

7 March 2023

Baby N

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Examination-in-chief by MR JOHNSON

Cross-examination by MR MYERS

Re-examination by MR JOHNSON

Tuesday, 7 March 2023

(10.30 am)

(In the presence of the jury)

MR JUSTICE GOSS: Mr Astbury.

MR ASTBURY: My Lord, we are to read some statements this morning and we have bundles ready for my Lord.

MR JUSTICE GOSS: Lovely, thank you very much.

(Handed)

MR ASTBURY: There's probably more than we would ordinarily read in one block, but we were unable to intersperse them yesterday in order to finish Dr Potter's evidence yesterday before 4.30. Apologies for that.

MR JUSTICE GOSS: Yes. Yesterday, I'd anticipated that some of the statements that are going to be read now were going to be read, but I appreciated that the witnesses who were lined up had to get through their evidence yesterday. That's why these are going to be slightly out of sequence, some of these, but you'll appreciate that the arrangements were made for those witnesses to attend from various hospitals and that's the way it was.

So bear in mind we'll be jumping around a little bit.

Obviously it's still surrounding the same event, but not quite in chronological order, so to speak, so far as the events are concerned.

MR ASTBURY: Thank you, my Lord.

MR JUSTICE GOSS: Please bear that in mind. If you need to explain anything about anything, very briefly do.

MR ASTBURY: Thank you, I'm grateful, my Lord.

We begin, please, at page 26 of my Lord's bundle with a statement from Andrew Henton --

MR JUSTICE GOSS: May I just say by way of reassurance, I know I said this to you a long time ago, when I do come to sum this case up to you, I'm going to take you through the evidence chronologically, fitting the witnesses together, because otherwise it's just impossible to make sense of a lot of what is alleged in this case. So don't be too worried about that because it must be slightly disconcerting for you when you're getting so much information, particularly when a lot is read. But you will see how it does fit together in relation to the sequence of events. And also I'll be pointing out where there are differences between witnesses and this sort of thing. You will have heard counsel by then as well.

Witness statement of DR ANDREW HENTON (read)

MR ASTBURY: This is a statement dated 22 April 2020 from Dr Henton, who -- some of you may recall his name appears as one of the doctors in the sequence of events chart in this case. Dr Henton says this:

"My involvement with [Baby N]'s care was quite limited and while I remember his name, I have no recollection of the case. I have had the opportunity to review his clinical notes to assist with the preparation of this statement.

"My primary involvement seems to have been a routine review on 14 June 2016, documenting on the consultant ward round on 15 June 2016, and finally writing some blood results in the notes later that day.

"At this time I was working for the paediatric department as a year 1 GP trainee doctor on a four-month placement working at the level of SHO.

"[Baby N] was born by a planned elective caesarean section on 2 June 2016 at 34 plus 4 weeks due to intrauterine growth restriction and was at high risk of having a blood clotting disorder due to his family history. A clotting disorder was confirmed following his birth.

"Following stabilisation after some initial minor breathing difficulties he stabilised well on the NNU and was progressing well, with discharge planning well underway before significant deterioration with breathing problems in the early hours of 15 June 2016.

"Intubation failed with repeated attempts, both overnight and later in the day, following a further significant deterioration. Ultimately, the NWTs team became involved."

That being the transport team that we heard described by Dr Potter only yesterday:

"[Baby N] was successfully intubated and was transferred to Alder Hey Hospital later that day.

"On Tuesday, 14 June 2016 I undertook a formalised weekly NNU review. [Baby N] had been stable in the preceding days and discharge planning was in process by this point. He was noted to be mildly jaundiced and was still on phototherapy for this. The plan was to repeat his bilirubin levels (SBR) to see if he needed to continue phototherapy. He was also to have a corrected calcium level checked as this was noted as elevated at 3.1 at 01.40 hours that day.

"I documented a discussion with his mother of the plan, which was very much with the intention to get him home later that week. Medication for his discharge had been requested and a follow-up with Dr Caswell, a haematologist at Alder Hey, was to be arranged.

"At 10 am, Wednesday, 15 June 2016, I documented in the notes during a ward round with the paediatric consultant Dr Saladi."

For reference, if anyone wants to know, that's tile 167:

"A summary of events overnight is noted where [Baby N] had desaturated and intubation had been attempted three times but was unsuccessful. At this stage [Baby N] was on BiPAP, has intravenous fluids and has received intravenous antibiotics in case of sepsis. At this stage, due to some blood noted in the oropharynx overnight, Alder Hey haematology have already advised obtaining a group and to save it in case of a need for transfusion. Clotting factor VIII was requested through the haematology laboratory.

"His chest X-ray was reviewed on the ward round. That was at 10.05 am..."

Again, for reference that's tile 186:

"... and it was noted that there was some patchy consolidation at the right lower base, which could have suggested infection or aspiration (vomit or blood). At 13.45 hours later that day, I documented in the notes the results of the clotting screen as per the ward round."

That's tile 225 if anyone wants to refer to it:

"These show continued low factor VIII levels and prolonged clotting time, which were very slightly better than those done on the day he was born. I do not recall any other involvement in [Baby N]'s care.

"I have been asked with regards to the difficulty of intubation encountered with [Baby N]. All I can advise is, based on the notes and knowledge of the procedure, it is an inherently challenging procedure which is performed under pressure. Minor variation in anatomy from person to person will also affect the ease of this."

That concludes Dr Henton's statement.

Witness statement of MS BERNADETTE BUTTERWORTH (read)

MR ASTBURY: The next statement, my Lord, please, at page 28 of the bundle, is from Bernadette Butterworth. She in a statement dated 14 May 2020 says this:

"On the particular day in question, I had been working a long day shift on the neonatal unit at the Countess of Chester

Hospital. A long day starts at 07.30 and finishes at 20.00 hours.

"I think I had been working in nursery 2. [Baby N] had been in nursery 1, being nursed in an incubator and being cared for by Lucy. I remember helping Lucy with the episode of desaturation and apnoea that [Baby N] is documented as having at 14.50 in Lucy's Meditech notes."

For reference, that's tile 244 on the presentation:

"I cannot remember exactly what my role was in helping Lucy or exactly how long I was assisting for. I can remember [Dr D] arriving and being present but cannot remember who else was present. I also cannot remember how I came to help Lucy. The unit is relatively small, so if Lucy had called for help or I had heard the monitor alarms going off, I would have gone to see if help was needed. In situations like this, anyone who is available would go and see if help was needed."

"With regards to the intubation drugs that I had given to [Baby N] I can confirm that it is my signature against the morphine being given at 15.18, atropine being given at 15.21, and the suxamethonium also given at 15.23."

Sorry, did I say 15.23 for the second one? So it's 15.18, 15.23, 15.23:

"I cannot remember if I physically administered the intubation drugs or if I just checked and countersigned for them."

"In relation to the question asking if I remember the other episodes of desaturations and apnoeas that occurred at 07.15 and 19.40, I cannot. I would not have been on shift at 07.15 and the night shift commences at 19.30, so I would have been handing over at this time."

"I do remember the ENT team from Alder Hey Children's Hospital had arrived and were present when I was leaving the unit that evening. I cannot remember any other involvement that I may have had with [Baby N] during this shift."

Witness statement of DR ANTHONY UKOH (read)

MR ASTBURY: My Lord, if I can go next, please, to page 55 of the additional statements in my Lord's bundle, it's Dr Anthony Ukoh. He says in a statement dated 6 November 2018:

"I have been asked about my involvement in the treatment of [Baby N] and, in particular, the day shift of Wednesday, 15 June 2016."

"I have had the opportunity to review the medical notes to assist with the preparation of this statement and I can confirm that I was working as a locum registrar within the paediatric department of the Countess of Chester Hospital on this day."

Pausing there, they've already been referred to and Dr Ukoh's notes appear at tile 178:

"[Baby N] was born slightly early. His mother was a haemophilia carrier. Following blood tests, it had been confirmed that he had inherited the haemophilia condition.

"I examined [Baby N] at 09.45 hours on Wednesday, 15 June 2016 as part of a routine ward round. I had noted from the handover that [Baby N] had deteriorated overnight, become mottled and was suffering episodes of stopping breathing. There was a suggestion that he might have sepsis. There had been some oral bleeding.

"[Baby N] had been commenced on intravenous antibiotics and some breathing support in the form of BiPAP. When I examined [Baby N], I was made aware that he was still suffering from episodes of desaturation and bradycardia and was not stable.

"[Baby N] was unsettled at times and at times I noted his back to be arching. He was mottled in appearance and he had dried blood on his lips and in the oral cavity. I discussed [Baby N] urgently with Dr Caswell, paediatric haematologist consultant at Alder Hey Children's Hospital, who had advised commencing [Baby N] on the blood clotting protein factor VIII.

"I also contacted the haemophilia liaison nurse in relation to obtaining the medication for its administration. I had no further involvement with the treatment of [Baby N] on this particular shift."

Witness statement of DR SATYANARAYANA SALADI (read)

MR ASTBURY: My Lord, next, please, Dr Saladi at page 30.

Dr Saladi says in a statement dated 22 May 2019:

"I was the paediatrician of the week covering the wards from 8.30 to 4.30 pm every day from Monday, 13 June to Friday, 17 June 2016.

"I was doing neonatal ward rounds on Wednesday, 15 June, after the handover from the night team at around 9 am.

"On reviewing the notes, it was clear that [Baby N] had developed desaturations the previous night (14 June going into

the morning of 15 June) and he was transferred to nursery 1 for closer observation. It was noted that intubation was attempted three times but was not successful. [Baby N] was given support with BiPAP, a form of breathing support through [Baby N]'s nose, while he was breathing on his own.

"After those events on the night of the 14th into 15 June, I saw [Baby N] on my ward round on the morning of 15 June 2016. The following clinical notes entry was made during the ward round by the junior doctor working with me that day. The notes record that [Baby N] was also seen by the day registrar prior to me reviewing his care on the ward round and the junior doctor working with me has recorded the following entry."

My Lord, in his statement Dr Saladi simply recreates what's on the notes. I wonder whether it would be easier simply to go to the notes in these circumstances.

MR JUSTICE GOSS: Yes, certainly.

MR ASTBURY: Tile 167, please, Mr Murphy.

If it assists, I can read the script:

"Ward round Saladi. Transfer to nursery 1. Profound desaturations to 48%. Attempted intubations x3. Blood in oropharynx, source unclear. Screened, on BiPAP, IV cefotaxime. Discussed with Dr Caswell this AM. For factor VIII, BD, 50 units per kilogram.

"V [for ventilation] BiPAP. F [feeding] IV glucose 10%, 2.6ml per hour, 150ml/kilogram/day. M [for medication]: intravenous cefotaxime. On examination: RR [which I think is respiratory rate] 28, PR 149."

Whether that's pulse rate I'm not sure but that would seem consistent:

"SaO2 [oxygen saturation]: 100%. Blood pressure: 88/51. Capillary refill time less than 2 seconds. Heart sounds 1 plus 2 plus 0. No abnormal posturing. Abdomen soft and non-tender.

"Plan: (1) Group and save. (2) Factor VIII as per haematology. (3) Repeat CRP in 24 hours. (4) Parents updated. (5) Cranial ultrasound scan."

The entry records, returning to his statement:

"The history obtained from the notes of the previous desaturations during the night which had been significant as his oxygen saturations had fallen to only 48% [as read].

"Three attempts at intubation were unsuccessful and blood was seen in the oropharynx, which is the part of the throat at the back of the mouth. The source of the blood was unclear. A screen for infection was being undertaken. [Baby N] was receiving ventilatory support, that being BiPAP. He was also receiving intravenous antibiotics. [Baby N] had been discussed with the consultant haematologist, Dr Caswell at Alder Hey Hospital, by the paediatric registrar Dr Ukoh, who recorded that Dr Caswell advised factor VIII, a blood clotting protein, to be given.

"I would have examined [Baby N] and the junior doctor working with me recorded [Baby N]'s respiratory rate, pulse rate, oxygen saturation, blood pressure, capillary refill time and his heart sounds. These findings indicated that [Baby N]'s condition was now stabilised. [Baby N] was not demonstrating abnormal posturing, which might have indicated a brain injury.

"On examination his abdomen was soft and non-tender, which indicated that his desaturations were not due to an abdominal cause. The plan I formulated was for a blood sample to be taken to identify his blood group and an antibody screen in order that arrangements could be made for a blood transfusion if necessary.

"The second step was for factor VIII to be given as per the advice received from the haematologist. I asked for a repeat CRP to be undertaken in 24 hours to confirm whether an infection was present. [Baby N]'s parents were updated about the events overnight and the plan and I also requested a cranial ultrasound scan to be performed. A record of the images in the notes revealed no brain haemorrhage.

"The records show that I subsequently made a retrospective entry timed at 16.30 hours in [Baby N]'s medical notes, having been called to see him. My note is incorrectly dated 2015. It should be 2016."

My Lord, the note is again reproduced in the statement. If we could look behind tile 247, please.

Having corrected the date on the left-hand side, it's timed at 16.30, and reads as follows:

"Desaturated this afternoon at 2.50 pm with blood in the oropharynx and blood in the nasogastric tube. Improved with bagging. Elective intubation planned, following pre-medication. Unsuccessful attempts with two registrars and two consultants. Vocal cords difficult to visualise. Laryngeal airway placed by Dr Brearey. Baby received 2x 10ml per kilogram fluid bolus. Anaesthetic support requested. (Anaesthetists) assessing the baby. Discussed with Dr Bill Yoxall, Liverpool Women's Hospital.

If no success, advised to discuss with North-west Transport Service team and liaise with paediatric ENT team at Alder Hey. Parents are in the room and have been kept regularly updated with the clinical course."

And then, "Saladi (consultant)", endorsed below.

