hours. His abdomen was described as "full but soft". At that stage his bowels had not opened. The feeds were increased at 15.17 and 19.00 on 3 August to 2ml of milk, the material being behind tile 92.

I have reminded you briefly of the circumstances of the omission of the 21.00 feed. At 22.00 hours, a large vomit of fresh blood was recorded in the nursing notes. The blood gas results at that stage were normal. The examination of Dr Harkness revealed a soft, non-tender, non-distended abdomen with normal bowel sounds. He was prescribed a bolus of sodium chloride, a dose of ranitidine and an injection of an antibiotic, metronidazole. The blood gas results showed signs of respiratory acidosis, the pH was lower than it had been, the CO₂ was raised, the metabolic component, ie the base excess, was normal. The glucose was up a bit at 10.6, but not anything really to worry about, and the lactate was normal. The haemoglobin on the gas was 185, which was normal.

At 23.40 there was the sudden deterioration in the conditions which I remind you are behind tile 149: heart rate was low, a bradycardia between 80 and 90 beats per minute, and low saturations of 60%. His perfusion was poor, so he wasn't a pink baby, and his abdomen developed the features Dr Harkness described in terms of discolouration. The clotting screen results are at J2704.

The prothrombin time at 19.45 was marginally above the normal range and the activated partial thromboplastin time well within the normal range. It is not suggested there was a blood clotting problem.

Dr Bohin said the decision not to hold a post-mortem was a poor decision.

Between his birth on 29 July and the time of the handover on the nursing shift at about 8 pm, 20.00, on 3 August, [Baby E] was incredibly stable and his blood tests accorded with that. He was at risk of increased NEC, his treatment was managed appropriately following his birth. NEC has no single presenting

feature but it can present with feeding intolerance temperature instability, abdominal distension, abdominal pain and, if it's more severe, bloody stools. It can present with a gastric perforation. Babies with NEC do not go from being well one minute to being very, very unwell within a matter of minutes or even a couple of hours. He had been tolerating his feeds and had passed meconium. She had dealt with NEC on a number of occasions and [Baby E], in her opinion, did not have clinical features consistent with NEC.

The 16ml of aspirate before he was fed at 21.00, 9 pm, struck her as being really odd and out of keeping with what had gone before. You don't take the volume of aspirate in isolation, she said, you have to link it to the baby's clinical condition, which had been fine, and he'd shown no signs of any gastrointestinal disturbance. He had tolerated those feeds up until that point and had no aspirate at all. She was at a loss to explain where this 16ml had come from, having had no aspirate before and having nothing in his tummy for 2 hours.

On the subject of bleeding being caused by an NG tube, the fact of trying to place that tube in the nose can sometimes cause minor trauma to the delicate lining of the nose and you sometimes get some very minor bleeding. She had never seen a baby haemorrhage or have blood around the mouth as a result of a nasogastric tube insertion.

It appeared that [Baby E] had a huge amount of haemorrhage at 22.00, vomiting fresh blood of unknown volume. That was an extremely unusual feature and to have an additional 14ml of blood in the syringe attached to the nasogastric tube, which in combination and together with the further 13ml recorded at 23.00, which she felt was very likely to be an estimate and could have represented over 25% of his blood volume.

Haemorrhage of this magnitude in neonates is vanishingly rare. Dr Bohin has never seen a baby having a gastric haemorrhage in this way. Babies do sometimes have gastric erosion and ulceration, but it does not result in haemorrhage of this fashion.

Taking all these factors into account and her experience, she thought [Baby E] died because of an air embolus. On that day he had the discolouration that was described by Dr Harkness. He suddenly collapsed where his previous clinical condition was not one where that was expected, and he did not respond to what was standard resuscitation. So on balance she thought he had an air embolus. The haemorrhage made him unstable, but she didn't think that was the cause of his death. [Baby E] didn't have NEC.

Well, I'll start reminding you of the evidence in relation to [Baby F], but obviously I'll have to break off at some point for lunch.

[Baby F], the subject of count 6, attempted murder, was born at 17.54 on 29 July, in good condition, cried at birth and weighed 1.43 kilograms, so was slightly heavier than [Baby E].

Dr Sally Ogden was present at his birth. The birth details are behind tile 5 in his sequence. He was admitted to the neonatal unit 16 minutes after birth at 18.10 hours. He was intubated and had a very low blood glucose level of 1.9. He was extubated the following day, 30 July. His blood glucose rose to 15.1, which was very high, and at 03.40 on 31 July the administration of manufactured insulin, Actrapid, was started; that's tile 10. He responded well to the insulin and his blood glucose an hour later at 04.40 had dropped to 8.7. The Actrapid was stopped at 06.20 hours.

The defendant, who had not been on duty that night after his birth, was on the night shift in the unit on three successive nights, on the 1st, 2nd and 3 August from 19.30 hours. She was the designated nurse for [Baby F].

Tiles 13 to 21 front relevant events, including the feeding regimes. Tile 17 relates to the feeding regime for the night of the 1st and 2 August. [Baby F] was prescribed Babiven and lipid, administered intravenously up to 3 August.

[Nurse B], who was on duty during the day of 3 August, confirmed that, apart from a transient respiratory issue after [Baby F] was taken off CPAP and put on Optiflow for a time, all was well. Feeds were increasing and he was tolerating milk.

From tile 22 you have the records detailing [Baby F]'s care from 01.00 hours on 4 August.

As you well know, the prosecution allege that [Baby F] was given manufactured synthetic insulin via the bag of Babiven that was hung by the defendant or that was hung during the course of the night shift of the 4th and 5 August. They also allege that, by reference to the blood sugar readings on the 5th and 6 August, the next bag of Babiven that was hung at midday, 12.00 hours, on 5 August, which will have been taken from stock, had had a similar amount of insulin put in it so that [Baby F] continued to receive insulin until that bag was replaced.

Insulin, explained [Dr C], is a hormone that is made by the body in the pancreas to help regulate blood sugar levels; that is endogenous insulin. It is also a manufactured medicine that can be given as a drug to diabetics who do not produce their own

insulin; that is exogenous insulin, in other words coming from outside the body. Dr Gibbs further explained that when insulin is produced naturally in the body, the insulin molecules attach to the C-peptide molecule and they are broken apart and both are secreted from the pancreas into the blood.

The C-peptide stays in the blood much longer than insulin, so normally, the C-peptide level is much higher in the blood than the insulin level. Synthetic insulin made by a drug company doesn't have any C-peptide attached to it, so it's very abnormal to have a high insulin level when there's a low blood sugar. There are rare disorders that premature babies can suffer where they produce and secrete too much insulin themselves.

[Baby F] was not such a baby.

As they are entitled to, the defence do not admit that the evidence establishes that [Baby F] or [Baby L], the subject of count 15, were given manufactured insulin, and they put the prosecution to proof. In other words, you must be sure that the evidence of Professor Hindmarsh and all the related evidence of sampling and testing --

(12.50 pm)

(No audio feed from court)

(12.51 pm)

MR JUSTICE GOSS: They also argue that if it is established that insulin was added to TPN bags by someone, there is a huge evidential gap proving that the defendant was that person. Her case is that she was not responsible.

In relation to [Baby F], the defence point to the absence of direct evidence that she tampered with any TPN bag. She did not have exclusive access to bags. She was not on duty when a Maintenance bag was hung and was providing the infusion at the time that the incriminating sample was taken, the line and giving set having also been changed by that time.

And finally, if she was intent on murder, why didn't she attack [Baby F] on some other occasion that she was looking after him on nights before 3 August, I have reminded you she was on duty on previous nights, or when she was back on the unit on 8 August?

With all this in mind, I remind you of the evidence relating to the taking and testing of the blood sample, its integrity and reliability and other evidence surrounding this alleged offence.

On Tuesday, 4 August Shelley Tomlins, a band 5 staff nurse, was on duty during the day with [Nurse B]. At 10.00, Shelley Tomlins completed the observation chart for [Baby F]; it's behind tile 64. He was 6 days old. The readings were acceptable for a neonate, indeed all the readings on that chart, which go up to 17.00 hours that day were.

Dr Gail Beech, a registrar at the time, was on duty that Tuesday and behind tile 67 is the note of the weekly review she conducted in preparation for the Wednesday ward round the following day. You can refer to that note if you wish.

They were establishing feeds and awaiting genetic results for T21, which is Down's syndrome, which, when received on 7 August, were negative. His hyperglycaemia, high glucose, for which he had been prescribed Actrapid in the early hours of 31 July, had resolved, he was on antibiotics and standard drugs. His sats were 92% to 97%, he had good gases, there were no concerns about his cardiovascular system, his heart sounds were normal, his weight loss of 9.6% was normal after birth. He was on small enteral feeds of expressed breast milk via a nasogastric tube straight into the stomach supplemented by TPN with no lipids via a long line. His head scan was normal.

On examination, he was active, pink, his chest was clear, there was no increased work of breathing, his femorals were good, his abdomen was soft, bowel sounds were heard and there were no hernias.

[Nurse B]'s note of that day is behind tile 53. In summary, [Baby F] remained on Optiflow but had reduced oxygen, his heart rate was stable, his long line was working satisfactorily. Based on all notes and observations, [Nurse B] said that:

"Apart from a slight respiratory issue in the morning there were no other concerns that were outside normal prematurity."

Behind tile 145 is the neonatal parenteral nutrition sheet, J3143. For 4 August, Dr Beech prescribed and signed for Babiven but no lipid, dextrose or other infusion. That prescription was sent off to the pharmacy and the made-up bag will have been received on the unit about 17.00. That entry was signed for by the nurses [Nurse A] and the defendant and then struck through against a time of 00.25. It was said not to be required.

Below that entry is a further prescription for day 7 for Babiven, lipid and 15 milligrams per kilogram per day prescribed by Dr Chris Wood. This was because the small enteral feeds had been stopped and [Baby F] was back on lipid. The defendant in evidence identified that she signed for administration of those prescriptions and the timings. You have a paper copy of what is

tile 147 as the first document in section 6 of your second jury bundle.

The new TPN bag was hung at 00.25 on 5 August. Yvonne Griffiths, the neonatal manager in the unit at the time, explained the prevailing situation in relation to TPN bags and the contents of the fridge in the treatment room, of which you saw photographs, although they were taken some 3.5 years after these events, and the tower of shelves to be seen adjacent to the fridge containing NG tubes, dressings, creams and the like was in an adjacent separate small room opposite nursery 1 and not in the position next to the fridge shown in the photographs that were taken all those years later.

The fridge, in which there was a list of the contents on the inside of the door, contained a supply of TPN stock bags of both Babiven and Start-up Babiven, as well as made-up prescribed Babiven and insulin in the form of Actrapid -- and two boxes could be seen in the photograph that you were shown on the top shelf.

That fridge was kept locked. There was one set of keys, which would start in the possession of the shift leader and then be in the possession of anyone wanting to take something from the fridge. That bunch of keys included keys to cabinets containing intravenous and oral antibiotics and medication which were always in nursery 1. There was no system for signing the keys in and out.

Any request to replenish stocks was done by a requisition book. That booklet represented the only source of audit of Babiven ordered into the unit. There was no way of knowing what was in the fridge when the orders were made. A check would be undertaken every night, but in particular on Monday mornings and Thursdays because the pharmacy would not supply medications over the weekend.

[Baby F] was the only baby in the unit on that night shift of the 4th and 5 August who was receiving TPN.

That's a convenient moment to break, members of the jury. It is actually exactly 1 o'clock. Could you be ready, please, to continue at 2.05? Thank you very much. Remember your obligations as jurors.

(1.00 pm)

(The short adjournment)

(2.03 pm)

(In the absence of the jury)

MR JUSTICE GOSS: Mr Myers, thank you. I've read your note and I have seen Mr Johnson's response as well. I'm happy to refer to this, but what I propose to do is to put it in its context, in other words revisit that whole section, because it really comes within the section that I gave about Professor Arthurs.

MR MYERS: Yes. The reason we raised it is because in chief he gave a list of possible causes and although he included resuscitation in his report, for whatever reason that wasn't something he said in chief, and therefore simply in cross-examination we adduced that from him, which he agreed. Of course, the matter raised by the prosecution is to do with the question of the strength of the association, which is a slightly different issue, although it's one on which we've already made our position plain to your Lordship.

But insofar as there's a list of alternatives, it certainly was one of the ones that he included on it, and as your Lordship knows, that's important to the defence because it something which applies across the board here as does the alternative the prosecution favour.

MR JUSTICE GOSS: If you look at page 13 of the document that Mr Johnson sent under item 5, that's the top of the transcript there, it's above the passage that's highlighted. I can read it out if it's easier.

MR MYERS: I have it now.

MR JUSTICE GOSS: This is air on radiographs. It perhaps begins at the bottom of the first page -- previous page, 12, I'll read it out, then you can all hear it:

"Answer: We've seen it in some children who have undergone extensive resuscitation. I am just referring to my report where we didn't see this very commonly on radiographs in those circumstances, but we are now performing CT scans, which are more detailed scans, of babies who have died, which allows us to see smaller locules of gas, smaller and smaller -- better imaging effectively.

"Question: So a CT scan is more discriminating?

"Answer: Yes."

And then:

"Answer: In that sense we have seen it occasionally [this is post-mortem gas] following resuscitation and the premise is that

we hypothesised that there is some natural gas in the body after death and it is possible therefore the resuscitation could circulate it around if it was successful in moving blood around with gas in it."

MR MYERS: Yes. And indeed when we cross-examined him with [Baby D], he then talked about redistribution of the gas in that way.

MR JUSTICE GOSS: Exactly, that's what he said. What I'm going to do is to try and dovetail all that together.

MR MYERS: We're grateful. We understand the requirement that it is in context but it's just -- and we understand also that your Lordship, having taken the list that was initially presented in examination-in-chief, it was exactly as your Lordship presented it but something that was missing from that at that stage, which was introduced in cross-examination, was the potential contribution of resuscitation (overspeaking) --

MR JUSTICE GOSS: But I am just alerting you to the (inaudible: distorted) I am going to be -- I will explain what it is and what the evidence is and I shall probably read out, in fact, what Professor Arthurs says, I think that's the best way of dealing with it, the relevant passages from the transcripts.

MR MYERS: Thank you, my Lord.

MR JUSTICE GOSS: Thank you very much.

Mr Johnson, is there anything you wish to say?

MR JOHNSON: No, thank you, it's all in the document.

(In the presence of the jury)

MR JUSTICE GOSS: A matter relating to what I said this morning when I was reminding you of the evidence of Professor Arthurs about the findings in relation to [Baby D] of the air in the great vessels. What I'm going to do is remind you of what I said then and then supplement it with what was said in cross-examination so that you have the whole context about possible causes, according to Professor Arthurs, from a radiological point of view of seeing air in the great vessels on radiographs.

What was striking, he said, was the black line from left to right just in front of the spine which was gas in the aorta or the IVC, the great vessels which carry blood from or back to the heart or in both of them. This was unusual in appearance and not typical of what they see in children who have died without an explanation.

That amount of gas is seen in babies who have died of sepsis or overwhelming infection or SUDI, which would not in any event apply to neonates, in trauma, road traffic accidents, and the like. Then he went on to say that he also saw it in the cases of two other children, including [Baby A].

Now, "and the like" was in a sense taken further during the course of cross-examination and he was asked about whether CPR could account for blood in the great vessels. He said that as far as radiographs are concerned, he was looking at X-ray images and then he explained about CT scanning, which was multiple (inaudible: distorted) so you get much more detail and says that they can see a lot more in CT scans and in effect it's more discriminating.

Then he said about air in babies to be seen on radiographs. He said:

"In that sense we have seen it occasionally following resuscitation and the premise is that -- we hypothesise that there is some natural gas in the body after death and it is possible, therefore, that the resuscitation could circulate it around if it were successful in moving blood around with gas in it."

That he said was the only other possible explanation.

In cross-examination, he said:

"Question: (Inaudible: distorted) able to explain that where there has been resuscitation, CPR, that can lead to gas emerging in the great vessels.

"Answer: Yes. We don't think that resuscitation causes gas, but we think that normal gas that's in the post-mortem state could be re-circulated if there's vigorous cardiac resuscitation.

"Question: So it encourages the gas to come out of solution in the blood, in effect?

"Answer: I think it more redistributes the gas in effect."

I'm grateful for that being raised with me and I've added it to my summing-up to assist you.

I had just said we were at the stage with [Baby F] and I said he was the only baby on the unit that night of the 4th and 5th who was receiving TPN, total parenteral nutrition.

In addition to [Nurse A] and the defendant, Nurses Sophie Ellis and Belinda Williamson were on duty in the unit over that night.

The shift leader was Belinda Williamson. [Nurse A] was [Baby F]'s allocated nurse. He was in nursery 2. [Nurse A]'s nursing notes are at J2991.

She was really happy with him between 20.00 and 01.00. The observations are at J3191, the blood gas record is at J3255, and the fluid balance chart is J3203.

Behind tile 144, J3143, is the fluid balance chart from after midnight, the time that the nurses tried to change all the fluids. There was no way of knowing who gets the bags out, she said, the keys would change hands and it wouldn't necessarily be the designated nurse who would get the bag out of the fridge. The checks would then be undertaken, checking that the labels matched the baby's name and that everything matched up.

Dr Beech's prescription of earlier that day -- well, in fact earlier the preceding day but on the previous shift -- was started at 00.25 and signed for by the defendant and [Nurse A]. There was no way of knowing 100% from the documents who did what. By that time lipid was not required because [Baby F] was on milk and did not have the need for it.

The evidence of Professor Hindmarsh was that there must have been synthetic insulin in that bag of Babiven TPN and it will assist you if you have to hand Professor Hindmarsh's blood glucose log for [Baby F], which is in section 5 at your first jury bundle, as I go through the events.

We became very familiar with this document and I can see, as I saw at the time, a lot of you made notes on this very document and highlighted various points about it. I'm not going to go through it all now because it's there, you're very familiar with it, but I noted, and you may well have noted, that it's probably worth adding in the box down (inaudible: distorted) begins 05/08/2015 at 01.54, below the first entry at 01.54, if you haven't already done so, 02.05, dextrose started 10%. And then between 04.02, 04.20 and 05.00, 04.20 dextrose, 10%, 3ml. These were boluses to reflect the background of ongoing insulin actions. The significance is what Professor Hindmarsh referred to as the subsequent readings were affected by those boluses.

Between 01.00 and 04.40, the observations chart document at J3191 behind tile 214 records that there was a sudden rise of [Baby F]'s heart rate and respirations at 01.00 with the heart rate up to 190 beats per minute and then up to over 200 beats per minute and respirations up to 70 per minute, each at levels in the yellow, unacceptable levels, and Belinda Williamson said that will have been brought to her attention.

Sophie Ellis, who was the designated nurse for baby EJ, administered antibiotics and other medication to [Baby F] in the early hours of 5 August as set out behind tile 168.

Dr Harkness, the registrar on duty that night, attended the unit at 01.30 with a senior house officer, Dr Chris Wood, who made a clinical note at the review. It was noted that there were multiple small milky vomits and 9ml of milk aspirate. [Baby F] was tachycardic at around 200 beats per minute, otherwise he was well. Professor Hindmarsh said that vomits and a rise in the heart rate are associated with hypoglycaemia.

Around an hour later, Dr Harkness was asked to see [Baby F] again. He was still tachycardic. His heart rate was 200 to 210 beats per minute with narrow complexes in the beat and there were large milky aspirates. His blood glucose level was very low at 0.8, a reading which Dr Gibbs told you was worryingly low.

On examination and testing, nothing else was abnormal except his creatine level, which was slightly abnormal, and Dr Harkness wondered if he was dehydrated. He also queried whether it was sepsis. He spoke via phone to Dr Gibbs who advised him that the heart rate and rhythm was unlikely to be supraventricular tachycardia, SVT, because, as Dr Gibbs told you, if he had an inherent problem in the pacemaker of his heart, the rate is usually closer to 300 beats per minute, so it wasn't SVT.

Dr Gibbs approved the plan, which was the administration of a 2ml per kilogram dextrose bolus as well as a bolus of saline, salt water, to improve his general circulation, to start him on a second line of antibiotics, cefotaxime and teicoplanin, and address the possibility of an infection and undertake a twelve-lead ECG, which is a much more sophisticated way of picking up problems with the heart than the heart monitor.

(Pause)

The intravenous infusion prescription document is behind tile 167, J3146. [Nurse A] identified her signature at entries 3 to 8 between 02.00 and 04.20.

Belinda Williamson identified her signature for a bolus of saline at 02.55 and she thought it was her signature for boluses at 02.05, dextrose, 03.35, saline and 04.10, saline. She agreed she played a part in the administration of medication in the early hours of that morning.

In her nursing note at 06.56, [Nurse A] summarised the events up to that time. The note referred to the large milky vomit, the heart rate going up to 200 to 210 beats per minute, the respiration rate increasing to 65 to 80, and [Baby F] becoming

quieter than normal. The glucose level at 0.8 was dangerously low.

Nurses [Nurse A] and Sophie Ellis and Belinda Williamson were clear that they had not administered any insulin to [Baby F]. Similarly, you heard from Nurses Cheryl Cuthbertson-Taylor and Valerie Thomas, both now retired, who were working that night shift, who said that they never in their time as nurses at the hospital added any substance, including insulin, to a TPN bag, indeed they never had any dealings with TPN bags because they were band 4 nurses.

Similarly, Kate Brammall, who worked on the day shift on 4 August, said that she never added anything to a TPN bag, it was something that was never done.

Kate Bissell, a senior neonatal nurse at the hospital who was carrying out audits on 4 August and had nothing to do with the delivery of a TPN to the unit that day, confirmed that she had never added anything to a TPN bag. So none (inaudible: distorted) said they had or had ever added insulin to a TPN bag.

Dr Gibbs conducted his consultant's ward round at 8.30 on the morning of 5 August. His clinical notes are behind tile 238. [Baby F] had a high heart rate and was showing a slight decrease in circulation. His blood sugar level, glucose level, had dropped to 1.7, which was unexpected, so another bolus of dextrose was given. His symptoms did not fit together said Dr Gibbs.