He continues in his statement:

"My entry confirms that [Baby N] had further desaturations at 2.50 pm that afternoon. Blood was recorded in the oropharynx and in the nasogastric tube. His saturations improved by hand ventilation with an Ambu bag. Once again there were difficulties in intubating [Baby N], which included an attempt by me as well as Dr Brearey, another consultant colleague, who came to help.

"Due to this, anaesthetic colleagues were called to provide specialist support. I discussed [Baby N] by telephone with the consultant neonatologist colleague [that's Dr Yoxall at Liverpool Women's Hospital] about difficulty in securing the airway. He advised seeking help from the North-west Transport Service along with the ENT team at Alder Hey for managing the difficult airway. [Baby N]'s parents were present and I kept them updated.

"I made a further entry in [Baby N]'s records at 18.00 hours on the same day, recording the telephone call I had with Dr Frank Potter from Alder Hey, who was the paediatric intensive care consultant, and my entry read as follows."

I don't think we need to go to this one, it's simply in text:

"15 June 16, 18.00 hours. Received phone call from Dr Frank Potter (Alder Hey PICU consultant) [that's the paediatric intensive care unit]. He will come with Alder Hey ENT consultant Ms Sue Day with a flexible bronchoscope. They will transfer the baby to Alder Hey with the NWTs ambulance, which will join them later. He asked for an Olympus light source suitable for an Olympus flexible bronchoscope. If baby is settled, no need to paralyse. Otherwise, give rocuronium."

And the treatment options are listed as follows:

"(1) Transfer to Alder Hey Children's Hospital with laryngeal mask airway. (2) Attempt intubation with flexible bronchoscope. (3) Tracheostomy if worsening airway.

"I have informed mother about the treatment plan. Dr Gibbs, the on-call consultant, is aware."

And again it is signed:

"Saladi (consultant)."

He concludes this statement, my Lord, with:

"Dr John Gibbs was the consultant on call that evening from 4.30. I had handed over continuing care of [Baby N] to him. I had no further involvement in [Baby N]'s care on 15 June 2016 after my last entry. According to the notes, [Baby N] was subsequently intubated by Dr Frank Potter and he was transferred to Alder Hey Hospital intensive care unit during the night of 15 June 2016."

Second witness statement of DR SATYANARAYANA SALADI (read)

MR ASTBURY: My Lord, there's a second statement from Dr Saladi at page 36 of the bundle, dated 23 January 2020, and in this he says as follows:

"[Baby N] has been seen in the paediatric unit at the Countess of Chester Hospital and by me on a regular basis since birth because he was born preterm at 34 weeks and because he has an inherited clotting disorder called haemophilia.

"The reason [Baby N] is still seen by me is due to his haemophilia and, as we are the local hospital, if he has any injury or bleeding this will be the hospital he would come to.

"He sees me for general paediatric medical problems and he sees a specialist at Alder Hey Hospital for the management of the haemophilia. [Baby N] is normally seen every 6 months. The last time I saw [Baby N] was on 19 November 2019. This was a routine review.

"On examination, he looked well. He was pink, he was giving high fives, he had good eye contact and was playing imaginatively with teacups while I was talking to mum. With regards to the rest of the examination, including the functional neurological examination (which means that we observe them doing all of those things as they are playing to see if they have any weaknesses or are dragging one of their limbs whilst they are moving) is appropriate [as read].

"There do not appear to be any headaches or any visual disturbances observed."

And under "examination" from that occasion it states:

"[Baby N] looked well today in clinic. Examination of his abdominal, cardiovascular and respiratory systems was unremarkable. His central line appeared healthy.

"I can see from [Baby N]'s medical records that prior to visiting Dr Whitby on 28 May 2019 [and these are the dates, my Lord as follows], 22 January 2018, 23 October 2018, 25 April 2018, 26 March 2018, 24 October 2017, 27 March 2017, 3 October 2016, 18 August 2016, 1 July 2016."

So that's a total of nine appointments listed by Dr Saladi.

"Over that period there were no major issues regarding his physical or cognitive development. Apart from the treatment for the haemophilia, which is the factor VIII, [Baby N] is not on any other medication and the only medical diagnosis is haemophilia and the preterm. We will continue to monitor [Baby N] for his growth and development.

"With regards to the haemophilia, I am aware that during the neonatal period there were difficulties in putting the tubes into [Baby N] and he had a bleed when we were putting these in.

"Any procedures can cause bleeding and the sort of procedures that little babies have, such as putting a feeding tube in from their nose to their tummy if they're too small to feed or, if they're having breathing difficulties, putting a tube into the windpipe, those are the procedures that can cause bleeding. I am aware that [Baby N] had bleeding from the oral cavity when he was receiving treatment on the neonatal unit at the Countess of Chester Hospital.

"There was difficulty in putting the tube into the windpipe, so much so that the top part of the glottis (the voice box) was swollen and we could not put the tube in to support his breathing. We had to call an intensive care specialist from Alder Hey to come to the Countess of Chester Hospital and they came with an ENT surgeon to put the tube in so we could safely transfer [Baby N] to Alder Hey hospital. I have detailed this in my previous statement. Those are the sort of problems babies with haemophilia can develop if there is a lot of bleeding."

My Lord, that concludes that statement from Dr Saladi.

Witness statement of [NURSE B] (read)

MR ASTBURY: Next, please, page 43 in the bundle. It's a statement from [Nurse B]. She says in a statement dated 4 June 2020:

"I have been asked with reference to my knowledge of [Baby N] and, in particular, the day shift of Wednesday, 15 June 2016.

"I have had the opportunity to read his care notes to assist with this statement. I do remember baby [Baby N] for his diagnosis. I had never seen a neonate with haemophilia before. I was working a long day shift within the neonatal unit.

"I remember at the start of my shift being shocked to see [Baby N] poorly in nursery 1 as he had been almost ready for discharge home. I remember [Baby N]'s clinical condition deteriorating throughout this particular day and it ending in full resuscitation. I also remember that Nurse Lucy Letby was his designated nurse.

"[Baby N] was situated in nursery number 1. If you were looking into nursery number 1 from the outside, he was in the space directly in front of the right-hand door.

"I do not remember having hands-on care with [Baby N]. However, I remember suggesting to Dr Brearey to use an I-Gel to secure [Baby N]'s airway when we were struggling to intubate him. I do not know why it was so difficult for the doctors to carry out this procedure.

"I distinctly remember the desaturation that occurred at 19.50 hours so I must have been in nursery 1 at this time. The ENT doctors had gone with our consultant to look at labour ward theatre as this is where they were thinking of taking [Baby N] for intubation and possibly a tracheostomy.

"I remember seeing [Baby N]'s monitor showing a severe bradycardia, desaturation and seeing Nurse Lucy Letby responding to him. I do not remember who else was in the nursery at this time or who alerted the medical team to return and assist.

"I can confirm that it is my initials against the blood gas readings taken at 15.11 and it is my signature against the administration of dexamethasone at 17.35 hours. I do not remember if this was for administering the drug or for countersigning. I remember that this drug was given at the request of the Alder Hey team to attempt to reduce any upper airway oedema that may have been there and to aid tracheal intubation."

Witness statement of MS ELIZABETH MORGAN (read)

MR ASTBURY: Next, my Lord, please, at page 45, a statement of Elizabeth Anne Morgan, dated 22 October 2021. She says this:

"I, Elizabeth Morgan, have been asked to provide my professional opinion on the following question."

My Lord, we've had a statement from Elizabeth Morgan before, who is the expert nursing practitioner who's given an opinion in a previous case. As this is a subsequent statement, it doesn't contain her full description and qualifications, so just by way of reminder, if that's appropriate:

"I have been asked to provide my professional opinion on the following question:

"'In interview, Lucy Letby said that she aspirated 1ml of fresh blood from the nasogastric tube but did not draw it to anyone's attention. How does this failure fit with good practice generally and in the case of a haemophiliac child in particular?'"

We're just going to get the document, my Lord, on which it's answered. If we go to jury bundle 2, which has the core documents from each case, and look behind divider 18, please.

Behind divider 18, the third page in should be numbered J19316. If everyone looks in the right-hand box underneath "Output", you'll see that "NGT" is circled and about halfway down, timed at 10, on the left-hand side, that particular row, read across, "1ml fresh blood" underneath "NG/ASP/vomit." I'm not sure what those letters say -- "NPU" possibly.

MR JUSTICE GOSS: It looks like NPU, "not passed urine".

MR ASTBURY: Yes. Under the colour of "bowel open", we've got "green". And then initials in the right-hand box.

MR JUSTICE GOSS: And that NP of NPU is in the urine column.

MR ASTBURY: Thank you.

Returning to the statement:

"In preparing my answer [says Elizabeth Morgan] I have read [Baby N]'s medical and nursing notes [that should say] and the interview transcript. I have read several articles setting out the principles for the management of haemophilia in a neonate.

"I have not nursed a baby with haemophilia, it being a rare occurrence, therefore I have applied my professional nursing experience to the question being asked.

"The main goals of care in a neonate with potential haemophilia is to assess the risk of and subsequently manage any serious bleeding and to provide safe routine newborn care.

"In my professional opinion it is standard good nursing practice that any unusual occurrence, such as a significant amount of fresh blood being aspirated from a nasogastric tube or being found in the mouth, in any baby would be escalated verbally by the bedside nurse to attending members of nursing and medical staff. This would be even more likely in the case of a baby born to a mother who was a known carrier for haemophilia and where there would be concern that a male baby would be likely to have inherited the disease. This would normally be done verbally at the time of the incident as well as being recorded in the nursing notes charts for the shift."

Witness statement of DR BENJAMIN LAKIN (read)

MR ASTBURY: My Lord, moving on to the staff from Alder Hey in the next three statements. Firstly, please, a statement of Dr Benjamin Lakin at page 47. In a statement dated 3 March 2020, he says this:

"As one of the duty consultants on the paediatric intensive care unit at Alder Hey Children's Hospital, we received a call in the mid-afternoon of 15 June 2016 about a patient, [Baby N], in the neonatal intensive care unit at the Countess of Chester Hospital.

"I understood from the referral that doctors had been unable to intubate him. This had been attempted as [Baby N] had developed pauses in his breathing pattern (apnoeas), which were associated with drops in his blood oxygen levels (saturations).

"I travelled to the Countess together with Dr Potter, a consultant in paediatric anaesthesia and intensive care. When we arrived on the neonatal intensive care unit, the anaesthetic team at the Countess of Chester had already assisted by inserting a device known as a laryngeal mask airway. This device is inserted through the mouth into the upper part of a patient's airway above the vocal cords. It is often used as part of an anaesthetic during operations to keep the airway open and provide gases such as oxygen but can be life saving when intubation is difficult or impossible.

"[Baby N] was receiving ventilation via a ventilator through this mask. Soon after we arrived, [Baby N] started to deteriorate rapidly with low oxygen levels and subsequently a slow heart rate (this is commonly a consequence of low oxygen levels in babies and children). There was little improvement with mask ventilation with a breathing circuit providing oxygen and the device called an oropharyngeal airway, a plastic tube in the mouth, designed to keep the airway open. [Baby N] required a period of several minutes of heart massage together with

intubation, ventilation and administration of a drug called adrenaline..."

And he explains that is to produce a faster and stronger pulse and raise blood pressure:

"... with some fluid and sodium bicarbonate. These measures were unsuccessful.

"Dr Potter carried out [Baby N]'s intubation. I had not personally attempted intubation as Dr Potter has far more experience in difficult airways, but I was present to support and assist with the efforts to stabilise [Baby N].

"My recollection is that it was more difficult than normal for us to intubate [Baby N] but this can occur sometimes unexpectedly in some patients. We often grade the ease by which a patient can be intubated when the voice box is directly viewed with an instrument called a laryngoscope between 1 (easy) and 4 (often impossible where no normal voice box is visible). We described this for [Baby N] as 2B.

"Following these measures we needed to stabilise [Baby N] and started an infusion into a vein of adrenaline to support [Baby N]'s heart and circulatory systems. Needing this type of support is not uncommon following a period of significant instability. We continued to ventilate through the tracheal tube that had already been placed into [Baby N]'s windpipe.

"Soon after, the rest of the transport team arrived, including Dr Chris Goodman and Sister Toni Berry Brown. We used a machine called ultrasound to assist in placing a larger drip, known as a central venous line, into a large vein in the neck called the internal jugular (this is much safer to provide strong blood pressure drugs in sick patients), as well as an arterial line in [Baby N]'s groin to more closely monitor his blood pressure.

"Subsequently, [Baby N] was established on a breathing machine (ventilator). His condition improved and he was stabilised. I left [Baby N] in the care of Dr Potter and the transport team. I do not recall witnessing any obvious bleeding throughout my involvement."

Witness statement of DR CHRIS GOODMAN (read)

MR ASTBURY: Next, please, my Lord, at page 50 is Dr Chris Goodman, who was just mentioned a moment or two ago. A statement dated 12 February 2020:

"The NWTS base is on the Birchwood business park, Warrington, and covers the north-west and North Wales region. It is a

collaborative venture between Royal Manchester Children's Hospital and Alder Hey Children's Hospital and has been commissioned to transfer critically ill children from district general hospitals within the north-west and North Wales area to one of the two paediatric intensive care units.

"A standard transport team will be comprised of at least one transport doctor, one nurse and one ambulance driver. My role on this occasion was as transfer doctor.

"The ambulances and transfer trolleys are equipped to transport critically ill children from newborns through to teenagers. Any hospital in the north-west region can contact NWTs in order to gain advice over the phone or to request transfer of a critically ill child to a PICU in a tertiary children's hospital. These requests can be made by paediatric, neonatal, anaesthetic or emergency department doctors.

"In the case of [Baby N], the initial referral was made by Dr Saladi from the Countess of Chester neonatal unit and this referral was made at 16.55 hours on 15 June 2016.

"I travelled from the NWTs base in Warrington to the Countess of Chester Hospital together with Dr Sturtor(?), anaesthetics, and Sister Toni Berry Brown.