Shelley Tomlins was [Baby F]'s designated nurse. At 0.40 that morning [Baby F] was tachycardic, his heart rate still being quite high, but his other observations were normal. The reference is to tiles 213 and 214.

Dr Sally Ogden saw [Baby F] at 10.00 hours. The clinical notes of her ward round with the consultant Dr Saladi are behind tile 238. His blood sugar had dropped from the previous reading but until this point he wouldn't have been receiving any dextrose because he wouldn't have had a line in. Do you remember there was an interruption (inaudible: distorted) line in?

There was a problem with the line in the right leg which had become tissued, meaning the infusion was going into the tissues rather than into the vein and was probably painful for [Baby F], so they stopped the TPN via the long line and, according to Dr Saladi, moved the TPN to a peripheral line (inaudible: distorted) and gave glucose through that.

Then, at 10.30, a new long line was inserted into the left foot as referred to in tile 244 which, when reviewed on X-ray, was

satisfactorily placed and she recorded that the new long line was to be used and the old line had been removed.

Shelley Tomlins was taken through the relevant charts, readings and notes relating to events during the course of that day, which are behind tiles 215 to 221. Boluses were given and readings taken, which invariably showed low blood sugar levels. Boluses were given at various times. You saw a video recording demonstrating the Alaris (inaudible: distorted) plus infuser pump, how it's set up with the bag containing the fluid running into a giving set and filter, then running down to the catheter, giving access to the vein. A bolus cannot be given through the pump. The alarm alerting staff to occlusion in the line or air in the line can be muted for 2 minutes. You also saw a video recording of the Alaris syringe driver.

[Nurse C] explained (inaudible: distorted) TPN going through the infuser pump. There would be ports enabling the 10% dextrose to go through either another Alaris pump or a syringe driver and then the lipids going through a further syringe driver or into the long line into the vein. Some of the long lines had two lumens.

In addition to the removal of the long line and the insertion of the new long line, Shelley Tomlins confirmed that she zeroed all the pumps at 12.00 hours, tile 259, J3204. They had been off for 1 hour during which time his blood sugar had risen to 2.4.

She hung a new bag at 12.00, tile 261. The neonatal parenteral nutrition -- the neonatal parenteral nutrition prescription. She was unsure as to whether the writing of the start and finish time was in her writing. She said the new bag, which replaced the bespoke bag that had been made for [Baby F], will have been taken from the stock of bags in the fridge on the unit.

The stock bags did not have added vitamins, so they could be stored for much longer. She thought there would be about five bags stored in the fridge at any one time and there was no log or record. Everything that was left in the fridge was counted every night shift and, if anything had been used, more would be ordered.

The keys to the fridge were usually held by the nurse in charge. As I've already reminded you, any one of the nurses could go and ask for the bunch of keys and end up accidentally having them in their pocket for a while after, so it wasn't strictly enforced and there wasn't any log or record kept of who was entering the fridge or what was in it or who had the keys at any given time.

Premade syringes of morphine, intubation kits and small amounts of premade drugs for use with the intubation kits and

(inaudible: distorted) insulin were kept in there. If the insulin wasn't kept in the fridge, it was in the nursery where medications like antibiotics were kept in cupboards, which were locked as well. The keys were on the same bunch of keys as the fridge key.

On tile 274 at 15.00, the word "restarted" is written indicating it looked like they'd stopped the dextrose and restarted it. The intensive care chart, J3204, shows that at 15.00 and 16.00 [Baby F] had received boluses of 10% dextrose. His blood sugar was still low at 1.9.

At tile 277, a blood sample at 15.01, had a blood sugar of 1.3. At 17.40, as recorded on J2963 behind tile 291, Dr Beech was asked to prescribe 15% dextrose over 24 hours at handover, to stop the TPN, check urinary (inaudible: distorted), cortisol and insulin. She assumes she was asked to do this by a consultant.

The nursing notes of Shelley Tomlins behind tile 215 just before she went off duty confirm:

"Persistent hypoglycaemia."

And:

"Therefore after discussion with Dr Jayaram, [Baby F] now changed from TPN, lipid and dextrose to just dextrose and NaCl [sodium chloride] added."

And:

"New fluids commenced around 7 o'clock this evening."

She then made a note that bloods had been taken via a venous sample and sent to the laboratory. It was at 19.00 that the infusion from the TPN bag was stopped.

Dr Beech, who was the first witness to comment on the results of the pathology, collected blood samples taken at 17.56 behind tiles 292 and 293. We heard more evidence about the results from Dr Gibbs, Dr Anna Milan, a consultant clinical biochemist working in the Clinical Biochemistry Unit at Liverpool Foundation NHS Hospital Trust, and from Professor Peter Hindmarsh, emeritus professor of endocrinology at University College London and also a consultant paediatric endocrinologist at University College London Hospitals.

An endocrinologist deals with the hormones in the body that regulate a number of areas, such as overall metabolism, glucose or sugar metabolism, fat metabolism, growth and development and air(?) response to stress.

The sample was frozen and will have been transported to the Liverpool Royal by courier or taxi. The analyser, which was manufactured by Roche, a global provider of such equipment, was checked and the results were held until technically validated. Then they were interpreted and phoned through to the Countess of Chester.

The records showed that the sample taken at 17.56 was booked into the system at the Liverpool Royal at 16.15 the following day. Applying the same (inaudible: distorted) unit of measurement, picomoles per litre, the level of C-peptide was undetectable, being less than 169, and the level of insulin was 4,657. The C-peptide figure should, in health, be anything between five and ten times the size of the insulin figure. This result prompted the chemist to message the Countess of Chester, reporting that the result was:

"Low C-peptide to insulin, query exogenous."

Which Dr Milan said was shorthand for saying: is this exogenous, it looks like it?

It was suggested it be sent to Guildford for further testing in relation to exogenous testing. This was not done, [Baby F] having recovered, and so the sample, which was preserved for 7 days, was thrown away.

Professor Hindmarsh, drawing together the data from the prescription and administration notes over the period of the ongoing hypoglycaemia which had taken place despite five bolus injections of 10% dextrose and the ongoing glucose delivery from the 10% dextrose infusion that was running concomitantly and the glucose that was also contained within the total parenteral nutrition, said that would give a glucose infusion rate of somewhere in the region of 12 milligrams per kilogram per minute, which is twice the normal requirement of a baby and to which had to be added the contribution from the five bolus injections also given. So in terms of the amount of glucose being administered, a minimum of twice the normal daily requirement, probably more than that, was being given to [Baby F].

When the professor returned to give evidence on 24 February in relation to [Baby L], he revisited the log he produced of blood glucose readings for 5 August. He explained that the increased readings of 2.3 at 02.55 and 2.9 at 05.00 hours are consistent with the administration of the two respective 3ml boluses of 10% dextrose at 02.05 and 04.20 hours against a background of ongoing insulin action. He went through the calculations, which are not in issue and of which I need not remind you.

Following the discontinuation of the intravenous feeds, there were two further glucose measurements: one at 11.46 of 1.4, so not too much different from the 10.00 reading, then a further value at 12.00 of 2.4 millimoles per litre, which would imply that the blood glucose had started to increase spontaneously because at that stage there was no contribution from the intravenous route. In other words, [Baby F] was receiving double the normal requirement of sugar as a result of the combination of TPN and dextrose and yet, when taken off the double quantity of sugar, his blood sugar actually increased.

In relation to the slightly different measurements of 1.3 and 1.9 taken close together at 17.56 and 18.00 respectively, one was a plasma glucose measurement and the other a near-patient blood glucose measurement. There's a slight difference, said Professor Hindmarsh, between the two. If you compare a finger prick or heel prick blood glucose measurement with a plasma value, the blood glucose measurement should be increased by about 10% to 15%. This is also relevant when comparing the plasma laboratory value in [Baby L]'s case with the record of all other blood values.

In relation to the dangers of very low insulin, Professor Hindmarsh explained that the brain is reliant on a constant supply of glucose for functioning. It doesn't store any glucose in reserve to any significant degree. It can store glucose as glycogen. That will only last 20 minutes. After that, there is no other energy available for functioning of the brain.

During hypoglycaemia, the body can generate ketones, the breakdown products from fat, and the brain can utilise the ketone bodies from that breakdown of fat as a substitute for the glucose that's missing. However, if the low glucose hypoglycaemia is caused by an excess of insulin, the insulin will reduce and the blood glucose and -- that source of energy will switch off ketamine (sic) causing a situation of hyperinsulinaemic hypoglycaemia. The brain is then very susceptible to incurring damage. That damage depends a little bit on the duration of the hypoglycaemia and also on the depth of the hypoglycaemia.

Initially, if you go down to a blood glucose of 2.6 or 3, then you'll have mild confusion, and if you are involved in any cognitive process, such as reading and writing, then there will be a deterioration in that. As you progress further down in terms of the blood glucose delivered to the brain, and that's not much, then it can lead to seizures, death of brain cells, coma, irreversible brain damage and, on occasions, death. Dr Evans confirmed this when he gave evidence.

Synthetic human insulin has been in use for the last 20/25 years or so, possibly more, and is regularly stocked in the hospital pharmacy. Actrapid is the commonest ward stock and is short-acting. Long-acting insulins are given subcutaneously and are not relevant in this case. It is not possible to give insulin via mouth, by the oral route, because it is a large molecule and can't(?) be broken down, so it could not be administered through a nasogastric tube.

In relation to the subcutaneous route, under the skin, there would have to be multiple subcutaneous injections, roughly every 4 to 6 hours over the 17 or so hours of hypoglycaemia that [Baby F] had. And to get that effect you'd probably have to do that almost at the same time as the total parenteral nutrition bag was set up, so there would be quite a few objections, and it's also difficult to start to explain why there is such a quick return towards normal blood glucose, particularly when the TPN stopped at 18.55 and there was an almost instantaneous rise to 2.5 and, by 21.17, normoglycaemia had been achieved, whereas with subcutaneous injections there wouldn't have been such a rapid response.

This implied that an intravenous route was the most likely explanation. There were two ways of administering it intravenously: the first is bolus injections of insulin, where hypoglycaemia will occur 20 to 30 minutes after the bolus injection. If nothing is done, the blood glucose will then start to rise back up again and be normal some 60 to 90 minutes after the bolus injection. So to maintain hypoglycaemia over such a protracted period of time, multiple intravenous injections, roughly every 2 hours, would have had to have been administered.

The second way is through an infusion. This, thought Professor Hindmarsh, was the most likely way of achieving the blood glucose effects observed, a continuous infusion using the bags of fluid that were available. That fitted the time when the fluids were discontinued for re-siting the cannula at 10.00 on 5 August and would also be consistent with the events or measurements that took place after the TPN was stopped at 18.55.

(2.42 pm)

(No audio or video feed from court)

(2.44 pm)

MR JUSTICE GOSS: Professor Hindmarsh calculated from the blood sugar results that the rate at which exogenous insulin was being administered to [Baby F] to maintain a steady state insulin concentration of 4,657 picomoles per litre, and adding some slight amounts to deal with adhesiveness of insulin to plastic,

would need an insulin infusion rate of approximately 1.2 units per hour.

Using that calculation, he concluded that 0.6ml of insulin would need to be added to the TPN bag to deliver the rate of insulin he calculated [Baby F] was receiving. It's a clear fluid and would be invisible to the naked eye and you wouldn't notice any change in the shape or size of the bag. It's obviously a very small volume.

The same amount would have had to be added to the stock bag of TPN that replaced the bespoke bag after the long line was re-sited as the blood sugar concentrations were about the same.

Professor Hindmarsh concluded that [Baby F]'s clinical presentation from just after midnight on 5 August to the early evening of the same day was explicable, and only explicable, by the fact that the fluid he was receiving had been contaminated with insulin.

Dr Evans concluded at an early stage of his review of [Baby F]'s medical records in 2018 and early 2019 that [Baby F] had received exogenous insulin and that it had been given via the intravenous route used to facilitate nutrition, TPN in the 500ml bag or bags delivering the nutrition from just before 01.54 on 5 August until the infusion was stopped at 18.55. From 21.17 hours that day, the glucose readings were of normal values and remained so thereafter.

Dr Bohin agreed with Dr Evans' conclusions and added that there was evidence to indicate that the TPN bag had been changed during this period and therefore two bags must have been contaminated, the originally prescribed one and the one that was made up in its place, which followed the protocol that a new bag would be put up when a long line was changed.

When interviewed on 10 June 2019, the defendant remembered [Baby F] as the surviving twin of [Baby E], whose death had affected her. She did not remember the incident other than looking at the notes provided. She agreed her signature was alongside a TPN bag entry at 00.25 on 5 August. She could not remember whether she administered the TPN bag or not. The other signatory was [Nurse A].

The TPN bags were kept in the top of the locked fridge and the insulin was kept at the bottom. All nurses, including nursery nurses, had access to the fridge along with doctors. She confirmed there was one set of keys that would be passed between them. The relevant TPN bag would have been made up in the pharmacy, labelled "Twin 2 [Surname of Babies E & F]" in a

secure bag and marked to this effect. This would have been checked before being set up.

In terms of connecting the bag to a baby, if you're starting fresh you have to get a new giving set into the bag, run the fluid through and then connect it to the baby or sometimes they would just do a fluid bag change, unscrewing the old one and putting the new bag on. They tried to do that with someone else all the time.

She was unsure whether TPN bags had a port for the addition of a medication, but in any event medication would not be added into a TPN bag. She didn't remember any involvement with connecting the bag to [Baby F] at 00.25. If a bag had to be disconnected it should not be reattached as it was no longer sterile. Once disconnected a bag should be disposed of in the sluice room.

The defendant agreed there was a significant drop in [Baby F]'s blood sugar in the reading at 01.54 on the 5th. This was dangerously low. She had no idea what had happened to cause the dramatic decline that followed. She denied having deliberately harmed [Baby F] and denied giving him any insulin or placing any in his TPN bag.

She asked the police whether the TPN bag was checked and asked the officers how they knew after the event whether the insulin was there at the time the bag was checked.

In the interview on 10 November 2020, when asked about Facebook searches on [Mother of Babies E & F] on nine separate dates between 6 August 2015 and 10 January 2016 and on [Father of Babies E & F] once, she said she couldn't remember making them. She thought it may have been to see how [Baby F] was getting on because, as a member of staff, you would care about what happens to the babies and obviously they'd been through a really difficult time.

She said it was possible she was looking for photographs of [Baby F]. She could not recall if she'd successfully accessed an account on Facebook or found anything. She did not know why she had messaged [Nurse A] at 8.53 on 5 August 2015 telling her about [Baby F]'s sugar reading of 1.8, which was a low reading, at 8 o'clock that morning when they had finished their shift but thought it might be to update her. She didn't know how she'd obtained the reading for 08.00 am but assumed it was by looking at the charts.

In her evidence she said she now accepted the readings and measurements. She did not remember hanging the TPN bags and thinks [Nurse A] must have. She agreed that it seemed [Baby F] had been given insulin and it was in the TPN bag. She did not

know where it had been put into the bag but canvassed the possibility of it happening in the CIVAS unit where the bag was made up. She confirmed she did not know about C-peptide at that time and denied that she knew that the bags had not been kept.

She knew at the time that [Baby F]'s blood sugar levels were low and accepted that adding insulin to the TPN was highly dangerous and life-threatening to a child of his age. She accepted that insulin was in the TPN bag hung at 00.25, or very shortly thereafter. She said she frequently searched for [Mother of Babies E & F] because she was somebody who was often on her mind. [Baby E]'s death did stand out to her and she often thought of them as a family. She got on well with [Mother of Babies E & F] at the time and wanted to see how [Baby F] was doing because she got to know the family and he was the surviving twin of [Baby E].

Obviously, I'll be coming back to insulin again when I come on to [Baby L]'s case, but that's all I'm going to remind you of in relation to [Baby F]. I turn then to [Baby G].

[Baby G] is the subject of three counts on the indictment, 7, 8, 9, all allegations of attempted murder. I'll make a start, we'll have a break, and then I shall complete, I anticipate, my resumé of the evidence relating to her today. That will then be enough for today because there are three events that I have to remind you of.

[Baby G] was born at 23.57 on Sunday, 31 May 2015 in Arrowse Park Hospital, a tier 3 hospital. She was very premature, being only 23 weeks and 6 days' gestation and weighed 535 grams, just under 1.3 ounces.

She was not breathing and was blue and floppy, was given ventilation breaths and was intubated. She was at the margins of survival when she was born. She stabilised, was taken to the hospital's neonatal unit and placed in an incubator, where she became pink and well perfused. She remained intubated and was in respiratory distress before things settled down.

Her chances of survival were very low, but she did survive, being cared for for 11 weeks in Arrowse Park Hospital. She had events during that time, one being on 4 June when she was very unstable and had problems with blood pressure, then episodes of bleeding, culminating on 29 June with a pulmonary haemorrhage, requiring a Broviac line until 30 July. By 12 July, she was in a special care or high dependency room, a lot better and quite stable.

On 13 August, at a gestational age of 34 weeks and 3 days, [Baby G] was transferred to the Countess of Chester in a stable

condition and with no obvious problems. She had been on expressed breast milk feeds since 22 June and weighed 1.26 kilograms, so she was almost 2.5 times her birth weight.

The defendant remembered [Baby G], who had a lot of ongoing issues when she arrived at the Countess of Chester. The prosecution case is that the defendant deliberately overfed her milk, once on 7 September and twice on 21 September 2015.

[Baby G] remained clinically stable over her first 3 weeks at the Countess of Chester. Dr Stephen Brearey, a consultant -- and as I reminded you yesterday, he was the neonatal lead at the hospital at that time -- first reviewed [Baby G] on a ward round on 22 August. The general trend for that time was one of improvement in terms of respiratory status and establishing feeds, which continued.

[Baby G]'s intensive care observation chart for the period of 2 September through to the start of the night shift of 5 September is J6959, and that's the first document in section 7 of your second jury bundle.

She was stable and well, having occasional desaturations after feeding, which were all self-correcting. On 6 September, when Dr Brearey was the consultant on duty, her oxygen requirement was continuing to come down and her feeds were well established. She was having milk by NGT and bottles, she was on fortifiers and Gaviscon.

She was in the cot in the far corner of the room, near the window in nursery 2 on 6 September. Her designated nurse for the day shift on that day, commencing at 08.00, was Victoria, known as Vicky, Blamire. She was a special care baby, the lowest of the levels under the BAPM standards in terms of neonatal care. Her observations relating to heart rate, respirations and temperature are on the next page in section 6 -- is it section 6 or section 7? I've given you two different section numbers there. It is section 7. Sorry about the first wrong reference.

It's on J6960, which is behind tile 56. Vicky Blamire described the readings as fine and she was a stable baby and one about whom she had no concerns. She was being fed by nasogastric tube and bottle at three-hourly intervals. Her feeding chart is behind tile 27. In summary, she received four feeds of 45ml each of expressed breast milk, with Gaviscon and a fortifier, which made the consistency thicker. Two of those feeds were by bottle and two by tube. Nothing untoward occurred.

Dr Brearey saw [Baby G] that morning and confirmed she was quite stable and improving. On examination she was pink and well, her

chest was clear and her abdomen appeared soft. Preparations for her discharge home continued.

Vicky Blamire handed over to [Nurse E], tile 47, who became [Baby G]'s designated nurse for the night shift on the evening of the 6th and 7 September. Behind tile 47 are the handover details. [Baby G] was the only baby in nursery 2 during that shift. The defendant had a baby in nursery 1.

Count 7, an allegation of attempted murder, relates to events surrounding a projectile vomiting episode at around 02.30 on the morning of 7 September and after the noted time of 02.15.

[Baby G], as I've reminded you, was in nursery 2. The prosecution case is that after [Nurse E] had given [Baby G] her feed at 02.00, the defendant deliberately injected milk and air by a syringe into her and noted the event at 02.15 to link it to a feed a short time earlier.

Before I remind you of the details of the evidence relating to that event, we'll have our ten-minute break and I'll continue then.

(3.01 pm)

(A short break)

(3.11 pm)

MR JUSTICE GOSS: 7 September 2015 was [Baby G]'s 100th day of life. The nurses were making a banner for her to celebrate. Ailsa Simpson was the shift leader that night and Dr Alison Ventress was the registrar on duty. [Nurse E] completed the observation chart at three-hourly intervals at 20.00, 23.00 and 02.00.

The entries in the next three columns with her initials are at the bottom of J6960, which is the second page in section 7 of your second jury bundle. [Baby G] was still on nasal prongs and some oxygen. [Nurse E] commented that, at 20.00, the respiration rate was at the higher end of normal, but her heart rate and temperature were normal and remained so, the respiration rate having dropped by 02.00. That can all be seen on the chart to which I've just referred.

She looked stable. The feeding charts are behind tile 57, J7012 and J7013, and you have paper copies in the last two pages in section 7AA. The first two are at the bottom of J7012 and the last one is at the top of J7013.

[Nurse E] said she usually completed the chart after the feed. The feeds were as they had been over the previous shift, comprising 45ml of expressed breast milk with Gaviscon and a fortifier. The feeds were all measured out. Those at 20.00 and 02.00 were given by NGT because [Baby G] was asleep. The one in between, at 23.00, was by bottle. At that bottle feed she recorded under the PU and BO columns that [Baby G] had passed urine and a large normal bowel movement. She fed well. The defendant agreed her readings were good at this time.

[Nurse E] described the process for feeding via NGT. The syringe was attached to the end of the tube, a bit of the stomach contents, about half a millilitre or less, were withdrawn or aspirated, put on to one of the pH indicator papers to check that the tube was in the right area of the body or not, an acid reaction of 5.5 or below confirming that the aspirate had come from the stomach, any surplus milk aspirate was put back into the baby's tummy. The syringe would be taken off and the plunger removed. The syringe was then reattached to the tube and the milk feed was poured into the tube using the end of the plunger to make the milk go down, tilting the syringe to one side and letting the milk go down by gravity. The syringe was then topped up as the milk went down until it had all gone.