"When I arrived, Dr Potter had already intubated [Baby N] and I assisted in securing a central venous and arterial catheterisation with him. This was a tricky procedure which is not uncommon in babies this small, particularly if they've had lines previously or are acutely unwell.

"The same team accompanied me on the transfer from the Countess of Chester Hospital to Alder Hey, with the addition of Dr Potter. We left for Alder Hey at 23.20 hours and arrived at 00.12.

"My role during transport was to monitor the patient and give any treatment or intervention that may be required en route. According to my records and the vital signs observations documented, it was an uneventful, steady transfer. There could not have been any apnoeic episodes during transfer as the patient was mechanically ventilated. From my notes and memory I am not aware of any spontaneous bleeding."

Witness statement of DR NORA RODRIGUEZ (read)

MR ASTBURY: Finally, my Lord, as far as the reading is concerned, page 53, please. It's a statement from Nora Rodriguez, who describes herself as a consultant anaesthetist and says as follows -- 14 February 2020 is the date:

"I presently work at Alder Hey Children's Hospital as a paediatric cardiac anaesthetist consultant. I have been working in this role at Alder Hey Children's Hospital since July 2016.

"I write this statement in relation to baby [Baby N]. I have referred to [Baby N]'s anaesthesia record of 12 May 2007 (sic) and other medical notes to inform my response.

"I anaesthetised him for the insertion of a portacath. Because of previous events relating to the intubation at the Countess of Chester, on 15 June 2016, I was minded that he potentially had a difficult airway. When I intubated on 12 May 2017, he being 11 months and weighing 9 kilos, intubation of his trachea was essentially straightforward. I had no issues in relation to the intubation and certainly nothing corresponding to those mentioned in previous emails. I needed no more than a little bit of cricoid pressure to make his larynx view a grade 1."

She points out that:

"Note: that is grade 1 out of 4 different grades, where 1 is the best view you can ever get."

"In small children, the larynx naturally sits more anteriorly in the neck, hence pushing down the next makes the tracheal hole perfectly aligned. If I would have needed more manoeuvres or I was concerned about him not being straightforward, I would have made notes to this effect. I would say this intubation was essentially straightforward with only minimal cricoid pressure to obtain the best view we could get.

"I did not note anything unusual, with no evidence of preceding injury or resulting scarring, and the application of cricoid pressure is a common occurrence in babies of this size and age."

That concludes the reading, my Lord.

MR JUSTICE GOSS: Thank you.

MR JOHNSON: Professor Kinsey, please.

PROFESSOR SALLY KINSEY (recalled)

Examination-in-chief by MR JOHNSON

MR JOHNSON: Welcome back, Professor Kinsey. For the sake of the recording, would you give us your full name, please?

KINSEY: My name is Sally Elizabeth Kinsey.

JOHNSON: Thank you. Just to remind the jury lest they have forgotten, I'm sure they haven't, your area of specialty, please?

KINSEY: Paediatric haematology.

JOHNSON: Thank you. You've come today to help us with the issue of... I've forgotten...

MR JUSTICE GOSS: [Baby N] and haemophilia.

MR JOHNSON: Sorry, I had haematology in my brain and I couldn't clear it to say haemophilia.

Sorry, to deal with the issue of haemophilia. First of all, just before we start, could we just deal with the six -- just so that there is a record of the fact that you have completed six separate statements in this case.

KINSEY: That is correct, yes.

JOHNSON: The first, 4 March 2020?

KINSEY: Yes.

JOHNSON: The second, 23 March 2020?

KINSEY: Yes.

JOHNSON: Number 3, 11 January 2021?

KINSEY: Yes.

JOHNSON: Then 30/6/21?

KINSEY: Yes.

JOHNSON: A couple, is it, on 16 October 2021?

KINSEY: Yes, that's correct.

JOHNSON: And then I think I said six originally, but actually the seventh is 23 August 2022?

KINSEY: Yes.

JOHNSON: Thank you very much. I'd like to work, if we may, primarily from your first statement, dated 4 March 2020.

Just so the jury understands, thereafter you were asked to provide further detail about various issues; is that right?

KINSEY: Yes, that's correct, yes.

JOHNSON: Some of your statements relate to the fact that you have been given access to expert evidence and the statements made by some or all of the other experts in this particular case?

KINSEY: Yes, that's correct.

JOHNSON: And also dealing with really administrative issues such as pagination and that sort of thing in the medical records?

KINSEY: Yes, absolutely.

JOHNSON: Would it be accurate to say that as a matter of fact, the medical records that you were presented with initially were a bit of a jumble?

KINSEY: Yes, that is the case, yes.

JOHNSON: All right. You have worked your way through them and, as I've already outlined, you are here to help us with the issue of haemophilia?

KINSEY: Yes.

JOHNSON: Dealing with that issue first of all, if we may, can we go to paragraph or section 4 of your report, initial report, of 4 March?

KINSEY: Yes.

JOHNSON: We've had a bit of an explanation from various witnesses along the way, but given this is your particular expert specialty, could you explain to the jury what haemophilia is, please?

KINSEY: Yes. Haemophilia is a bleeding disorder and it is quite a rare condition. It's one of the commonest -- it's top of the list, really, for difficulties, so people have often heard about it. Haemophilia is due to a reduction in a coagulation factor called factor VIII.

The coagulation system is there to prevent us from bleeding catastrophically following injury and there is a step wide cascade of factors which activate following contact with broken blood vessels that activate one protein, that then activates another, so you get what's called a clotting cascade to eventually end up by making a blood clot that fills the hole in a blood vessel so that the bleeding stops.

Factor VIII is part of that cascade and so individuals who have no factor VIII, or very low levels of factor VIII, are at risk of bleeding, which can be catastrophic bleeding.

Would you like me to continue?

JOHNSON: Yes, please. Thank you.

KINSEY: When we look at how severe haemophilia is -- factor VIII deficiency is called haemophilia -- we look at it in a range of nought to 100%. So 100% is within the normal range. Those with severe haemophilia have less than 1% levels of factor VIII in their bloodstream. People with levels of 1% to 5% have moderate haemophilia. Those with a factor VIII level of more than 5% and up to 40%, have mild haemophilia and everyone else is counted as being normal as far as haemophilia is concerned.

So people with factor VIII levels above 40% are in the normal range. So it's very tiny minority that is less than 1%, who are severe. And in this particular case, [Baby N] fell in the range of moderate haemophilia.

JOHNSON: Just looking at what you've just explained to us in pure percentage terms, if I took an exam and got between 1% and 5%, I wouldn't describe that as a moderate result.

So can you just put the moderate of 1% to 5% in everyday terms and explain why that is moderate?

KINSEY: Yes. Looking at the percentage and looking then at the effect in individual people, individuals with factor VIII levels of less than 1% will have very major bleeding, so they're likely to have spontaneous bleeding. These are individuals -- and they are mostly men or boys, and I'll come on to that later. These will be people where even walking and having pressure on the knee joints can cause bleeding into their joints.

So it's very common to have joint bleeding. It's common to have mouth bleeding and it's very common to have much more excessive bleeding than you'd expect to see following a minor injury. So this might be bruises.

And a particular time to identify haemophilia is in children when they have intramuscular injections or vitamin K following birth because that can cause major bleeding into the muscle at the site of the injection.

JOHNSON: Can I just stop you there, please? We've heard that in [Baby N]'s case, the administration of vitamin K was

deliberately not intramuscular. Would that be the explanation for why that decision was taken?

KINSEY: In [Baby N]'s case that is the reason for intravenous vitamin K not being given because there is a potential of him being haemophiliac because his mother is a carrier.

JOHNSON: Would that decision have been taken also because vitamin K, habitually, is given very early, isn't it?

KINSEY: It's usually given on the same day of birth.

JOHNSON: And by that stage, would it be the position that the precise position of the severity of [Baby N]'s haemophilia wouldn't have been established by that stage?

KINSEY: No, it wouldn't, no. It takes some time.

JOHNSON: So making sure that the position does no harm, first of all?

KINSEY: Yes.

JOHNSON: So that would be put off, all right. I'm sorry to have interrupted you. Would you carry on, please?

KINSEY: Individuals who have moderate haemophilia will have bleeds into the joints, into the muscles, or following dental surgery, et cetera, on a less frequent basis, but they would know what symptoms or their parents would know what symptoms to look out for with bleeding and bruising. So they are more likely to have factor VIII to help to manage an injury causing bleeding on a "when it's required" basis rather than on a regular basis.

But there are some differences. Some people seem to have a little bit more even though they fall into the moderate section.

JOHNSON: Thank you.

KINSEY: People with factor VIII levels more than 5%, who have mild haemophilia, will be covered with special administration of factor VIII, for instance if they were going to have surgery, to make a planned arrangement so that they wouldn't bleed catastrophically because we know that they have low factor VIII.

JOHNSON: Yes. Having looked at the blood tests for [Baby N], what was the number that one would attribute between 1 and 100 in his particular case?

KINSEY: From the information that I found, the first investigation which he had, within the first couple of days of life, showed that he had 3% factor VIII.

JOHNSON: Did that increase at a later date?

KINSEY: On the second occasion, the level had got up to 5%.

JOHNSON: Right. Do you have a date for that second administration?

KINSEY: I'm afraid I don't.

JOHNSON: But that's during his stay at Chester?

KINSEY: Yes, that is correct.

JOHNSON: So that puts him -- would that put him on the cusp of moderate to mild?

KINSEY: It would, but having had the first one being 3%, then I would say that it would put him firmly into the middle of moderate.

JOHNSON: Lest there's any -- it's important to be clear about this.

KINSEY: Yes.

JOHNSON: All right.

Now, I think you said a few minutes ago that boys are classically the people who manifest this particular condition. But perhaps you can explain why that is and also, if you would, the jury has heard that [Baby N]'s mother had a predisposition to this particular issue.

KINSEY: Yes. Haemophilia is an X-linked genetic disorder. So just to explain that, all of us have 46 chromosomes in our cells and in the nucleus of our cells. The chromosomes are parts of the genetic material which gives us the attributes that we have. It may be the colour of our eyes, our hair, how tall we are, et cetera.

The chromosomes are paired, so there are two chromosomes 1, 2, et cetera. But the final pair, which are called the sex chromosomes, are different between males and females. So the female sex chromosome is the X chromosome and the male is the Y chromosome.

If you look at the genetic material in these particular chromosomes, the female, the X chromosome, is much bigger than the Y chromosome. What that means, so far as biology is concerned, is there isn't a pair that then can allow for an abnormality on the missing part of what would be the extra part of the X chromosome. So if you have -- of the Y chromosome.

If you have two X chromosomes, you are female. If you have an X and a Y you are male. So if a woman is a carrier for haemophilia, that would mean that she has an abnormality on one of the X chromosomes. It is countered by the normal X chromosome, so that female individual is likely to have a lower amount of factor VIII, but usually in the normal range or at the top end of the moderate range or mild range.

JOHNSON: Can I check that I have understood that? So every female has two X chromosomes, no Y chromosome?

KINSEY: Correct, yes.

JOHNSON: Every male has one X chromosome and one Y chromosome?

KINSEY: That is correct.

JOHNSON: The genetic issue that causes haemophilia always occurs on the X chromosome?

KINSEY: Yes.

JOHNSON: And females have two X chromosomes, therefore if there is an issue, a haemophilia issue, on one of the X chromosomes, in all likelihood the other X chromosome makes up for the deficiency --

KINSEY: Exactly.

JOHNSON: -- in the X chromosome that has the issue?

KINSEY: Exactly.

MR JUSTICE GOSS: To some extent?

KINSEY: Yes, to some extent.

MR JOHNSON: Sufficient to take you to within the normal range?

KINSEY: Yes.

JOHNSON: So although your particular reading between 1 and 100 may be low, it is still sufficiently low to get you within the normal range?

KINSEY: Yes, usually.

JOHNSON: And from a practical point of view, therefore, females who have the haemophilia gene or the haemophilia abnormality to the gene don't suffer the day-to-day issues that males do because they don't have the compensation in the other X chromosome?

KINSEY: Exactly. That's right.

JOHNSON: I think I understand. I hope I do. All right.

So that's the background, if you like, the biological background to this particular issue?

KINSEY: Yes.

JOHNSON: As a result of that, genetically speaking, what is the probability of a male child inheriting haemophilia?

KINSEY: It's 50%. So it depends which of the maternal X chromosomes combine with the Y chromosomes from the father. So if it is the haemophilia-bearing X chromosome then that boy will have haemophilia.

JOHNSON: Okay.

KINSEY: If it's the other, then that won't be the case.

JOHNSON: So putting it in more day-to-day language, if your mother has the genetic predisposition, you as a male child have a 50% chance of inheriting it?

KINSEY: Yes.

JOHNSON: And you will have a problem to some degree because you don't have a compensatory extra X chromosome because you are a boy?

KINSEY: Yes, that is correct, yes.

JOHNSON: As a result of that, in cases where the medical profession have identified that a particular mother has this genetic predisposition, is it an important thing for the gynaecologists to do to determine the sex of the child whilst or before birth?

KINSEY: Yes, it's very important actually. So if a woman is known to be a carrier of haemophilia, it is very important that there is an attempt to be made to determine the sex of the

unborn child in order that birth can be managed sensibly to avoid issues for the child. Birth is quite a difficult process for people and therefore usually a caesarean section would be suggested.

JOHNSON: Yes. Whilst there may be a whole range of reasons why a C-section is adopted in these cases, is the principal reason to prevent the likelihood of bleeds in the brain during a normal vaginal birth?

KINSEY: Yes, that is absolutely the case, and one of the things that I didn't say is that the most important types of bleeding are intracranial bleeding and neck and throat bleeding and gastric bleeding or gastrointestinal system bleeding in people with severe haemophilia.

JOHNSON: Yes. The medical profession operates, at this stage of a child's entry to the world, on the basis that the child may have the most severe type of haemophilia?