It was then detached from the tube and the end was put back on to the tube. She would take the observations while the milk was warming, feed time and the observations were recorded at around that time frame before the feed was given. Usually babies' breathing rates go up after a feed.

The pH acidity tests of both feeds were recorded as 4, which confirmed they were acidic and had come from the stomach.

After the feed [Nurse E] went on her one-hour break. She said this was likely to have been around 02.05 to 10 on the morning of the 7th. If [Baby G] had looked unwell or she had had any concerns, she would not have taken her break.

When she came back from her break 1 hour later the lights were on in nursery 1. She went to nursery 2 to check on [Baby G] but she wasn't there, so she went back to nursery 1 and was told by staff that [Baby G] had been unwell while she had been on her break. That, she said, was unexpected. [Baby G] had been in her cot, was fed and settled when she left her, and there hadn't been anything on her observations so far that shift that had caused her any more concern than usual for a baby that was a low-flow oxygen.

Ailsa Simpson, the shift leader that night and the designated nurse for AC in nursery 1, described it as a relatively calm shift. [Baby G] was in good condition, feeding well, weighed

just under 2 kilograms, and was progressing as the nursing staff hoped. The neonatal review on page 3 of 7, line 26, says she was feeding or fed AC at 01.15.

She said that would take no longer than half an hour, but she could not be definite about the time it did take. She co-signed for the fortifier and Gaviscon and medications for [Baby G], as can be seen from the documents behind tiles 64 to 66 at 23.00 and again at 01.46 and 01.47.

She last updated the computer with [Nurse E] at 01.47. She said she then embarked on getting the milk from the fridge for baby AC's next feed in nursery 1 at 02.20, which is the timing given to the feeds set out in line 41 of the neonatal review. All her timings were approximate. She was referred to the record of another baby on the unit at that time, DB, the document is J29020, which has medication being administered to that baby, DB, by Nurse Christopher Booth and she was a co-signer at 02.13. She wasn't sure where the computer was that this signing was documented on. She would have had to have been with Chris Booth at that time.

After about 5 to 10 minutes after she had finished feeding AC in nursery 1, she was sitting at the nurses' station, almost opposite the door to nursery 1 and about 10 to 12 feet away from [Baby G]'s cot, when she heard a significant projectile vomit. The defendant was sitting with her at the station. When she was interviewed prior to making a witness statement on 1 September 2018, she said that as they were going over to [Baby G]'s cot, a time she estimated as about 30 seconds after the vomiting, [Baby G]'s alarm went off, indicating a significant drop in oxygen levels and heart rate. There was a large amount of milk she had been fed and it had come back up. She could see vomit in it and on the bed sheets and the side of the cot, on the floor next to the cot, and on the arm of the chair beyond that. She directed a police officer to mark the areas on a photograph, which depicted a different chair, but in the same position as the one that was there at the time. You have seen that photograph, I'm sure you'll remember it, for which your reference is J26510. They sat [Baby G] up and, realising her heart rate and saturation levels had dropped, gave respiratory support in the form of Neopuffs.

In her witness statement made on 1 September 2018 Ailsa Simpson said:

"Lucy and myself were sat at the nurses' station from about 01.15. As far as I can recall neither Lucy or I moved from that station during that time."

In an earlier statement made on 9 February 2018, she said:

"Prior to [Baby G]'s observation and monitor alarm activating, I cannot remember where the other staff were. Once the observation monitor alarm activated at the nurses' station, I immediately jumped up and ran into [Baby G]'s nursery along with Lucy."

She confirmed that that statement was prepared from an audio-recorded interview the police conducted on the same day in which, when asked where Lucy was, she replied:

"Either she was probably sat outside with me at the nurses' station or possibly in with whoever she was looking after that night."

On that shift the defendant, as I've said, was the designated nurse for baby IH in nursery 1. In her evidence she said that her recollection was that she had no contact with [Baby G] on that shift before the vomiting episode. She remembered [Baby G] as a baby who had a lot of ongoing issues, but agreed, from the feeding charts and observations on the 6th and 7 September, [Baby G]'s readings were good up to the 02.00 feed.

She was sat at the nurses' station with Ailsa Simpson and had been there a few minutes when they heard an alarm and a loud retching sound. They both went in and found [Baby G] vomiting from her mouth and nose and struggling to breathe. No one else was in there.

She could not recall any contact with [Baby G] on this shift before this. She referred to the neonatal unit review on which she was documented as taking observations and feeding baby IH in nursery 1 at 02.00, something she said that would take a few minutes.

She said that they immediately started to give [Baby G] Neopuffs, her abdomen was firm and red, she thought she used the Neopuff and Ailsa went for help. She did not attribute the event to staff levels or [Baby G]'s treatment up to that point. She identified a possible nursing problem of [Nurse E] overfeeding [Baby G], but didn't believe that she did. She agreed it was an extraordinary vomit that she had not seen from a neonate.

When interviewed by the police about this event on 5 July 2018, which is in the [Initials of Baby G] section of the interview file, the defendant said it was a shock to have three deaths in June, one in August and one in September. She said:

"You just have to find a way to deal with it and carry on to provide the job and care that you give."

She didn't feel that there was anything that needed to be looked into. It was just a shock for everyone. She recalled [Nurse E]

being [Baby G]'s designated nurse on 7 September and [Nurse E] was on her break when this happened. She agreed that the notes suggested she took over care at 02.00 but she could not recall why. There were no clinical concerns at the start of the shift.

She had found [Baby G] vomiting. It was projectile vomiting of a large volume of milky-coloured vomit. She said that sometimes babies did vomit, but not very often was it a projectile vomit. She questioned whether the baby had just been fed, but confirmed that she was not involved in [Baby G]'s feeding. She thought maybe she'd gone to help [Baby G] because she heard her vomiting.

When asked about the significance of the air obtained from the nasogastric tube, which she recorded as ++, she replied that:

"Sometimes when babies vomit, they can take on air as well if they're gasping with the vomiting."

The volume of air from the NG tube was a larger volume than the general amount that would usually be obtained, but she was not sure of the cause of the air in [Baby G]'s abdomen. She said that air could accumulate if there was a bowel problem or infection.

She thought that the vomit went into the cot and down [Baby G]'s clothing. She heard her vomiting and may have seen her vomiting.

When interviewed again on 11 June 2019 about the collapse on 7 September, she said she didn't believe [Nurse E] would have left [Baby G] had there been any concerns. In relation to the vomit she agreed there were two possibilities: [Baby G] must have received more than the 45ml of milk or she had not digested the milk from her previous feed. She thought she could have projectile vomited on 40ml of milk. She denied overfeeding [Baby G] or administering air via her feeding tube. She had no explanation for how the large volume of air could have got into the stomach.

In evidence she said it was an oversight that she did not mention when interviewed that the vomit went on the floor and on the chair. She said it was an extraordinary vomit that she had not seen in the case of a neonate.

Nurse Christopher Booth answered the call for help, arrived in the nursery when other staff were already there and [Baby G] was being given oxygen and breaths via Neopuffs and helped with the resuscitation.

Dr Alison Ventress was the registrar on duty that night. She confirmed that there were no concerns raised by the clinicians

handing over at the start of the shift. For your reference, tiles 80, 84, 107, 117 to 119 and 136 are the relevant medical tiles. She was reliant on the notes made at the time. Her note behind tile 80 recorded that she was called urgently at 02.35. The agreed evidence of Lisa Walker was that Dr Ventress arrived within minutes of the call.

It was put to the defendant that this means that the event occurred very shortly before she was alerted and some time after [Nurse E] had been feeding her at 02.00 and gone on her break.

On her arrival, it was reported to her that [Baby G] had:

"... had very large projectile vomit, reaching chair next to cot and canopy, abdo appeared discoloured, purple and distended."

The note continued:

"[Baby G] distressed and uncomfortable. Red in face and purple all over."

She could not recall whether this was something she was told or saw for herself. Her oxygen had been increased, her desat levels had dropped to the 80s but her heart rate stayed normal. Then:

"Full feed (45ml) aspirated."

She was not sure if she had asked the nurse to do that or whether the nurse had done that before she arrived. The note went on:

"Large watery stool passed, after which abdo slightly better and [Baby G] relaxed and appeared back to her usual self."

Again, she was unsure as to whether this was something she was told.

The next line onwards was her input when she was there. It was:

"Planned to cannulate, start IV fluids and take some bloods."

However, she was called urgently into theatre. By this time [Baby G] was better and she was happy enough to leave her and was not worried.

Less than half an hour later, she was called out of theatre because [Baby G] had gone apnoeic and dusky. This was shortly before 03.30. She stopped breathing, her sats had dropped to 50%. When Dr Ventress arrived, [Baby G] was receiving IPPV. Her heart rate was okay, it took around 5 minutes for her sats to pick up. She was then moved to nursery 1 on CPAP.

Dr Ventress tried unsuccessfully to insert a cannula or drip on two occasions. [Baby G] then had a further profound apnoea, her heart rate went down to 70 and her oxygen saturations went down to 40, her perfusion worsened, her cap refill time was 3 seconds -- it should have been 2 or less. IPPV using a mask was started again and there was a gradual improvement.

Dr Ventress decided to incubate her in order to put her on a ventilator rather than persisting with CPAP via a mask as that forces air into the tummy as well. A size 3 ETT was inserted. While she was doing that Dr Ventress noted bloodstained fluid was coming up from the trachea or between the vocal cords, which she said was likely to be fresh blood, a small amount. It was unusual to have blood coming up from beneath the vocal cords, she said, because that is not an area that they would touch with the laryngoscope. Good bilateral air entry was achieved and the capnograph was positive and her sats improved.

In her first police interview the defendant was asked about the record of a profound desaturation and marked colour loss with an apnoea at around 03.15. She could not recall how long it had taken for [Baby G] to desaturate or who was present when the profound desaturation took place or where she was at that time.

Dr Brearey arrived at about 03.30. In relation to projectile vomiting, he said he'd seen it in babies with other diagnoses but not in a preterm baby like [Baby G] who had been stable for so long without the diagnosis of pyloric stenosis, which [Baby G] didn't have. She responded well to the treatment and her readings returned back to normal, although some air was leaking back up the windpipe. Dr Brearey was called to theatre, but he was content with her progress.

At 05.30, whilst still on the ventilator, there was another profound desat. IPPV was started and the team wondered if there was a problem with the ventilator. Dr Brearey, who was still in theatre, said it was very unusual for babies to desaturate when on a ventilator. It was perplexing that he couldn't think of a natural cause why that would happen. The flow sensor was changed, but that made no difference, so they changed the whole ventilator.

There was a further profound desaturation at 06.05, by which time Dr Brearey was in the unit. Her sats remained low and she was being given 100% oxygen.

The decision was made to re-intubate. The ETT was removed at 06.10 and:

"Thick secretions ++ in the mouth and a blood clot at the end of the ETT."

Were noted. So, said Dr Ventress, there was some blood coming up from the windpipe or lungs that caused the clot and that could have been interfering with the flow of air.

Despite a jaw thrust to bring the chin forward and using a Guedel to lift the tongue off the back of the throat, the sats and heart rate had fallen. The nasogastric tube was aspirated as the abdomen appeared very large and around 100ml was aspirated, which, said Dr Ventress, was a lot. And she couldn't say 100% from that entry that it was air because she hadn't documented what it was, but she thought that she would have documented if it was not air.

Dr Brearey said he assumed it was milk or fluids and, if it was, he couldn't explain where it had come from, although he couldn't be 100% sure he took it to be milk or stomach contents because you don't aspirate air with a syringe -- from a syringe.

[Baby G] was re-intubated with a slightly larger tube at 06.15. Dr Ventress noted when looking in the mouth that there was bloodstained fluid in the oropharynx, which is just below the throat. She suctioned below the vocal cords, but nil was obtained. A traumatic intubation can sometimes cause trauma, but she did not see any trauma.

X-rays taken at 04.48 and 06.36 confirmed chronic lung disease of prematurity that all babies born at 23 weeks would have. There was a lot of air in the bowels but no evidence of perforation.

The defendant recalled [Baby G] carried on having desaturations, she didn't know why and recalled her being re-intubated. She said she carried on providing support for [Baby G] for the rest of the shift. Her case is that she did nothing wrong and did not falsify any times in the notes. She identified a potential nursing problem with [Nurse E] having overfed [Baby G], but didn't believe that she had.

She accepted that air or milk could have been pushed from the feeding syringe into [Baby G]'s stomach, which was something she accepted in the 2019 police interview, but denied that she had injected any milk or air in this or any other way.

Behind tile 147 are J2366 and J2367, which are Dr Harkness' notes from 09.00 hours. The overnight query as to the cause of the sudden deterioration was sepsis or aspiration, that is inhaled vomit. [Baby G] was continuing to require and receive a relatively high amount of respiratory support and having

desaturations and bradycardia, she was still quite unwell with low blood pressure and her heart rate was very fast. She had good perfusion but low urine output. She was paralysed and sedated. Low neutrophils can be a sign of infection, but they slowed the breathing down.

Contact was made with Arrowe Park Hospital. Things had improved by 10.00, but she needed a lot of support and was not out of the woods. The blood tests were inconclusive of sepsis. There was nothing concrete in relation to determining the cause of the collapse. There were no recorded malfunctions in relation to any of the four ventilators being used in the hospital on 7 September.

[Baby G] was readmitted to Arrowe Park Hospital the following morning, 8 September, at 04.30, with presumed sepsis leading to multi-organ dysfunction, requiring intensive support. She was very unwell on arrival, had severe hypertension and an MRI scan suggested a significant hypoxic or ischaemic insult abnormality in both cerebral hemispheres and possibly established infarcts. A radiograph taken at 05.00 did not, said Professor Arthurs, show evidence of NEC.

She required a blood transfusion for anaemia and vitamin K for blood coagulation. She was changed to single antibiotic therapy and she completed a seven-day course of meropenem. She gradually improved to not needing any support on her discharge to the Countess of Chester 8 days later on 16 September. She was self-ventilating in air and continuing to establish enteral feeding. The presumption of sepsis was based on her clinical picture and markedly elevated CRP as her cultures for infection were all negative.

The WhatsApp messaging passing between the defendant and Jennifer Jones-Key and [Nurse A] is set out in the sequence of events. In some of those messages, for example tiles 210 and 238, and a long sequence over 29 minutes from tile 246 onwards, there are direct references to [Baby G]'s condition and being a high risk baby. The messaging continued to the point of [Baby G]'s transfer to Arrowe Park Hospital at 02.30 hours on 8 September.

Dr Evans reviewed all the medical notes and the marked photograph of the extent of the vomit. He noted [Baby G]'s condition was stable and satisfactory up to shortly after the 02.00 feed:

"When a baby's stomach is full [he said] no more feed can be given under the force of gravity, so it's important only to feed by gravitational pressure. You could, but should not, force milk down the syringe into the stomach having inserted the plunger."

He confirmed that infection is, for babies on the NNU, the highest risk factor. He had only seen projectile vomiting in cases of pyloric stenosis, which [Baby G] did not have. It is something that occurs with babies 6 to 8 weeks of age or thereabouts and it doesn't occur and disappear, it requires surgery.

He couldn't recall a baby vomiting as far as [Baby G] did in this case. He noted the subsequent extraction of 45ml of feed. It was his opinion that [Baby G] was compromised by receiving a large volume of fluid or fluid and air into the stomach. In that situation the stomach muscles would contract and the contraction of the stomach muscles would lead to the baby vomiting. This was not, he said, unique to babies. He proceeded on the premise that the stomach was empty prior to the 02.00 feed.

In relation to [Nurse E] saying that she had withdrawn only a small amount of aspirate to test that the end of the tube had been in the right place by giving a pH reading of less than 5.5, he accepted that he'd based his opinion, at least in part, on the stomach contents having been aspirated. The pH reading of 4, which was acidic, was indicative of acid in the stomach. If there was a significance amount of milk mixed up with the stomach contents the acid would look like milk and wouldn't have an acidity of 4.

He also said babies fed by NG tube do not vomit. The aspiration of the stomach after the vomiting and the passing of a stool will have taken pressure off the abdomen and there was some improvement of her condition, but she was compromised from the time of vomiting and suffered significant oxygen deprivation to cause significant irreversible brain damage.

He referred to Dr Ventress noticing blood on the lung side of the vocal cords, indicating [Baby G] was bleeding prior to the first resuscitation attempt. She did not have a bleeding disorder. He discounted pulmonary haemorrhage, that is haemorrhage in the lung itself, describing it as a killer, and she would have been unlikely to have survived such an event if it had occurred. There was no natural reason for any bleed before the projectile vomiting.

In relation to the role of any infection, by 14.18 hours, some 10 or so hours after the vomit, [Baby G]'s CRP had risen to 28 and the neutrophil count had risen, which was a marker for infection. Twenty hours or so later it had risen further and peaked after she had been transferred to Arrowe Park. The infection occurred after the collapse and was not a cause of the vomit. He had never seen a baby with an infection present in the

way that [Baby G] did. In his opinion she must have had more than 45ml of milk and had excess milk and air down the tube.

When challenged as to reaching his conclusion because of other cases of unexpected incidents, he said that this was the first case he looked at and reached his conclusion without knowing about any of the other cases.

Dr Bohin said she had never seen a baby weighing 2 kilograms vomiting, it was something quite extraordinary, and concluded it must have been a huge vomit of milk, considerably more than 45ml. In answer to the questions that you asked, namely what is the maximum amount of fluid the stomach of a baby of [Baby G]'s size could hold, how much would cause the diaphragm to be compromised, Dr Bohin said there isn't a right answer to the first question, the maximum amount such a baby could hold, and there was nothing much in the literature. A stomach of a baby that has not been fed is very small. Over time, in term babies, as they increase feed day on day, the stomach, which is muscular, stretches to be able to accommodate that. There is no research that she could find that provided an answer.

From her own experience and being at post-mortems, the neonatal stomach in a two-kilogram baby is very small, about the size of a plum, but it can actually extend a lot and in a baby who has been fed over many weeks and months, as [Baby G] had been, the stomach would actually have enlarged. So it's impossible to be precise as to the volume of a stomach in a baby who had been fed for many months.

Similarly, it was impossible to answer the second question, how much would cause the diaphragm to be compromised, because for some babies with normal lungs a distended tummy might press up on to their lungs only a small amount and wouldn't actually affect them very much. But [Baby G]'s lungs were not normal because she had chronic lung disease and so most probably there wouldn't need to be much distension before her lungs were compromised, but in terms of the volume in the stomach she couldn't give an answer to that.

Dr Bohin read the nursing and medical observations charts for the whole of [Baby G]'s feeding history, which you have. Prior to the 15 June on the second, fourth, sixth, seventh and fourteenth days of June there were episodes of desaturation. Some were markers of her being gravely ill, others were related to her chin being on her chest or handling.

On 14 June, when she was 14 days old, an ET tube was inserted. Enteral feeds, milk feeds, were cautiously commenced at half a millilitre every 4 hours via an NGT on 15 June. They were tolerated and gradually increased. There was no vomiting and the

nursing staff recorded the nasogastric tube aspirates as minimal, which she took to be less than a millilitre.

Because the breast milk was tolerated, some fortifier was added from 26 June. There was a hiatus in feeding breast milk because [Baby G] had to have a Broviac line inserted by the surgeons at Alder Hey under general anaesthetic on 26 June.

On 29 June she probably had a pulmonary embolism. There was fresh blood on suction. Dr Bohin said that in a baby of this age and gestation, a pulmonary haemorrhage was not inevitably -- would not inevitably be a killer, but normally would be.

The feeds on 30 June were hourly feeds at 3ml every hour which were increased to 4ml every hour. When that happened [Baby G] had a single large nasogastric aspirate.

The feeds were continued and thereafter were well tolerated to the extent that breast milk fortifier was reintroduced. Between 30 June and 3 July she continued to be fed by hourly nasogastric feeds.

On 3 July the feeds were increased in an attempt to get her to gain weight. That increase was well tolerated and there was no vomiting or increased nasogastric aspirates.

She developed frequent desaturations. There had been one on 1 July which was diagnosed as being due to poor lungs. The desaturations were self-correcting, not requiring any help or intervention from nursing staff.

On 3 July there was the first mention of gastro-oesophageal reflux and she developed very thick secretions from her breathing tube from which they subsequently grew a bug.

They elevated the cot and started a course of erythromycin, an antibiotic. They also started her on Gaviscon for Babies, which in powdered form is added to the milk and forms a sort of raft over the top of the stomach contents and it makes it more difficult for you to vomit them.

[Baby G] was extubated on to BiPAP, a form of CPAP, on 7 July. She continued to tolerate feeds by which time they were 5ml every hour.

On 31 July [Baby G] had three desaturations which were not self-correcting and required a brief increase in her oxygen concentration. There was a re-intubation because the tube had slipped and had a blood clot. Thereafter, she recovered and continued to have very fleeting self-correcting desaturations

after feeds, which was very normal in neonates of her size, said Dr Bohin.

On that day, 31 July, she also had a single large nasogastric aspirate of 10ml prior to the feed at 5 o'clock and that feed was subsequently omitted but thereafter she was fed without any problem and she was well enough to be given her immunisations the next day, but she was not transferred to the Countess of Chester as had been planned.

On 3 August [Baby G] had an increase in her desaturations accompanied by bradycardias. The medical team were cautious and did an infection screen and started her on antibiotics. Feeds were continued and she continued to tolerate feeds. There was no vomiting and aspirates were minimal.

On 12 August [Baby G] was doing well, so that the feeds were increased to double amounts two-hourly rather than hourly, a change that was well tolerated, which meant that she could tolerate that sort of doubling of volume in her stomach and that her stomach could accommodate that and, as I've already reminded you, it was then that she was transferred from Arrowe Park Hospital to the Countess of Chester on 13 August.

I've gone through those in some detail just to remind you so you don't have to look through all the records and it gives you a sort of overview summary of what her pattern of progress was while she was in Arrowe Park until she went to the Countess of Chester.