KINSEY: Yes, one has to be in that position, yes.

JOHNSON: So it's a question of risk management at that stage?

KINSEY: Exactly.

JOHNSON: And as we've already determined, that risk management continues with the administration of vitamin K for the reasons you've explained?

KINSEY: Yes.

JOHNSON: And then there comes a stage fairly early where the blood will be tested?

KINSEY: Yes.

JOHNSON: And we've heard about that in this particular case. It will be established relatively early on where on the spectrum of the severity of this particular problem a particular child falls?

KINSEY: Yes, that is the case. It's also important to have a steady state. What I mean is that an individual who's having an investigation to measure factor VIII, because there are certain situations where factor VIII may actually go up in cases of stress, et cetera, so the initial -- the first blood investigation to identify the amount of factor VIII is obviously important, but it's also quite important to keep an eye on that to make sure that that wasn't an elevated level because there may have been some activation or activity, eg infection, which I

don't think there is in this case, that might increase the amount of factor VIII available in testing.

JOHNSON: Just dealing with that point that you've just raised, the question of infection so far as you have considered it, is in the context of whether or not it has increased the level of factor VIII; is that right?

KINSEY: Yes, that's correct. It's best to err on the side of caution and to administer factor VIII if it's felt that there may be a lower baseline factor VIII level.

JOHNSON: Thank you. In terms of the necessity to give factor VIII to a child in its first week or two of life in hospital, what is the requirement for that?

KINSEY: Well, having established that [Baby N] had a factor VIII level of 3%, putting him in moderate range, and that he was in hospital in a neonatal unit being closely watched, then there is no requirement to continue to give factor VIII, to keep levels at a particular level, because we don't need or want to give excessive amounts of any drug to a child or person unnecessarily. So it's important to keep an eye, a very close eye, on how the patient is, whoever they are, however old they are, to be certain that we're not missing anything and should there be a need for further factor VIII to be administered.

JOHNSON: So from a clinical perspective, therefore, what are the good reasons for not giving factor VIII to a child with a moderate level of haemophilia?

KINSEY: Well, as I've mentioned, children would have to have intravenous administration. This is not something that can be taken by mouth because it's a protein that would be destroyed by the gastric acid. So it has to be given either intravenously or intramuscularly, but we don't want to give it intramuscularly either because that can cause bleeding in the muscles so it would to be intravenous, which means putting in a venous cannula for administration. But also what we don't want to do is -- at the time that we're talking about, I just want to be very clear about this, the factor VIII which was being administered was very highly managed and it was clean with respect to some of the issues that you may have heard about the haemophilia problems in the 1970s, which were contaminated. So contamination has been removed so far as we know, but we can't absolutely guarantee that, we have to be careful about the drugs that we use.

JOHNSON: So the jury will have heard of, I'm sure, the contaminated blood scandal.

KINSEY: Yes.

JOHNSON: That was a situation in which many people, many of whom had blood disorders like haemophilia, were given blood plasma that had originated in the United States?

KINSEY: Yes, that's correct.

JOHNSON: And as a result, they had health problems such as HIV and that sort of thing?

KINSEY: And hepatitis, yes.

JOHNSON: So one of the reasons that children of [Baby N]'s age wouldn't habitually be given when they are immobile factor VIII is to guard against the possibility that one is giving something that actually isn't needed, but carries with it a risk in giving it?

KINSEY: Absolutely. That's correct, yes.

JOHNSON: So that's the thinking behind the deliberate non-administration of factor VIII?

KINSEY: Yes. At the same time as monitoring the patient to identify that there isn't any bleeding going on.

JOHNSON: Yes. So until there is positive evidence of bleeding, does it follow one wouldn't normally, particularly at this time in 2016, have been administering factor VIII to a child with the levels of factor VIII that [Baby N] had?

KINSEY: Yes, that's correct.

JOHNSON: Thank you. You have observed the fact that [Baby N] was scanned to detect the possibility of a cranial haemorrhage, a bleeding within the brain --

KINSEY: Yes.

JOHNSON: -- at a very early stage. Is there any evidence that that sort of problem existed with him?

KINSEY: No. He had a cranial ultrasound and subsequently an MRI scan, neither of which identified any intracranial bleeding.

JOHNSON: And if there was going to be a bleeding issue with a child of his age and gestation, is that the principal place that one would expect to find it?

KINSEY: Yes, it is. Yes, absolutely.

JOHNSON: You were then asked to look at two particular incidents; is that right?

KINSEY: Yes.

JOHNSON: I'm now looking at your paragraph 5.7. You went first to the fact that he was given, [Baby N] was given, vitamin K --

KINSEY: Yes.

JOHNSON: -- on the evening of 2 June 2016?

KINSEY: Yes.

JOHNSON: And you were then -- your attention was drawn to an issue that had happened at or just after 1 am on 3 June when [Baby N] collapsed?

KINSEY: Yes.

JOHNSON: I hope we can deal with this very quickly. Did you identify any issue relating to [Baby N]'s blood that, on the evidence, had any impact on [Baby N]'s collapse at that stage on 3 June?

KINSEY: No, I didn't.

JOHNSON: So whatever it was that caused that collapse, you can't help us with from your particular specialist perspective?

KINSEY: No, I can't.

JOHNSON: So can we move on to the 15th but look compendiously at the time between the collapse on the 3rd and the issues that arose in the early hours of the 15th? Did you see anything in that time frame, in other words 2 am on the 3rd to midnight of the 14th into 15 June, which was caused by a potential issue with [Baby N]'s blood?

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

JOHNSON: You went next, at your paragraph 5.9, to the issues in the early hours of the 15th. From the jury's perspective, my Lord, of course we're now looking at count 18 and to something that happened at about 7.15 on the morning, 07.15 hours, of the 15th. And then in the succeeding 3 hours or so, bleeding issues, which may or may not be associated with attempts to intubate [Baby N].

So I'd like to deal with two alternatives, please.

The first alternative is that [Baby N] was bleeding from the throat, or somewhere down his throat, before anyone had tried to intubate him. Okay? So in other words, a spontaneous bleed.

KINSEY: Yes.

JOHNSON: Can a spontaneous bleed be explained by [Baby N]'s haemophilia?

KINSEY: No, it can't, no.

JOHNSON: Why not?

KINSEY: First of all, a child of the age that he was at the time, which was about 14 days, 13 or 14 days, would not be in a position to damage themselves in the throat.

They just wouldn't put their hands in their mouth and they wouldn't be doing it deliberately of course because they wouldn't have that intelligence. So, no, one would not expect a child to just have a spontaneous bleed as they're in the moderate haemophilia group. We know he's not a severe haemophiliac.

JOHNSON: Yes. So from the perspective of your specialty, would you exclude the possibility that a bleed in that location could occur spontaneously in this child?

KINSEY: With respect to haemophilia, yes, that would not happen.
No.

JOHNSON: Now, if a laryngoscope was used on a child with haemophilia, could that cause bleeding?

KINSEY: Well, any instrumentation potentially could cause bleeding, so yes, it's a possibility.

JOHNSON: So therefore, from your expert perspective, does this become an issue of whether or not the laryngoscope was used before the bleeding or the bleeding occurred before the use of the laryngoscope?

KINSEY: No, one would not have expected to see any bleeding prior to instrumentation.

JOHNSON: So it's probably a very poor question from me. I'll put it a different way. If the bleeding occurred before the laryngoscope, you would from your perspective say that's not haemophilia?

KINSEY: Yes.

MR JUSTICE GOSS: Not attributable to haemophilia?

MR JOHNSON: Not attributable to the haemophilia.

KINSEY: Yes.

MR JUSTICE GOSS: Or to a child injuring him because we know a child physically couldn't do it. So we know a spontaneous bleed could not be attributed to the haemophilia.

MR JOHNSON: Whereas if bleeding occurred as a result of the use of the laryngoscope, that could be the result of or attributable to the haemophilia?

KINSEY: Yes, if there was no bleeding evident before and then subsequently after some instrumentation there was bleeding, yes.

JOHNSON: Moving on to some other issues, please. You deal or you recognise this issue as having been identified at the time; it's your paragraph 5.11, Professor Kinsey.

KINSEY: Yes.

JOHNSON: It's the issue of the possibility of [Baby N] having suffered a pulmonary haemorrhage, so bleeding from the lungs.

KINSEY: Yes.

JOHNSON: From the point of view of your field of expertise, do you regard a pulmonary haemorrhage as being a viable explanation for what the treating medics saw in [Baby N]?

KINSEY: No, it isn't. The child had been well until such time as he suddenly became unwell. So that was a sudden thing. A pulmonary haemorrhage is very unlikely in a child of that age. It's very unlikely given the observations at the time. So I agree, it's a possibility that blood from within the lungs has created blood in the oropharynx, but it doesn't seem a likely situation or scenario, no.

JOHNSON: From your perspective, would [Baby N] have recovered the way he did had he suffered a pulmonary haemorrhage?

KINSEY: No. A pulmonary haemorrhage is a very serious condition and this is a condition where the blood -- the lungs fill up with blood, which is bleeding from the lungs themselves, and so the child would be very, very compromised in that situation and this doesn't seem to have been the case. [Baby N] recovered very promptly, as you mentioned.

JOHNSON: I'm looking at your paragraph 5.14 now. As part of the treatment that was given to [Baby N], and we heard yesterday at the end of the day about this, he was given -- a venous line and an arterial line were placed in him before he was moved from Chester to Liverpool.

On your reading of the notes, so far as those matters were concerned, did you detect anything which informed your view as to [Baby N]'s bleeding?

KINSEY: The reason for mentioning it is that obviously if a needle is being put into a vein and/or an artery, then there is a potential for causing bleeding and there is no record of any bleeding associated with the insertion of intravenous and intra-arterial lines.

JOHNSON: And given his predisposition to bleeding as a result of haemophilia, would you expect a record to have been made if it had occurred?

KINSEY: Yes, it would be something that people would be looking out for, yes, so they would need to manage it if there had been some bleeding surrounding the insert of the -- the area around the insertion of the needles.

JOHNSON: Now, the jury heard yesterday about a particular appearance of [Baby N]'s epiglottis, that it was swollen, that it was, to use the word of the particular doctor, redder than the surrounding mucosal tissue. Would haemophilia explain that?

KINSEY: To have spontaneous bleeding in the epiglottis in a child who's not in a position to injure themselves, the answer to that is, no, this wouldn't be haemophilia causing this problem.

MR JUSTICE GOSS: So would not be attributable to haemophilia?

KINSEY: Yes, it would not be attributable to haemophilia, yes.

MR JUSTICE GOSS: Mr Johnson, I don't know how much longer you're likely to be. I know Mr Myers, I anticipate, will have some questions -- I say I know.

MR MYERS: Yes. Not a huge amount, but there are some questions.

MR JUSTICE GOSS: I'm just wondering whether...

(Pause)

MR JOHNSON: I was just thinking about whether I really needed to ask Professor Kinsey any more questions and I don't think so.

MR JUSTICE GOSS: We'll have the break anyway and you can think about that and we'll resume in 10 minutes. All right? Thank you.

(12.00 pm)

(A short break)

(12.10 pm)

MR JOHNSON: I have no further questions.

MR JUSTICE GOSS: Thank you. Mr Myers.

Cross-examination by MR MYERS

MR MYERS: Professor Kinsey, just to assist so it is quite clear what we're dealing with, there's no suggestion here, we are not making any suggestion, that this is something to do with spontaneous bleeding. That's not the suggestion. In fact, that was made clear with one of the witnesses yesterday.

KINSEY: Yes.

MYERS: So we're not suggesting that accounts for anything in this case. And although the issue of pulmonary haemorrhage has been referred to so far by one or other prosecution witness, we are not looking at that or asking you to find anything here is consistent with pulmonary haemorrhage. Just so we can all be clear where this is.

The primary issue so far as bleeding is concerned on these counts is what physical act caused it or could have caused it or how, if that can be established. So to that extent, the part that any haemophilia may or may not play is relevant from your expertise, Professor Kinsey.

KINSEY: Yes.

MYERS: But I say that so we can focus on where this fits in and to assist all of us. So it's not about spontaneous haemorrhage and it's not about pulmonary haemorrhage.

Now, trauma, when we use the word trauma in medical situations, that can either be accidental or deliberate; is that correct?

KINSEY: That's correct, yes.

MYERS: And so when we look at the points that I'd like to look at with you, Professor Kinsey, where we are heading and what we have in mind is what difference, if any, [Baby N]'s haemophilia may have made if there was trauma, be that accidental or deliberate?

KINSEY: Yes.

MYERS: That's where I'm heading. So it's quite clear to everyone, that's what we're dealing with.

The first thing I would like to just confirm is the position with factor VIII so far as -- his factor VIII, so far as we can do so. You've explained to us the different levels of factor VIII and where that places haemophilia on a scale from severe to mild to no haemophilia.

KINSEY: Yes.

MYERS: At the time of birth, [Baby N] -- soon after, anyway, [Baby N] was assessed as being 3% factor VIII, wasn't he?

KINSEY: Yes, he was.

MYERS: You have explained to us 3% places him in that moderate level of 1% to 5%; is that right?

KINSEY: That's what I've said, yes.

MYERS: A baby who is at that level, if they bleed, is it that they are more likely to bleed more profusely than a baby who has normal factor VIII levels?

KINSEY: Yes, absolutely.

MYERS: Does it also mean that in the event of any trauma, that trauma itself is more likely to cause a bleed?

KINSEY: Yes, it is.

MYERS: So they are more sensitive to trauma in that sense; is that correct?

KINSEY: Yes, it is.

MYERS: And then in the event of a trauma which makes blood flow, the blood flow will be more profuse than it would otherwise be?

KINSEY: Yes.

MYERS: Your recollection was that at some point during his course in the hospital, [Baby N] went from 3% to 5%. I'm going to look to see if we can identify this.

KINSEY: Yes.

MYERS: You say he went up to 5%?

KINSEY: Yes.

MYERS: Which is still at the upper end of moderate factor VIII deficiency; is that correct?

KINSEY: Yes, it is.

MYERS: Right. Just to try and pin down when this is, we're going to look at a few pages that will appear on the screen. The first couple are not in our bundle, my Lord, but we're going to put them up now. I'm going to ask Mr Murphy to put up page 19165, which are notes by Dr Ukoh for 13 June.

KINSEY: Yes.

MYERS: So just making sure we can orientate ourselves. The first event regarding [Baby N], the first count we're dealing with, is in the early hours of 3 June. We've moved beyond that.

KINSEY: Yes.

MYERS: Then we deal with two counts on the 15th. So this is 13 June, a note by Dr Ukoh at 04.50. At this point, if we look under "Probs (3)" can you see:

"Presumed haemophilia A. Factor VIII..."

3% is how that's recorded at this point.

KINSEY: Yes.

MYERS: And then if we move next, please, to page 19167. And we look at the top half, Professor Kinsey. It's a document we are familiar with which are notes prepared in advance of something that's called the grand round at the Countess of Chester Hospital. It might be an expression used at other hospitals, the grand round, is it?

KINSEY: Yes, it tends to be a sort of weekly event.

MYERS: This is for 14 June, so the following day. If we look down at the problem list, it's got:

"Presumed haemophilia A, factor VIII 3%."

We have still got 3% there?

KINSEY: Yes.

MR JUSTICE GOSS: It's in very similar terms. It looks as though they are both taken from a document that these doctors have looked at.

KINSEY: I would agree entirely.

MR JUSTICE GOSS: So there's a common source for both these entries in all probability.

MR MYERS: Yes.

KINSEY: I absolutely agree.

MYERS: That must be so. If we next move to tile 178, Mr Murphy. You'll see we are now on 15 June. Again, assisting all of us, the second count relating to [Baby N], which is on 15 June, is round about 7.15 am. And we know, Professor Kinsey, there was an attempt to intubate [Baby N] some time around about 08.00 that morning by [Dr A].

KINSEY: Yes.

MYERS: That's just to orientate us. These are notes by Dr Ukoh again at 09.45. I'm going to take us to the second page of them where we can see where we're up to with factor VIII. If we go here, we can see under the plan there's no level included but it says:

"Needs factor VIII."

That's what's put here at this point.

KINSEY: Yes.

MYERS: And we know there was blood identified in the oropharynx that morning at some point around the intubation, that's in issue.

KINSEY: Yes.

MR JUSTICE GOSS: But earlier in this note there's no reference to the level?

MR MYERS: No, there isn't here. We're about to get there, my Lord.

MR JUSTICE GOSS: Yes.

MR MYERS: We know as a matter of record, just to assist us, that factor VIII was given for the first time that day at 11 o'clock and we've got that, we've seen that on the intensive care chart. I won't go to that, we've all got that, we've seen it.

Then I'm going to ask if we could go forwards next, please, to tile 275. That's not the tile I'm looking for. It's J19175, Mr Murphy. It's 225. That was my fault. Tile 225.

Now if we look here perhaps we can look at the written part of this page. We're moving on through 15 June. We know that the factor VIII was given at 11 o'clock. Then if we move, we can see a note at 11.44, and a reference to "kindly bringing in more factor VIII". Can you see that? It's just in the centre of that page, Professor Kinsey.

KINSEY: Yes.

MYERS: So there's been an administration of one dose, a request for more. And then if we look down at the note of Dr Andrew Henton at 13.45 we can see:

"Factor VIII now recorded at 5%."

Can you see that?

KINSEY: Yes, I can see that.

MYERS: This is to assist. If there's an earlier time, of course I invite anyone to identify that, but looking through the clinical notes this appears to be the point at which we first see a reference to 5%.

KINSEY: Yes.

MR JUSTICE GOSS: If you look at the top of that, the first entry, 11.00 hours, "Repeat F8 levels". So it may be that that is...

MR MYERS: That's Dr Ukoh's writing.

MR JUSTICE GOSS: Dr Ukoh is saying at 11.00 to repeat the factor VIII levels and then at 13.45 that's the result of the repeat could that be or am I just making...?

KINSEY: Well, it could be.

MR JUSTICE GOSS: Could they do it that quickly?

KINSEY: Well, it... Yes, they can. Certainly the prothrombin time, the PT, and the APTT they can do instantly. And that would give us some idea because the APTT is the test that would identify factor VIII as being the issue here. That's long -- that means there is a deficiency.

So it's not above the 40% level. And it says factor VIII at 5% at the bottom.

Now, the factor VIII analysis takes longer to do, so that -- I'd be surprised if it would be turned around in less than 2 hours. But they could do it quickly if necessary.

MR JUSTICE GOSS: Yes. Anyway, it doesn't really matter.

As Mr Myers has said, that's apparently the first entry to the level being 5% at 13.45.

MR MYERS: It's the first one I've identified. If that's in error, then I welcome correction. That's going through the notes, my Lord, and that seems to be where it's first recorded.

KINSEY: I agree.

MYERS: In fact could that reflect the fact that [Baby N] has started to receive factor VIII by this time?

KINSEY: It may well do, yes.

MYERS: Right. So if that's correct, when we're dealing with the bleed that is identified at the time of intubation round about 8 o'clock that morning, from what we have he would still be at 3% at that time?

KINSEY: No, not necessarily, actually, because if he had a bleed then he'd be using up the factor VIII that he did have, minimal though it was. So actually, the starting value may be lower, so he may have got down to 1% or 0% because he is consuming it.

MYERS: Right. In any event, it appears the 5% reflects the receipt of factor VIII at some time that morning?

KINSEY: Yes.

MYERS: All right. So that doesn't tell us what the level was at 8 o'clock when he bled?

KINSEY: No, I don't think it can do, no. And that may not be -- well, that's not a high enough level to stop bleeding anyway.

MYERS: Right. That's the next thing I wanted to establish. So we're still in the zone of bleeding being more profuse with this level of factor VIII?

KINSEY: Yes, absolutely.

MYERS: Again with some general matters, Professor Kinsey, the process of intubation, you have dealt with this but can I confirm, depending on the circumstances, that is capable of causing some bleeding in a baby, isn't it?

KINSEY: Yes.

MYERS: And the process of using a nasogastric tube or orogastric tube, we know the difference between these procedures now, is that capable ever of causing bleeding?

KINSEY: I think any instrumentation, so ie putting something external into that area, has a potential for causing trauma and hence bleeding.

MYERS: You've explained to us why it may not be necessary or desirable to give factor VIII, even though a baby like [Baby N] has been identified to have a low level. You've explained why that is the case.

KINSEY: Yes.

MYERS: It may not be given immediately?

KINSEY: Or at all.

MYERS: Or at all?

KINSEY: Yes.

MYERS: But what you said was that the practitioners would keep a close eye on the baby to make sure they're missing nothing?

KINSEY: Yes.

MYERS: In other words, if anything happens which means there may be a requirement, then of course obtain the factor VIII and then give it; is that correct?

KINSEY: Absolutely, and in a situation like this, in the area that we're talking about, it's critical.

MYERS: Yes, critical. And with that in mind, even if it's not given to the baby from birth, would it be in your opinion good

practice to at least have it in stock so it's ready to go if it's needed?

KINSEY: Yes, it would be good practice.

MYERS: And that's something really that would stand out if you'd got a baby who had got a factor VIII deficiency, isn't it?

KINSEY: Yes, it is, yes.

MYERS: Dealing with the 15 June events, which we've been looking at here and what you're focused on, as the prosecution have explained to us, there's an issue, a factual issue, about the order in which intubation and bleeding takes place --

KINSEY: Yes.

MYERS: -- and you've been asked about that.

KINSEY: Yes.

MYERS: You've explained that intubation, as with any instrumentation, may carry a risk of causing bleeding.

May. It depends on the circumstances. Is that correct?

KINSEY: Yes.

MYERS: And if there's a baby with lower than normal factor VIII levels, with haemophilia, in the way, for instance, that [Baby N] had, does that increase the risk of bleeding from trauma?

KINSEY: Um... Not necessarily, no.

MYERS: If there is trauma, does that mean that bleeding is more likely?

KINSEY: If there is trauma?

MYERS: Yes, if there is trauma.

KINSEY: Yes, if there is trauma then it is more likely.

MYERS: And what you have said already about haemophilia leading to bleeding that would then be potentially more profuse would also apply?

KINSEY: Yes, it would.

MYERS: And profuse, meaning more of it?

KINSEY: Yes, more of it, yes.

MR JUSTICE GOSS: Slower to clot?

KINSEY: Well, not clotting is the problem here with haemophilia, so the clots are very fragile and break down immediately, yes.

MR MYERS: Thank you, Professor Kinsey. Those are the questions I've got.

Re-examination by MR JOHNSON

MR JOHNSON: Could I just clarify what we should take away from the last few questions and answers? You were asked whether haemophilia increased the risk of bleeding from trauma and you said not necessarily. And then you appeared to give an answer which could be interpreted as saying the opposite to that and it's probably a deficiency in understanding on my part rather than on your part in the way you expressed yourself. But can I give you an opportunity to clarify that? Somebody who suffers from haemophilia, are they more likely to bleed or is it that when they start to bleed, they don't clot?

KINSEY: It is in fact both. So individuals who have severe haemophilia can have spontaneous bleeding.

JOHNSON: Let's leave people with severe problems out of it and focus, if we may, if only for my own benefit so that I don't get confused, on people who fall into [Baby N]'s category.

KINSEY: Yes.

JOHNSON: So somebody in [Baby N]'s category, who is immobile at his age, is he more likely to bleed than the child in the next cot of the same gestation who has a normal factor VIII level in their blood?

KINSEY: In a steady state situation, no -- well, he is at greater risk, but not from spontaneous bleeding.

JOHNSON: Yes. So he won't just bleed for no reason?

KINSEY: No, he won't just bleed for no reason. This is why I said earlier -- what I said is that individuals who are in the mild or moderate -- sorry, I mean moderate -- group is that they are not given factor VIII on a regular basis because it is not required.

JOHNSON: Yes. Are you saying that it takes less trauma to induce, to start bleeding in somebody with [Baby N]'s

characteristics as compared to a child with factor VIII within the normal range?

KINSEY: Yes. I mean, the other way round. You need more trauma in an individual with normal factor VIII levels to induce bleeding or a collection of bleeding, bruising under the membranes. You might not necessarily see blood outside but you might see swelling.

JOHNSON: So does it follow that, just picking up on your distinction between bleeding and bruising, bruising in effect is bleeding under the skin, isn't it?

KINSEY: Well, bruising wherever it happens is contained -- well, it can be contained within an area where it isn't going to -- it can then have pressure around it, which would reduce the bleeding because of pressure in the area closing the hole. Does that answer your question?

MR JUSTICE GOSS: I think in simple terms, blood comes from a vessel?

KINSEY: Indeed, yes. It does.

MR JUSTICE GOSS: So in other words, it can be an artery, a vein, which is a big carrier of blood, or it can be a little capillary vessel from which one can bleed?

KINSEY: Yes.

MR JUSTICE GOSS: If you bang your thumb with a hammer you can bruise it and that's subcutaneous bruising, bleeding under the skin you get?

KINSEY: Yes.

MR JUSTICE GOSS: Are you saying that someone of [Baby N]'s category, in terms of haemophilia, if he is subjected to a trauma, that his vessels are such that he is more likely to bleed than a child otherwise of his characteristics without haemophilia?

KINSEY: He is more likely to bleed.

MR JUSTICE GOSS: And that if he does bleed, his bleeding -- the blood will be slower -- will not clot?

KINSEY: The blood will not clot.

MR JUSTICE GOSS: You corrected me before. Will not clot.

Therefore there will be more blood, it'll either be subcutaneous under the skin or, if the trauma causes a rupture of the skin --

KINSEY: Then you'd get bleeding out of it.

MR JUSTICE GOSS: But there has to be a rupture of the skin?

KINSEY: Indeed, yes.

MR JOHNSON: Just picking up on that final point, somebody suffering with haemophilia, like [Baby N], does it take any more to rupture their skin than it would take to rupture the skin of a child who fell within the normal range?

KINSEY: Um... Technically, no, because the skin's integrity is the same. It's not a skin issue. But if the skin becomes stretched because there's bleeding underneath it or a bruise underneath it, then that will be more likely to burst open.

JOHNSON: So the pressure of the bleeding would overcome the strength of the surface of the skin?

KINSEY: Yes.

MR JOHNSON: Yes. Does your Lordship have any further questions.

MR JUSTICE GOSS: No, thank you, I think I've asked enough.

Mr Myers, are there any questions you want to ask arising out of my questions?

MR MYERS: No, I'm grateful. Thank you.

MR JUSTICE GOSS: Thank you very much for coming back and giving your evidence in relation to the issues that you have today. I assume not required again?

MR JOHNSON: I don't think so.

MR JUSTICE GOSS: Are you aware of your being required again?

KINSEY: No, I haven't been.

MR JUSTICE GOSS: I'm told you won't be required again, so thank you very much.

(The witness withdrew)

MR JOHNSON: Dr Evans, please.

DR DEWI EVANS (recalled)

Examination-in-chief by MR JOHNSON

MR JOHNSON: Welcome back, Dr Evans. For the record would you identify yourself, please?

EVANS: Dr Dewi Evans.

JOHNSON: Thank you. I hope I'm correct in saying that you have completed five separate reports or statements on the case of [Baby N].

EVANS: I have.

JOHNSON: Thank you. They are dated, for the record, 3 June 2018?

EVANS: Correct.

JOHNSON: 17 January 2019?

EVANS: Correct.

JOHNSON: 24 June 2021?

EVANS: Correct.