Dr Bohin concluded, on all this evidence, that it was clear that, as noted on J7012, certainly by 6 September, [Baby G] was tolerating the alternate nasogastric three-hourly tube and bottle feeds she was having. There was no vomiting. There was no mention of aspirates and where the nasogastric tube had been tested for acidity prior to a feed on 5 September, the nurses either marked positive for acid without actually writing down a pH figure or, at 20.00 on the 6th, the nurse recorded a pH of 4, which is acid. All those feeds were well tolerated.

The pH value of 4 recorded by [Nurse E] at 02.00 was not consistent with there being a large amount of undigested milk in the stomach; a pH of 4 was very acidic. If there was undigested milk in the stomach that would buffer or neutralise the pH and you would expect the pH to be higher than that. A neutral pH is 7. Anything less than that is slightly acidic.

She had reviewed the subsequent feeding charts from Arrowe Park and the Countess of Chester and where there were minimal aspirates or where there were milky aspirates the pH was usually around 5.5 or 5, but never as low as 4.

In relation to [Nurse E]'s entry at 02.00 on the 7th, she concluded that the stomach was empty at the time that feed was given because the pH from the aspirate was 4 and she wouldn't have expected the pH to be that low if there was a large volume of undigested milk in the stomach. It was pointed out to her that in her report of 28 March 2019 she stated:

"The NGT was recorded as being checked prior to this feed. At this check no large residual volume of milk was found in the stomach, ie it was empty. 45ml of feed was given."

It was put to her that she based her opinion at that time on the stomach having been aspirated and she was now modifying her opinion to accommodate the evidence of [Nurse E] and, implicitly, having heard the evidence of Dr Evans. She refuted any suggestion of having discussed the matter with Dr Evans or having changed her reasoning. She said that she based that opinion on the pH level and having read all the feeding notes and not as a result of Dr Evans saying that.

As a consequence of her having vomited in a projectile way as described, and then 45ml of feed having been recovered or aspirated from her stomach, Dr Bohin concluded that [Baby G] must have had an additional excessive volume of milk in her stomach at some point after her 02.00 feed in order for her to be able to projectile vomit a large amount of milk and have a 45ml residual amount within her stomach.

There was nothing in the records to reasonably suggest that prior to this incident she was a child that was prone to vomiting. Forceful vomiting is not common in a neonate. Gastro-oesophageal reflux can develop but cannot explain what happened in [Baby G]'s case. Infection does not present with projectile vomiting. At the stage at which she had vomited, any infection played no part. She accepted that the general rule is that there is a 24 to 48-hour period in which C-reactive protein peaks in an infection and it declines quickly after reaching a peak.

The highest reading was 218 from a test at 07.23 on the 9th, which was about 53 hours after [Baby G]'s vomiting episode, which suggested the onset of the infection was after the event. She also said that the 100ml of air or liquid, or a combination of the two, that was aspirated at 06.15 could be accounted for by infection.

Finally, I move on to counts 8 and 9. [Baby G] was discharged from Arrowe Park at 15.00 on 16 September and returned to the Countess of Chester. Counts 8 and 9 relate to events during the day shift at about 10.20, that's count 8, and 15.30, count 9, on Monday, 21 September.

Valerie Thomas was [Baby G]'s designated nurse for the preceding night shift of the 20th to the 21st. The relevant documents from the handover are from tile 30 onwards. At the end of her shift in her nursing notes, behind tile 44, written at 07.19 hours, she wrote:

"Written in retrospect for care from 20.00 to present. Observations satisfactory. Temp 36.4 to 36.7. Well wrapped up. 3x8 feeds continued EBM. On 165ml per kilo. Using own bottles. Completed bottles but had one NGT feed at 03.00 to rest. Settled late after 21.15 feed. Fed by dad. Has passed urine and bowels open. Medication given as prescribed by NNU staff. Routine bloods taken this morning at 06.00 and sent to lab. For imms today."

In her statement, read to you as agreed evidence, she considered the observations were satisfactory. The temperature was a little low but she was well wrapped up.

Tile 45 in your second sequence of events in [Baby G]'s case sets out the personnel on duty for the ensuing day shift on 21 September. The paediatrician of the week was Dr Gibbs. Dr Newby was on call. The registrar on duty was Dr Harkness.

The shift leader was Caroline Bennion. The defendant was [Baby G]'s designated nurse for the shift as well as being the nurse for babies BH and CM; those three children were all in nursery 4.

Other nurses on duty were [Nurse B], Shelley Tomlins and Caroline Oakley. There was an event, the first event of that day, which is not the subject of any charge that was noted by the defendant in her nursing notes that are referred to and set out behind both tiles 48 and 50. That's the same sheet in, fact of the notes, so you can either see it on 48 or 50. She described this event in these terms:

"Written for care given from 08.00. Emergency equipment checked. Fluids calculated. [Baby G] nursed in a cot. [Baby G] appears pale. Temperature 36.4. Hat in situ and well wrapped. NG tube feed EBM given. At 10.15, two large projectile milky vomits. Brief self-resolving apnoea and desaturation to 35% with colour loss. NG tube aspirated. 30ml undigested milk discarded. Abdomen distended, soft. Doctors asked to review. Temperature remains low. Tachycardic. Greater than 180 beats per minute since vomit. Mum states that [Baby G] does not appear as well as she did yesterday. U&E, FBC and CRP taken and sent. Blood gas as documented. Blood sugar 9.9mmol. To go nil by mouth. Commence IV fluids and antibiotics. Care handed over to S/N [Nurse B] approximately 11.30."

In a message to [Nurse A] behind tile 111 the defendant said that:

"She looked rubbish when [she] took over."

The defendant told you that she remembered the incident and having concerns about [Baby G]'s temperature and ongoing low temperature. [Baby G] was about to receive her immunisations.

At 09.00 her temperature was normal, tile 46. She said she had given that feed. It was recorded behind tile 47 and was 40ml of EBM by NG tube. The vomit was after this feed. She would have tested the pH before the feed but not aspirated the contents. She was being treated as a term baby.

She couldn't recall how she was after the feed. She was alerted to the vomit by the monitor. She believed she was in nursery 4. [Baby G] stabilised and she asked for a doctor, if a doctor could review her.

Tile 54 refers to the observations chart of which you have a paper copy. The first doctor to attend was Peter Fleming, then a senior house officer at the hospital. His note is behind tile 51. It recited [Baby G]'s medical history by way of problems, followed by a set of results for bloods timed at 01.17 that morning. He then referred to the report of the event that required his presence and he noted it as follows:

"Two times projectile vomits witnessed by nursing staff, after which she was apnoeic for around 6 to 10 seconds, went blue, sats down to 30%."

By the time he arrived, she was breathing and crying and seemed to be recovering. Her colour was normal but slightly pale. She was well hydrated. Her tummy was distended, but her liver and spleen felt normal, so they weren't responsible for the distension, and the tummy was soft and non-tender.

He discussed the case with the registrar, Dr Rachel Chang, and concluded that the best plan going forward was to aspirate the NG tube and leave it on free drainage, delay the next feed, observe the stomach over the next hour, take heel prick bloods, a full blood count, U&E, which relates to kidney function, and CRP, which can be an indicator of infection. The immunisations planned for that day would be held off and there would be a review in 1 hour.

Care of [Baby G] was handed over to [Nurse B] at 11.30 because [Baby G] was going to be transferred to nursery 1 where she, [Nurse B], had another baby.

I move then to the circumstances of the second event that day, which gives rise to count 9.

[Nurse B]'s nursing note is behind tile 72. She said [Baby G] was pale and quiet when she took over, which was not her normal self, and her heart rate was high. She didn't recall her to be a vomity baby, [Baby G]'s observation chart for 20/21 September is behind tile 61 and you have a paper copy as the first document in section 9 of your second bundle.

Her heart rate had settled by the time she completed her first entry timed at 12.45. The feeding chart is behind tile 69 and records that at 09.50, an entry initialled by the defendant, she was fed 40ml of EBM by NG tube and then:

"30ml x2 milk projectile vomit. Blood sugar reading of 9.2. Bowels open ++, loose watery and green. Reviewed by doctors."

[Nurse B] thereafter recorded nil by mouth. Her nursing notes are behind tile 72 to which you can refer.

Dr Rachel Chang reviewed [Baby G] at 11.50. She noted she was pale, tachycardic, with a heart rate up to 190 beats per minute, had one feed delayed and had no further vomiting. She documented that:

"According to nursing staff and parents, [she] was not herself."

On examination, [Baby G] was self-ventilating in air, had good oxygen levels and her heart rate had settled to 160 to 170. Her tummy was soft and distended so she recommended partial screening for sepsis.

Dr Gibbs recommended a broad spectrum antibiotic, cefotaxime. [Baby G] needed to be cannulated, however because of her prematurity it was difficult to achieve and required seven attempts. A temporary cannula was initially fitted in order to get samples so they could check for bugs in her bloodstream and was also used to administer antibiotics and also 10% dextrose intravenously into [Baby G], but it was unusable for fluids until Dr Gibbs finally succeeded in cannulating her at about 7.20. By which time she had been without fluids for about 6 hours.

This day was the first day that Dr Gibbs had direct involvement with [Baby G]. He was aware of her medical history. He went to the unit after completing his paediatric round and saw Dr Chang's note. He said that projectile vomits in a premature baby who had been feeding satisfactorily since returning from Arrowe Park was unusual, although he accepted that gastro-oesophageal

reflux, which was potentially part of her condition, may lead to vomiting and possible forceful vomiting but not to projectile vomiting.

He also said that a drop in her oxygen level to 30% was a severe desaturation. The reassuring features were that she remained in air, spontaneously ventilating, her oxygen levels were good and her capillary refill time was good, her heart rate was a little high, but it settled. The plan was not to feed into her tummy but set up intravenous access.

[Nurse B] remembered Registrar Harkness and Dr Gibbs coming to the room to attempt the cannulation after Dr Chang had been unable to do so. She believed [Baby G] was on a procedure trolley and remembered her being screened from others in the room and the sticky part of the monitor being switched from limb to limb so they could see veins in different parts of [Baby G]'s body, her hands, wrists, feet, ankles. She didn't remember how many times it was moved.

When the doctor finished on the trolley the procedure was they would then let a nurse, and preferably the designated nurse, know that they had completed what had gone on, the screens would be removed and the baby placed back in their cot.

She next saw [Baby G] when the defendant called for help. This was the event at 15.27, count 9. [Nurse B] was not in that room when she heard the call and went to the doorway and saw the defendant providing breathing support for [Baby G] who was in the cot using a Neopuff. The defendant said [Baby G] wasn't breathing and [Nurse B] could tell that she wasn't. She didn't look well at all. She was a poor colour. She didn't remember if the monitor was attached but it was switched off -- the screen was off and she was unsure whether the probe was attached.

She shouted for Caroline Bennion who came quickly to help the defendant. [Baby G] responded very quickly to the treatment, was put on to Optiflow, was then moved to nursery 1 and kept on full monitoring and under very close supervision.