JOHNSON: Then there is a pair on 21 October 2021?

EVANS: Yes.

JOHNSON: As before, your initial statement was a sift?

EVANS: Yes.

JOHNSON: The second statement was more considered?

EVANS: Yes.

JOHNSON: And then subsequently, you've dealt with administrative issues such as pagination, but you've also given us some further detail on issues that have been raised with you after your considered report?

EVANS: That is correct, yes.

JOHNSON: Thank you. Just to put this case into the overall context, this was, I think, the 29th case that you were asked to look at?

EVANS: Yes.

JOHNSON: Thank you. I would like to take, if we may, as a template for your evidence the report of 17 January 2019. There did you set out the circumstances surrounding [Baby N]'s birth --

EVANS: I did.

JOHNSON: -- which we have heard in evidence?

So far as the material that you were given, did that consist of the medical records from the Countess of Chester, which included some radiology material?

EVANS: Yes.

JOHNSON: An index and also some medical records from Alder Hey Hospital --

EVANS: Correct.

JOHNSON: -- in Liverpool?

EVANS: Yes.

JOHNSON: Taking up, if we may, your report at paragraph 4 -- I'm looking at your overview to start with -- did you note the breathing issues, the grunting issues, that had occurred shortly after [Baby N] was born?

EVANS: Yes, I did. These lasted for a few hours, soon after his birth, but settled quickly.

JOHNSON: Did you also note the results of the blood tests, the coagulation results in particular?

EVANS: I did and noted that the factor VIII value was recorded at 3%.

JOHNSON: Yes. Did you, as a matter of fact, towards the end of your report, invite the police to consult somebody with the sort of specialist knowledge that Professor Kinsey has?

EVANS: Yes.

JOHNSON: Did you go on to consider the circumstances surrounding [Baby N]'s collapse at shortly after 01.00 hours in the early hours of 3 June?

EVANS: I did.

JOHNSON: And in particular, did you refer to the note made at the time by the doctor concerned, saying that [Baby N] had desaturated down to 40%?

EVANS: Yes.

JOHNSON: He was unsettled, there was an increased work of breathing?

EVANS: Yes.

JOHNSON: He looked mottled?

EVANS: Yes.

JOHNSON: And dusky?

EVANS: And screaming.

JOHNSON: And screaming, of course, yes.

EVANS: Yes.

JOHNSON: You referred also, I think, to the nursing note entry made by Nurse Booth, which recounted the fact that [Baby N] had continued to cry, as it was put in the nursing note, for 30 minutes?

EVANS: Yes.

JOHNSON: Thereafter, did you review the medical records covering the time following that and the events in the early hours of the morning of 15 June?

EVANS: Yes, I did. What I found was that having recovered from this event on 3 June, his progress was pretty uneventful really. He was making satisfactory progress as you would expect of a baby who was premature but otherwise well.

JOHNSON: Did you refer at your paragraph 13 to the events at 01.45 on the morning of 15 June?

EVANS: I did.

JOHNSON: For anybody's note, they're at tile 80 and are [Dr A]'s notes.

EVANS: Yes, I did. I heard [Dr A]'s testimony yesterday and the note that he was -- had noticed mottling, which is a discolouration of the skin, and this -- but otherwise his heart rate and his heart sounds were normal, he had good air entry in

his lungs and his abdomen was normal and there were normal bowel sounds. They also did -- [Dr A] carried out blood gases, capillary gases.

They were all satisfactory. The lactate value was 3.2, which is minimally raised, but in isolation is not of clinical significance.

JOHNSON: Yes. And that in effect is what he told us yesterday?

EVANS: Yes.

JOHNSON: Did you move on to consider [Dr A]'s notes which were at tile 84 in the second [Baby N] sequence and some desaturations which had been noted on the monitor?

EVANS: Yes. Again -- we're talking about 05.15 hours?

JOHNSON: Yes.

EVANS: Again, some more blood tests. So first of all, the capillary refill time was 3 seconds, and you'd want it to be 2 seconds or less really, so it's slightly increased and could be indicative of baby becoming unwell for some reason. His white cell count was 7.4, which is normal, in other words there was no indication of infection from the white cell count value. Platelet count 309, which is normal again. CRP value was less than 1, which again is a marker of infection, and a value of less than 1 is normal. But [Dr A] was sufficiently concerned, I think because the capillary refill time was slightly prolonged, to stop oral feeds and give a bolus intravenous infusion of 10% sodium chloride, which is standard practice, and he also added an antibiotic.

JOHNSON: Again, we heard, I think, from [Dr A] about that yesterday.

EVANS: Yes.

JOHNSON: Did you move on then to consider the notes that had been made by [Dr A] at 08.00 hours that same morning?

EVANS: I did. These notes indicated a far more significant deterioration in [Baby N]'s condition because his oxygen saturation had dropped to 48%. Now, that is low and life-threatening. His heart rate was 80. That is very low and very, very concerning. And those values were sufficient for him to require what he called bagging or being bagged up. He also had a mottled appearance of the skin once more and also reduced tone -- in other words, he was more floppy.

So these are very concerning matters and were sufficient for him to be transferred to the intensive care nursery.

JOHNSON: Yes. You recorded additionally, I believe, the fact that [Baby N] had been given medication in preparation for an elective intubation?

EVANS: Yes. He received morphine, which is a drug given for pain relief and for -- yes, pain relief. He also was given suxamethonium, which is a muscle relaxant, which one gives as a pre-med in anaesthetics to relax the muscles if you're preparing intubation. And he had atropine as well. So anyway, there were three efforts made. They were, sadly, unsuccessful.

JOHNSON: Yes. The jury has heard evidence yesterday concerning blood being seen at this stage of the process and no doubt the jury will come to their own conclusions in due course. But you have noted that fact, haven't you?

EVANS: Yes, and it's clear from the evidence I've heard yesterday and from the notes I'd seen before that the blood was noticed in the oropharynx, in other words at the back of the throat, and the blood was present prior to the efforts at intubation.

JOHNSON: That, as you will understand, Dr Evans, I think is disputed on behalf of the defence.

EVANS: Okay, right. That was my understanding anyway.

JOHNSON: Yes. That's one of the issues that the jury will in due course be invited to determine.

Did you go on to consider [Dr A]'s notes of [Baby N]'s vital signs together with those noted by Dr Ukoh at 10 am that morning?

EVANS: Yes. The 10 am notes noted a respiratory rate of 28, which is normal, a heart rate 149, normal, and oxygen saturation 100%, which again is clearly satisfactory.

His blood pressure was 88/51, which is absolutely fine.

And on this occasion his capillary refill time was less than 2 seconds, which is normal. In other words, showing normal perfusion of the skin. And again there was an additional note about there was no evidence of what they describe as abnormal posturing, in other words his tone was not abnormal. So these were normal findings.

JOHNSON: Did you go on to note a later desaturation at or about 14.50 hours that afternoon?

EVANS: Yes, I did. Yes, I did. Again -- which part is this?

JOHNSON: We're at paragraph 19 of your report.

EVANS: Yes. He desaturated once more at 2.50 in the afternoon and the entry notes blood in the oesophagus and in the nasogastric tube and he required some resuscitation, he required bagging and, again, needed or was given two fluid boluses of sodium chloride, which is standard treatment in a situation of this nature.

JOHNSON: We then heard evidence which you have summarised concerning a continuing series of events, which culminated ultimately at about 19.40 that same day when preparations were being made by the Alder Hey team to intubate [Baby N].

EVANS: Yes. Very striking that a number of people were unable to intubate [Baby N] during this afternoon, which is why they called the Alder Hey folk, yes.

JOHNSON: And we heard that [Baby N] required, after his collapse at that stage, CPR?

EVANS: Yes.

JOHNSON: And received multiple doses of adrenaline?

EVANS: Yes.

JOHNSON: And sodium bicarbonate?

EVANS: Yes. Six doses of adrenaline in all and sodium bicarbonate, yes.

JOHNSON: As part of your review did you look at the observation charts, in other words the yellow and white charts which the jury have had copies of?

EVANS: I did.

JOHNSON: Did you also review the nursing entries, both from 3 June and 15 June?

EVANS: I did. Yes, I did.

JOHNSON: So just going to page 20 of 27, please, Dr Evans. It's your observations section, paragraph 58. What overall view, in a

nutshell, did you take of [Baby N]'s progress from his birth until his collapse shortly after 01.00 hours on 3 June?

EVANS: My overall observation was that it was known that his mother was a carrier for haemophilia, but that he was well following his emergency caesarean section, not requiring much in the way of resuscitation. So therefore, that would have been satisfactory for a baby who's 34 weeks of age, gestational age.

JOHNSON: Did you regard his deterioration at 01.00 hours on 3 June as being an everyday type of occurrence for a child in his position?

EVANS: No. In my sift report I overlooked it, let's be frank about that, but it was rather unusual in that he seemed to be fine at about 9 hours of age, and what was striking was this very sudden and very significant drop in oxygen saturation to 40%, so very low. He responded with 100% oxygen. We heard from the doctor who said she was crash called to something else, to another patient, sorry, and when she came back he was asleep, in air, with normal saturations. Therefore this very sudden onset of something with a very quick improvement, which is something very unusual.

JOHNSON: Yes. Now, this apparent desaturation was associated with what Dr Loughnane described as screaming.

EVANS: Yes.

JOHNSON: Did you think that was significant, the use of that particular word?

EVANS: Well, it's very unusual for babies to cry other than when you're doing blood tests or causing some sort of discomfort, usually by putting intravenous lines in or taking blood tests from a heel prick. So they will cry.

But once you stop the procedure, they usually stop crying fairly quickly. They don't carry on crying.

As for screaming, this is an incredibly unusual description in my experience of a baby, 6 weeks premature, screaming. That's very unusual. And again continuing to cry for half an hour. So that was something that, having looked back on these notes, struck me as very unusual.

JOHNSON: Did the length of time, the 30 minutes -- is that -- it may be implicit from what you've already said, but is that unusual?

EVANS: Yes, the length of time is very unusual -- well, the fact of screaming, that the term screaming was used, is very, very unusual for a doctor to describe a baby in a baby unit, and the fact that it was the nurse, actually, who recorded the crying continuing for 30 minutes. So that is an exceptionally unusual finding in a neonatal unit and it's not what you would get because a baby is hungry, for instance.

JOHNSON: So did you come to a conclusion as to what, in your view, had caused [Baby N] to react in that unusual way?

EVANS: By this time, of course, this is case 29, and I was aware of, you know, all the other cases we'd done because these files arrived with me later than the others, the first 28. It struck me that this baby might -- that something had been done to this baby to cause this episode of screaming. And so I went back over my notes, I went back over the overarching view I made in relation to injection of air into the circulation from other scientific papers, and there were a couple of them, a couple of papers, who described babies who had accidentally received an intravenous injection of air into the bloodstream and screamed, collapsed and died.

Now, all of that -- none of this was known to me before I became involved with this investigation, and of course it repeated what we've heard in previous cases with [Baby I], [Baby I], case 8, possibly [Baby E], where one heard, I think with [Baby E], this horrendous cry, as his mother described it.

[Baby I], again, a significant cry.

We know that babies who get intravenous air for whatever reason, there is an increased risk, hardly (inaudible) because they're small, of course, so you don't need as much air to cause problems. And secondly, they still have this hole in the heart, this foramen ovale, so any air can get from the right side of the heart into the left side of the heart. If it gets into the left side of the heart, it could get into a heart blood vessel, coronary artery. So technically, it could cause a heart attack, you know, which is incredibly painful. I can't prove any of this by the way.

JOHNSON: Let's stick to, if we may, rather than getting involved more arcane areas, whether you thought that this particular event was a naturally occurring event, in other words whether it was one of the vagaries in behaviour of an infant on a neonatal unit or whether there was some other cause for it.

EVANS: This was unusual. This was unusual. This baby, very quickly following his birth, had recovered. So he was well at 9 hours of age. In other words, there was no grunting, one did not

have any of the features you get with breathing difficulties. So there was none of this and then suddenly, out of the blue, he collapsed very, very precipitously and this is what is remarkable.

Equally remarkable is the fact that he recovered so quickly. So for instance, if he had deteriorated because he was sickening for an infection, we're talking 3 June now, I would not have expected him to be back asleep, breathing in air, you know, soon afterwards. So therefore all of this, as we've heard several times, is incredibly unusual and not the sort of thing one has seen, despite one having spent most of one's career looking after babies in baby units.

JOHNSON: So far as the issues of 15 June are concerned, the events of the early hours -- and by the early hours I'm talking about from midnight through to before 07.00 hours, okay?

EVANS: Right, yes.

JOHNSON: In that period of time, did you draw any conclusions from the evidence as it was presented to you on paper and as you have heard it during this trial?

EVANS: As I've heard it during this trial, and clearly it's much easier to form an opinion having heard everyone else's evidence, I would say that during the early hours his condition is what could be explained -- could be explained -- on the basis he was sickening for an infection. In other words, he was not quite as well, skin mottling, you know, that kind of thing, but not -- in other words, if I'd been there I would have done what [Dr A] had done and considered, "Hmm, he is sickening for an infection". We know the results subsequently did not prove an infection, but that is what I would have done. I would have done what [Dr A] did.

JOHNSON: You say the results didn't prove an infection thereafter, but looking at those results in the succeeding days, was there any evidence of an infection?

EVANS: No, none at all.

JOHNSON: But thereafter, there are several collapses from 7.15 onwards. What view did you take of those events?

EVANS: I'm not sure what -- it's quite difficult what to make of those. The key event for me was the fact that there was a deterioration around 8 am, which was more significant. In other words, his oxygen values dropped, his heart rate dropped significantly, and the most significant finding for me was that the doctors decided to intubate him, correctly, but when they

put a laryngoscope in to visualise the vocal cords, the back of the throat contained lots of blood --

JOHNSON: Yes.

EVANS: -- which meant that they were unable to intubate him, so they carried on with BiPAP.

JOHNSON: So far as that is concerned, we've heard the factual evidence, we know where the issues lie between the prosecution and the defence. Would it be fair to say that your expert opinion can't really assist the jury in deciding whether the blood was there before the intubation or it was the intubation that caused the blood? It's a matter for them to look at the evidence and make their own minds up?

EVANS: Yes. If a doctor who had passed a laryngoscope said there was blood there, well, there was blood there.

I can't help in that situation.

JOHNSON: Okay. But what view -- on the assumption that the blood was there before the laryngoscope went in, what conclusion did you draw?

EVANS: Right. My conclusion was that there was bleeding.

I obviously can't claim haematology expertise. I know the baby had haemophilia. I've read Professor Kinsey's report and heard her evidence this morning that babies whose haemophilia is moderate will not spontaneously bleed. It was my opinion that the bleeding was the result of trauma to his upper airways.

JOHNSON: Yes. The issue for the jury is how the trauma is caused?

EVANS: Yes.

JOHNSON: Is it the laryngoscope or is it something else?

EVANS: Yes.

MR JOHNSON: All right. I note the time, my Lord, but I'm almost finished.

MR JUSTICE GOSS: I think then finish if you're talking about a few minutes.

MR JOHNSON: Yes, thank you.

Did you in your report defer -- it's your paragraph 76 -- to a paediatric haematologist?

EVANS: Yes, absolutely.

JOHNSON: Which in effect is what Professor Kinsey is?

EVANS: Yes.

JOHNSON: So far as later events were concerned that day, beginning at about 15.00 hours and culminating in the dramatic collapse at about 19.45 or thereabouts, did you come to any views so far as what had caused that was concerned?

EVANS: Really, I mean, [Baby N] had a very torrid time of it during this time and, of course, I knew by then that not only was there blood in the back of his throat and therefore that could have compromised him at any time during the future, but I think the original -- the 8 am inspection noted that the epiglottis was swollen, which is what caused the problem, which would make intubation more difficult, and therefore it is difficult to say whether his subsequent deteriorations were the result of the problems he suffered from around 8 o'clock in the morning.

MR JOHNSON: Yes. Thank you very much. My Lord, that may be a convenient moment.

MR JUSTICE GOSS: Yes, certainly.

2.05 then, please, members of the jury. Thank you very much.

(1.04 pm)

(The short adjournment)

(2.05 pm)

Cross-examination by MR MYERS

MR MYERS: Have you got your papers ready, Dr Evans?

EVANS: Yes.

MYERS: I'm going to start with the events of 3 June --

EVANS: Yes.

MYERS: -- from round about 1.10 in the morning. You dealt with this in three of the reports that you've prepared for us, haven't you, in particular 3 June 2018?

EVANS: Yes.

MYERS: 17 January 2019?

EVANS: Yes.

MYERS: And 21 October 2021?

EVANS: Yes.

MYERS: The first time you deal with 3 June is in that first report. In that report I ask you to look at paragraph 58. I know it's described as a sift report, that's the way it's been put, but let's look at paragraph 58. Tell me when you're there.

EVANS: Yes.

MYERS: Dealing with [Baby N]'s position, having reviewed the notes, the papers you had, your opinion was:

"There is nothing to suspect any significant problem until the early hours of 15 June."

That's what you said then, isn't it?

EVANS: That is correct.

MYERS: That's on the report of 3 June 2018.

EVANS: Yes.

MYERS: By the time that you wrote this report, you've told us this was report number 29.

EVANS: Yes.

MYERS: So you were familiar with the issues in the case, weren't you?

EVANS: Yes.

MYERS: If we put up the notes, please, from Dr Loughnane at tile 161, Mr Murphy. This is sequence 1 for [Baby N], tile 161.

We see the notes there. We'll look at them again in a little bit, Dr Evans. You will have looked at these notes in the course of preparing this report, won't you, into [Baby N]?

EVANS: I would have.

MYERS: If we scroll down please to the key section, Mr Murphy.

Are we able to go overleaf to the 01.10 report?

A little bit further down, so we've got the entirety there.

You had the opportunity to read that as well, didn't you?

EVANS: I did.

MYERS: When you wrote that report in June 2018, nothing there caused you concern, did it?

EVANS: Overlooked it.

MYERS: I'm going to suggest you are -- you have told us in your evidence that you have decades of experience as a paediatrician, don't you?

EVANS: Yes.

MYERS: And if you considered this to be significant, you would have said so in your first report, I suggest, Dr Evans.

EVANS: Let me go through, it's only five or six lines, and I think it will explain why I did not take much notice of it.

01.10. Before this, the baby was stable. I think we will accept that. Asked to see, desaturated. Fine, okay, that's a concern:

"Unsettled and increased work of breathing. Got upset. Looked mottled, dusky. Saturations reduced to 40% and then [arrow] 100% oxygen."

Okay? Therefore that is a concerning event:

"On my arrival. 40% oxygen."

I'm not sure whether that means the baby is now on 40% oxygen or having an oxygen saturation of 40%.

I would interpret that as being in 40% oxygen. That is the way I would interpret it.

"Screaming" -- at the time, let's be frank, I had not associated screaming -- it was screaming, okay? So baby's -- he was screaming.

There was sternal recession. Key entry here:

"Poor trace on sats probe."

In other words, we're not quite sure whether it's accurate or not. He is pink, okay? Good:

"Attempt to settle."

That is the whole of the entry. That is not a criticism by the way because the next entry is:

"Crashed bleeped away (inaudible: coughing)."

If we go up the next two lines, please:

"On return, SVIA [spontaneous ventilation in air], sats 100%. Asleep. Work of breathing improved."

In other words, he is back to normal. So therefore, in the grand scheme, looking at 1,200-odd pages, that did not strike me as something that I -- at the time was significant, especially as a few pages later, ie the events of 15 June, were far more striking. So that is my response to the way I looked at those few lines.

MYERS: You say 1,200 pages. Most of those pages are scans that don't play a part in what we're looking at here, aren't they? There are hundreds and hundreds of pages of scans; yes? This is in the first few pages of the clinical notes -- it is in the first few pages, isn't it, Dr Evans?

EVANS: I have made my response and that is my answer.

MYERS: And can you assist me, it's almost the first entry you come to of any substance in the clinical notes, isn't it?

EVANS: I've told you what my answer is.

MYERS: And it's easy to read?

EVANS: I have told you what my answer is.

MYERS: I suggest you said you didn't consider it to be significant because it wasn't actually. That's the reason. Do you agree or -- well, you disagree with that, don't you?

EVANS: Right. In my evidence in other cases, I have described in many cases, most of the cases, what I have called standalone cases. What I mean by that is this: that from looking at the clinical notes, only looking at the clinical notes, there were features there that, in my opinion, were concerning and also consistent with one or more of the babies being the victims of inflicted injury, okay, inflicted injury as a standalone case.

I'm not going to go through all of them, we can do that at another time.

Now, this event of 3 June is not, in my opinion a standalone case. In other words, if I'd been presented with this sheet on its own, without knowing about the others, I'd have said: well, this is concerning, interesting, you know, suddenly deteriorating and then suddenly improving, how do I explain that in isolation? This is very difficult to explain.

MYERS: You'd already prepared 29 reports by this time, hadn't you?

EVANS: I'd prepared 28 reports, I think.

MYERS: Yes. Let's move to the second report, which is dated 17 January 2019.

EVANS: Yes.

MYERS: If we go to your views of this event, it's at paragraph 63. By this point now, you have identified this and you say:

"It's my view that [Baby N]'s deterioration, his distress is consistent with him being the victim of some kind of inflicted injury which caused severe pain and distress and destabilised him."

"Inflicted injury." There is nothing actually from what we see in these notes to support the suggestion that there is an inflicted injury here, is there?

EVANS: That was my opinion then and that is my opinion now.

And I'll explain to you the way that my opinion evolved --

MYERS: I'd be grateful if you'd answer the question. If further explanation is necessary, you can be asked, but I'd be grateful if you could simply assist with explaining what I'm asking and dealing with those questions.

EVANS: If you ask me the question, I'll answer it if I can.

MYERS: Is there evidence of physical -- physical evidence of inflicted injury in what we see on this occasion?

EVANS: From my report of 2019, the answer is yes, and I'll tell you what they are. There was a sudden deterioration at 40%, the screaming and the crying that lasted 30 minutes. I explained to you that in 2018, I was not aware or familiar with the

association between screaming and the injection of air into the blood system, didn't know about it at the time. But you will also know that in 2019, I collected a whole load of scientific papers, put them all together in what was described as an overarching report in relation to air embolus and quoted a load of papers. We've already said it's difficult to get scientific papers on this condition because it's so rare, so unusual, and I think that was January 2019, I'm not quite sure, I don't have a copy with me.

In those papers -- in those papers, there are papers who quote babies being given air, accidentally, into the circulation, screaming and dying. So therefore, we've got those two, those papers. In addition to that, which reinforces the opinion I made in 2019, since the beginning of this trial, we have heard of other cases -- [Baby I], case number 8, being the most striking example of a baby screaming as part of her deterioration.

Now, that was not evident from the clinical notes that I saw in 2017, so I didn't know that at the time and I didn't know about the other babies and the extreme crying or screaming. So all that information is information that I discovered since the beginning of this trial. So therefore, the information from the beginning of this trial has reinforced the opinion I expressed in -- whenever it was -- January 2019. But I did not know about the association with screaming, I don't think, during what Mr Johnson calls the sift report.

MYERS: In that report, the second one that I'm asking about, you make absolutely no reference to an air embolus, do you, at any point? Do you?

EVANS: I'll check it. I think I made that in my second -- my third report, I think.

MYERS: This is the second report. We've got the first report of 8 June 2018 when you identified nothing, you simply say 15 June is the time that is significant. We've got your report of 17 January 2019. You don't mention an air embolus, do you, Dr Evans?

EVANS: I do not.

MYERS: No. You use the expression "inflicted injury", don't you?

EVANS: I use that as a generic expression which I've used in other cases.

MYERS: You agree there's absolutely no evidence of any physical injury from what we see on the 2nd or 3 June, is there?

EVANS: I disagree with that. I should also add as clinicians, we accumulate evidence. In other words the more information we get, the more likely we are to reach a diagnosis. So therefore, in my first report I overlooked this, and I think I've explained why: in my second report I am now suspicious and by my third report I am more prepared to commit myself to the diagnosis of what happened here.

MYERS: What you are doing, Dr Evans, is coming up with different theories to try to fit an allegation to give support to it. That's what you're doing, isn't it?

EVANS: No, no, I'm functioning as a clinician. This, you will find, is what clinicians do. We start with quite often minimal information and then, as the information accumulates, then it's more -- it's more possible to reach a diagnosis. This is what clinical practice is all about, irrespective of whether somebody is the victim of an inflicted injury.

MYERS: You don't mention air embolus until we come to your third report on 21 October 2021?

EVANS: That is correct.

MYERS: That is 3 years after we've been going with this particular child; that's correct, isn't it?

EVANS: Yes.

MYERS: In fact, the material you've pointed out to the jury is the same material you had been looking at up to that point, isn't it?

EVANS: No -- sorry, the presentation of [Baby N] on 3 June was different to the other cases where we've discussed --

MYERS: No, I'm talking about the material relating to [Baby N] that you base air embolus on, in that report in October 2021 is material you had had since 2018. It's the same material.

EVANS: It's the same material --

MYERS: Yes.

EVANS: -- but the way you interpret the material depends on the additional information you get.

MYERS: And this is you, by the time we get to October 2021, moving away from "inflicted injury" and now having a shot at air embolus, isn't it? That's what we have.

EVANS: I think in the circumstances I think this is very likely what happened to the little baby actually, yes.

MYERS: We know that Dr Loughnane arrived on that unit at 01.07.

We know the report of the collapse was at about 1 o'clock.

EVANS: Yes.

MYERS: You heard her evidence?

EVANS: Yes, I did.

MYERS: We can see it says here "pink" and her evidence was by the time she got there he was looking pink, so he'd recovered, that's what she said?

EVANS: Yes.

MYERS: So this had gone on for 7 minutes?

EVANS: Yes.

MYERS: So this must be the swiftest air embolus in the history of air emboluses, Dr Evans. Seven minutes, air embolus?

EVANS: It could well be.

MYERS: A world record?

EVANS: It could well be.

MYERS: Rapidly dissolving nitrogen?

EVANS: It depends on the volume, it depends on the rate of infusion. Those are the two characteristics that determines what happens to the baby. And the baby received 100% oxygen, so that's what happened.

MYERS: You have put this in because you want to find something to support the allegation and this is the best you can come up with, isn't it?

EVANS: It's not like that at all. What I have said in my reports, in this particular report, is that I'm aware, and I've said earlier today -- is that it's case 29, that this is not a standalone event. But you cannot overlook the events that have happened that we've discussed in this trial over the past few months.

I have not said that in any report before this but I think it's worth noting that this is what I've said in this particular case. In other words, I am looking at all of the options and I think that's quite important.

MYERS: We've heard what's been said about the features of air embolus so far in this trial. So looking at this, first of all, there is no characteristic discolouration, is there?

EVANS: Not as far as I know.

MYERS: There is in fact absolutely no significant collapse at all, is there?

EVANS: Saturation dropping to 40% is a significant collapse, sorry.

MYERS: There was no collapse requiring resuscitation?

EVANS: Required 100% oxygen. Any baby who requires 100% oxygen who was previously in air has something significantly the matter with them.

MYERS: We've seen plenty of cases in this case not linked to the allegations where there are desaturations and oxygen provided to babies; that's standard, isn't it?