[Baby G]'s mum was informed of [Baby G] having stopped breathing and came from the family room. She was placed in an incubator without clothes. Her tummy was normal, her poos were abnormal.

The defendant said that screens had been put round [Baby G] because she was having a procedure, cannulation. There was no one with her in nursery 4 at that time. That was the only nursery in which she had any responsibilities, being, I remind you, the designated nurse for [Baby G] and two others. At 15.00 she initialled an entry for RH in nursery 2, J2912, something that would have taken a couple of minutes.

It was common practice for staff periodically to look behind a screen. She happened to look and noticed that [Baby G] was on her own behind a screen on the procedure trolley where she should not have been left without anyone there. She did not recall being told at any time by the doctors that they had finished with [Baby G] and that she needed to be put in the cot. [Baby G], she said, was blue and not breathing. The monitor was not on her. She immediately picked her up and put her in her cot, Neopuffed her, and called for help. [Nurse B] came and spoke to her.

She said she was keen to put a Datix report in about [Baby G] having been left unattended without a monitor on. She didn't take the matter any further because she took an assurance from her that she, [Nurse B], would deal with it.

When first interviewed about the episodes on 21 September she vaguely remembered the shift and thought [Baby G] was in nursery 4 and she was her designated nurse. The notes were gone through and she said from reading her notes it would appear that there wasn't an issue with the 9 o'clock feed. She didn't remember the two large projectile milky vomits at 10.15.

In interviews on 10 November 2020 she was asked in more detail about events on 21 September. She remembered going behind a screen and finding [Baby G] on the procedure trolley unattended. She had not switched the Masimo monitor off and could think of no reason why it would have been, it was bad practice, and she confirmed that you would never routinely leave a baby alone on a procedure trolley behind a screen. She confirmed that someone had made a mistake in turning off the monitor and leaving [Baby G] on a trolley unattended behind a screen.

She could not remember having made the numerous Facebook searches for [Baby G]'s mum, [Mother of Baby G], on 21 September, 5 November 2015, and 23 January 2016, 16 February 2016 and 1 September 2016. She had no comment to make about them.

She did not recall sending the message to [Nurse A] at 21.20 on 21 September, saying:

"Looked rubbish when I took over this morning then she vomited at 9 and I got her screened."

Or why she sent that message.

[Nurse B] said she hadn't been told that the cannulation was complete and said that both Dr Gibbs and Dr Harkness apologised to her after that second event. Dr Gibbs accepted that the

monitor should not be switched off and, if the sensor had to be moved to effect the cannulation, it should have been applied to another limb. He had little recollection of the event and admitted that he had no recollection of whether the sensor had to be removed or what he did after the cannulation or of any conversation with [Nurse B]. He accepted it was possible that [Baby G] was left unattended and without the monitor switched on after the cannulation:

"If she [that's [Nurse B]] said that it happened, then it must have."

And he apologised for having done so, but he didn't remember it.

He said he would not have left a baby unattended and would have told the nurse present that they were leaving. Dr Gibbs also said that a prolonged cannulation event could distress [Baby G] and cause her breathing difficulties and that it was not surprising that there was a further apnoeic episode with desaturation, but added that such an episode may not have been caused by the cannulation.

Dr Harkness did not recall the monitor being detached. It was important to keep it on and attached. He said he definitely wouldn't have turned it off. He thought he probably told one of the nurses that they had finished. He remembered leaving the room to document the event.

In his witness statement he said he did not remember speaking to a nurse after the cannulation. In evidence he accepted that it was possible that [Baby G] was left on the table and the screens were still there when he left the room. He went straight to the paediatric ward to complete the handover. He couldn't remember himself and Dr Gibbs apologising to [Nurse B] for leaving [Baby G] unattended behind a screen and for failing to switch the monitor back on.

[Nurse B] said she spoke to the shift leader, Caroline Bennion, and the ward manager, Eirian Powell, about this second event but she was unaware as to whether any formal complaint via the Datix system was made; she didn't make one.

Caroline Bennion recalled [Baby G] needed to be cannulated and that she and the defendant were with Dr Chang when Dr Chang fitted the temporary cannula.

Eirian Powell, who was on a phased return to work that day, had no recollection of anything clinically untoward being brought to her attention. She explained that if an untoward clinical event occurred she would have anticipated learning of that event

either by it being reported in Datix or to her orally and she would then have investigated it.

An X-ray of [Baby G]'s abdomen had been taken at 12.21. Dr Wright's report on that X-ray is tile 60. There was:

"Marked gaseous distension of bowel throughout the abdomen excluding the rectum, which contains a little gas. Transition point at the rectosigmoid junction and Hirschsprung's disease should be clinically considered. The differential diagnosis includes sepsis. No free peritoneal air or intramural gas identified. Please fax the report to clinical team."

In relation to sepsis, tile 59 refers to venous blood having been taken in respect of which no bacteria had grown 5 days later. This, said Dr Gibbs, did not rule out infection but lowered the possibility that she did have an infection. [Baby G] did not have Hirschsprung's disease; that was the agreed evidence of Professor Simon Kenny which was read to you.

Later that evening, in a message exchange with [Nurse A], the defendant, in the message behind tile 211, sent at 21.20, said that [Baby G]:

"Looked rubbish when I took over this morning then she vomited and I got her screened."

The prosecution say that this was incorrect as far as [Baby G]'s condition was concerned and the wrong time of the vomits. The defendant said the latter, the timing of the vomits, was a mistake and she was pale as recorded on her note, but accepted she was otherwise in good continue at the start of the shift. She denied that she was trying to create the impression that this was a child who was sickening for an infection and that it happened nearer handover than it really did.

There were no issues in the following night shift; that was the agreed evidence of Dr Alison Ventress.

[Baby G] was stable and improving.

Dr Evans and Dr Bohin both gave evidence as to the episode of projectile vomiting at 10 o'clock, 10.00. Dr Evans made no reference in his first two reports of 6 November 2017 and 31 May following his initial sift of the cases to this first event that is now the subject of count 8.

In the second report he said he scrutinised the rest of the clinical entries and did not find any evidence of any acute life-threatening event. He explained that he had over 4,000 pages of materials relating to [Baby G] alone and concentrated

his review of the medical notes rather than the nursing notes and accepted that he simply initially missed this event.

When he reviewed the evidence again, as set out in his report of 24 March 2019, in addition to the note of the defendant behind tile 50 in which she recorded two large projectile vomits, a brief self-resolving apnoea and desaturation, to which I've referred, he noted the record made by Dr Fielding transcribed on tile 51, which I've already reminded you of.

Dr Evans also referred to [Baby G]'s abdomen being distended, so larger than it should be, and that her bowel sounds were active, meaning that the intestinal system was working perfectly well, but the abdomen was distended, which would occur if the abdomen was either full of milk or full of air or full of a combination of milk and air, despite her having vomited. You would expect any abdominal distension to reduce, he said, because some of the substances in the stomach had been vomited up. This was a very significant concerning issue, particularly in association with the oxygen saturation dropping to 30%, going blue and stopping breathing for a few seconds. He concluded that she had probably had a life-threatening episode of vomiting and oxygen desaturation for which there was one explanation, which was that [Baby G] had been given far more milk during her nasogastric tube feed an hour earlier.

The plan was to give her 14ml of milk and she had been tolerating that amount of milk by bottle the previous day, 40ml or 45ml, so if she had been given 40ml of milk then it would not explain how she had two large projectile vomits and there was still 30ml left in the stomach.

He concluded she had not received 40ml of milk, she had received a lot more than that, and it was an excessive amount of milk or milk and air. He accepted that the events on 21 September were not as serious as the one on 7 September, which was responsible for a huge change in [Baby G]'s overall health.

The abnormalities found on an MRI carried out on 15 September from memory, she(?) said, at Arrowe Park showed very significant abnormalities, whereas previous scans had been satisfactory. From 7 September onwards [Baby G] was a completely different baby from a neurological and developmental point of view and vomiting was a significant part of her life.

Dr Bohin noted from the records that [Baby G] was feeding well, tolerating her feeds and the day before she had been fed by bottle, apart from one feed when she was asleep.

On the 21st she was given a feed at 09.00 via nasogastric tube because she was apparently asleep and shortly after that had two

large projectile vomits which caused her to stop breathing temporarily and desaturate. She said that the feeds didn't add up, as I've already referred to, and she concluded that the feed at 9 o'clock via the nasogastric tube prior to the projectile vomit was in excess of 40ml.

The events of the 7th and 21 September were strikingly similar, but the consequences were different. Dr Bohin accepted that after 3 October vomiting by [Baby G] became much more of a feature. The records showed that from the 3rd to 8 October [Baby G] was recorded as having one or two vomits each day which varied from small to large and some were after cares. Domperidone was added to the anti-reflux regime on 17 October 2015 because of the vomiting.

She was taken to a number of records of such vomits and there were vomits, two large vomits, on 8 October, J7452, after which she was put back from four-hourly to three-hourly feeds. A few self-correcting desats and two large digested milk vomits were noted on 9 October. On 15 October, a quite large projectile vomit. On 17 October, a large vomit following a night-time feed. And on 23 October, a large vomit following a feed.

When asked about [Baby G]'s father saying that he had seen [Baby G] projectile vomit on occasions after 9 September, Dr Bohin commented that what parents commonly describe as projectile vomiting is what she would say is forceful vomiting, but not projectile, as projectile vomits go a huge distance.

Professor Arthurs said that from the radiological point of view, putting aside her lung changes and some chronic lung diseases associated with her prematurity, she essentially had several episodes of bowel distension that seemed to resolve. Each of these, he said, should be interpreted in the context of how unwell she was at the time.

The opinions of the treating clinicians and nursing staff needed to be taken into account when drawing conclusions. There were obviously several episodes where [Baby G] was acutely unwell. From the radiographs, there wasn't anything specific to suggest any abnormalities. The radiology did not assist in relation to the opinions of Dr Evans and Dr Bohin by way of attributing events to deliberate overfeeding.

If the baby had been overfed with milk, they wouldn't necessarily see that on an X-ray, said Professor Arthurs. The X-rays all show a lot of gas in the abdomen, so overfeeding with milk, a combination of milk and/or air could cause these findings. Excessive milk on its own would not show on the images; air could, and air and milk could. There was nothing on

the X-rays that that would really provide a diagnosis as to why that had happened.

I'm sorry we've gone on a bit longer than I'd anticipated, but I just wanted to finish [Baby G] so that we can move on to the next baby at 10.30 tomorrow morning. Would you please remember and adhere to your responsibilities as jurors and be ready to resume at 10.30 tomorrow morning. Thank you.

(In the absence of the jury)

MR JUSTICE GOSS: I don't think you --

MR MYERS: No.

MR JUSTICE GOSS: -- are going to have a visit?

MR MYERS: No, not this afternoon.

MR JUSTICE GOSS: No visit this afternoon, thank you.

I may have misunderstood that. I think your solicitor --

MR MYERS: Yes, but not a visit from us.

MR JUSTICE GOSS: Not a legal visit.

MR MYERS: No, thank you.

(4.25 pm)

(The court adjourned until 10.30 am on Wednesday, 5 July 2023)