EVANS: No. If you have -- what prem babies do sometimes is they desaturate, their oxygen drops, they may drop from, I don't know, the low 90s to high 80s say, and it resolves spontaneously. We've had many of the nursing staff say that, short-lasting, you know. But a drop to 40% in a baby who was previously in air is very, very striking and very significant, even if -- if they recover in 7 minutes, but the doctor concerned was crash called away, you can't blame her for that, so therefore that may -- so that may limit the information that she was looking at.

MYERS: Her evidence was very clear. Are you seeking to put a perspective on what she said to the jury?

EVANS: No, I heard her evidence. You heard mine and that's my opinion.

MYERS: You weren't there, were you, Dr Evans?

EVANS: No, no, I heard her evidence.

MYERS: Her evidence was:

"By the time I arrived he was looking pink".

So he's recovered, and then she went on to say:

"I'd expect his sats to be high 80s or 90s."

That's when she attended. Do you recall that?

EVANS: I can't recall every word, but I was next door, but it was 40, you know, it was 40 when she was called and an oxygen saturation of 40 is concerning and potentially dangerous.

MYERS: This was --

EVANS: It is dangerous, not potentially dangerous.

MYERS: The entry for screaming you have told us all is incredibly unusual, "exceptionally unusual" is the language you've used, isn't it, today in your evidence?

EVANS: Yes. I don't think I've ever heard babies screaming in baby units. They cry. They certainly don't cry for 30 minutes.

MYERS: It can't be that unusual, Dr Evans, because you didn't make reference to this when you first read it and it's -- did you?

EVANS: It's one word, screaming.

MYERS: Do you agree that descriptions of how a baby cries or how it screams are subjective, aren't they?

EVANS: Depends on their experience, really.

MYERS: We've seen the report of the baby getting upset is the way this was -- if we just scroll up, please, scroll up and look at the top of the screen. The report given to Dr Loughnane was "unsettled and got upset". Do you see that?

EVANS: Yes.

MYERS: We've seen the clinical notes of Nurse Booth who was present -- who wasn't present, but reported it as crying. This word, screaming, is used by one person, this doctor here, isn't it?

EVANS: Well, you know, there's screaming, you've got looked mottled, dusky, you said there was no sign of abdominal discolouration or skin discolouration. That's not strictly true. Looked mottled, right? That is skin discolouration. It is not specific for any condition but you can't say it wasn't there. I've already said that I was not aware of the association

between screaming and air embolus in 2018, so there you go. So we've got, you know, he's dropped his sats to 40%.

MYERS: The question I asked you, Dr Evans, was if they were a characteristic description of air embolus and you've agreed.

EVANS: It is not characteristic of air embolus, but you cannot say that there was no -- you cannot say that there was no change in its skin colour.

MYERS: I didn't say that.

EVANS: No, no, I'm sure we'll agree on this one. He looked mottled, therefore there was skin discolouration. Is it characteristic of air embolus? No, it is not.

MYERS: So your reference to it is an attempt by you to try to work a piece of evidence in to support your evidence, is that correct, seizing on the word "mottled"?

EVANS: No, I am replying standard clinical practice, which is what I've done throughout my career and what I've done throughout this trial.

MYERS: If it doesn't denote an air embolus, and we agreed there's no characteristic discolouration of an air embolus, why did you stop as you were going through to make a point of identifying "mottled" then?

EVANS: Because it's written there. It's on -- it says there, "Looked mottled".

MYERS: In any event --

EVANS: Sorry, there's a difference between "looked mottled, dusky". Okay? There's a difference between "looked mottled, dusky" in a baby whose oxygen drops to 40% and then is back in air within a few minutes and was pink when the doctor saw her (sic). There's a difference between that and "looked mottled" in a baby whose blood pressure was a bit low or who's sickening for an infection or requiring 40% oxygen because of breathing difficulties, for example.

This baby's "looked mottled" is in association with those other features. It is not characteristic of air embolus, but it's -- you cannot say that there were no skin discolouration changes in this baby. There were.

And the other thing that's interesting in this particular case is, and if we accept what Dr Loughnane said, is that when she got there he was pink. Therefore whatever the skin

discolouration was, was short-lasting, and this is something we've heard the local doctors mention in association with other clinical cases in this trial.

MYERS: You can't tell the cause of the screaming from the fact it records "screaming" or "got upset", can you?

EVANS: Sorry, I was -- I missed that because of the coughing, sorry.

MYERS: You can't tell the cause of what lies behind the screaming from the fact the word "screaming" is put there, can you?

EVANS: You accumulate evidence, that's what clinicians do, and you form an opinion.

The other point in this particular case, I've already said about --

MYERS: Is your answer no to that, Dr Evans?

EVANS: Just a minute, just a minute. I've already said at least twice that this is not a standalone case like the other cases I've given evidence in. The events of 3 June is not a standalone event, I've already said that. But looking at the thing, on the whole, I think we have concerns here and we have to explain this event somehow and the more likely explanation is as I've described.

MYERS: A baby of 35 weeks can cry or scream persistently and loudly, first of all, can't they? Is that correct?

EVANS: Well, you know.

MYERS: And [Baby N] in fact was 10 hours old and not receiving feeds at this time?

EVANS: Well, you know. He's not -- if he's... Yes.

MYERS: And a neonate of that age can cry or scream loudly because they're hungry, can't they, as it happens?

EVANS: Oh come on, for half an hour?

MYERS: They can cry or scream loudly?

EVANS: Come on. for half an hour?

MYERS: They are not going to cry for half an hour collapsing with an air embolism, are they, Dr Evans? That's a fact.

EVANS: If they're hungry, they're not going to drop their saturations to 40%, they're not going to require 100% oxygen, and if you suggested that any neonatal nurse would let a baby cry for half an hour because they're hungry, I think you would upset an awful lot of neonatal nurses, so let's forget all that. Let's forget about hunger being the explanation for this, shall we?

MYERS: The point being you simply can't diagnose air embolus from screaming, can you?

EVANS: Of course you cannot.

MYERS: Right. When you were talking about screaming, you said this before lunchtime. You were talking about the connection between screaming and air embolus and you were talking about the way air moves through the heart.

You said:

"Answer: If it gets into the left side of the heart, it could get into a heart blood vessel, coronary artery. So technically, it could cause a heart attack, you know, which is incredibly painful. I can't prove any of this by the way."

Are you seriously suggesting this is a heart attack that's taking place? Is that why you said that?

EVANS: I don't think you can rule that out, actually.

MYERS: So you --

EVANS: I don't think you can rule that out.

MYERS: It's a self-correcting heart attack?

EVANS: Heart attacks -- I don't want anyone to have a heart attack, but most people survive heart attacks, okay? So you've got the option -- you've got -- if it goes to the left -- sorry, if a bubble of air gets to the left side of the heart, it can go anywhere. If it goes to the abdomen, you see the skin discolouration. If it gets to a coronary artery it will cause ischaemia to a coronary blood vessel -- there are three coronary blood vessels, by the way. If it gets to the brain, it can cause a neurological problem, lack of oxygen to the brain.

So where the bubble goes can vary, but the key thing is the volume of the bubble and the rate at which it goes there. So therefore, as I have mentioned more than once in other cases, what doctors do, we list what we call a differential diagnosis.

Okay? We list all possible options. So therefore, what I didn't mention this morning was I listed a number of possible options.

Looking at this again, I think that my opinion, as I expressed in the second of my three reports is correct.

MYERS: There's not even a recorded change in heart rate, is there?

EVANS: Not recorded there.

MYERS: Or blood pressure?

EVANS: Not recorded there.

MYERS: It's an unusual heart attack to have no change in heart rate, for instance, isn't it?

EVANS: Not recorded there. I have -- I don't recall ever seeing from my neonatal practice a heart attack in a baby, but that's because one tends to avoid injecting air into their circulation.

MYERS: You see, what you were doing this morning with the jury was suggesting that because a heart attack can be painful and because [Baby N] is recorded by one person here as screaming, this may be a heart attack. That's what you were trying to say, wasn't it?

EVANS: What I said this morning is if air had gone into the coronary artery, which is -- it'd cause a heart attack, let's use the scientific term, it would cause lack of oxygen or ischaemia to the heart muscle. Let's avoid the lay term. That would cause severe distress and pain.

If it goes anywhere else then the features change.

It goes to the brain, brain problems. If it goes to the abdomen, you get skin discolouration. If the bubble goes into the feet, then your toes will go white. In other words, it depends on where it goes.

MYERS: So your evidence, so we can understand this, is that this may be signs of a heart attack brought on by an air embolus?

EVANS: I think that we have to seriously consider that this baby was the victim of an air embolus on 3 June.

Whether the bubble went into the heart or the brain or anywhere else is difficult to say.

MYERS: You've referred to research, a paper or something, you read involving screaming and air embolus, haven't you?

EVANS: I have.

MYERS: That's in your third report at page 4598 in our pages and there are two publications you refer to, aren't there?

EVANS: Yes.

MYERS: One of them is called Broadhurst. We've got here the situation with [Baby N]. My Lord, it's at page 4598 of the statements, if the reference is to be made, and it's page 2 of the statement dated 21 October 2021.

EVANS: Just a minute, here we are.

MYERS: It's easier if I read your summary --

EVANS: This is "Death by Error" by Anne (sic) Broadhurst; yes?

MYERS: "Death by Error" by Daphne Broadhurst describes several cases, and this is one of the two cases you are referring to:

"She notes a baby of 8 months who was receiving intravenous fluids. The family reported the presence of air bubbles in the line after the nurse squeezed IV bag. The baby screamed, turned blue, arrested and died. The cause of death was said to be cerebral air embolus."

EVANS: Yes.

MYERS: Clinically, and factually, that has absolutely nothing in common with what we're looking at here with [Baby N], does it?

EVANS: I disagree. This baby was 8 months to start off with, so far bigger. A baby of less than 2 kilograms would require far less in the amount of air.

And then in this particular case, there were lots of bubbles there, so again we're back to how much air and the rate at which it was given.

MYERS: The other paper that you referred to, I'm going to the detail of what you have put, just following on on the same page of your statement, is Seoul's publication, isn't it?

EVANS: Yes, it is.

MYERS: It describes an infant death due to air embolism from a peripheral venous infusion?

EVANS: Yes.

MYERS: "The case relates to a 11-week-old baby who returned to hospital 5 days following a hernia repair."

It says the mother was concerned about the colour of the site there and the question of infection.

EVANS: Yes.

MYERS: "An intravenous catheter was inserted into an infusion pump in the back of the right hand. The infusion pump was connected to the intravenous line. The nurse flushed the intravenous line with normal saline and the report says immediately thereafter the nurse started the infusion pump and returned to the head of the crib to record the time. Meanwhile the baby's cries had turned into screams. He then coughed or gasped loudly. His back arched, his arms stiffened, he lost consciousness. Resuscitation was not successful and after 5 minutes of effort he was declared dead. The chest X-ray carried on during the resuscitation was described as being of poor quality. No air was seen in the vascular structures or the heart. A post-mortem X-ray taken 12 hours after death was reported to show air in the pulmonary and systemic circulation as well as air in the portal venous system beneath the diaphragm."

That, factually and clinically, has nothing in common with the situation with [Baby N] in this case, does it, Dr Evans?

EVANS: That is incorrect. What I've said is that I've quoted papers that associate screaming with injection of air.

I haven't taken it any further than that. That is what I've said in my report and that's what I'm saying now.

As well as that, again, repeating myself, this is something we've heard in other cases in this trial.

MYERS: You have gathered bits of what you can to try to put together some kind of allegation based upon air embolus to fit the allegation, not the facts. That's what's happened, isn't it?

EVANS: No, those are the facts, that is the clinical evidence, and by the way, I've not heard of any other explanation that fits as clearly as the interpretation I have given in relation to this particular event.

MYERS: 15 June, Dr Evans.

EVANS: (Speak sotto voce).

MYERS: Let's have a look now at... 15 June, Dr Evans. I'm going to the report that your evidence was principally drawn from, you gave it from this morning, the report of 17 January 2019.

EVANS: Yes.

MYERS: You've explained to us today, you reviewed the deterioration of [Baby N] during the night or rather the very early morning of 15 June, haven't you?

EVANS: I have.

MYERS: And there was a brief summary of [Dr A]'s clinical notes throughout the course of that night, wasn't there?

EVANS: Yes.

MYERS: Then we came to the desaturation at about 7.15 in the morning; yes?

EVANS: Yes.

MYERS: And then the question of the intubation and the blood that is seen around that time?

EVANS: Yes.

MYERS: Right. When you were dealing with this, you said this about it. Let me start with your opinion. I would like to go to paragraph 71. You said:

"It's probable that [Baby N] sustained trauma to his oropharynx some time prior to the doctors being asked to see him at 1.45 on 15 June."

EVANS: Mm.

MYERS: "Inserting any kind of implement, such as a nasogastric tube, into a baby's mouth and thrusting it into the back of the throat would be sufficient to traumatise the soft tissues of the oropharynx, causing bleeding and subsequent generalised deterioration."

EVANS: Yes.

MYERS: And so, first of all, there you're saying that he sustained trauma to the oropharynx some time prior to the doctor seeing him, so some time before 1.45 in the morning. That's what you said, isn't it?

EVANS: I've got that time wrong.

MYERS: And then we go to paragraph --

EVANS: Sorry, I got that time wrong.

MYERS: Then we go to paragraph 78. It's not just -- let's go to paragraph 78:

"I suspect that if [Baby N]'s initial bleeding problems were due to spontaneous bleeding from his oropharynx, his condition would have deteriorated significantly during the next few hours."

Well, we're not talking about spontaneous bleeding.

But you conclude that paragraph with this:

"It is my opinion that [Baby N]'s oropharyngeal bleeding was the result of some form of trauma to the back of his throat during the early hours (pre 01.45) of 15 June 2016."

That's what you say, isn't it?

EVANS: Got that time wrong, sorry about that.

MYERS: Well, you -- you said that now twice in that report, haven't you, 1.45?

EVANS: Yes, but it's wrong.

MYERS: But we've got the clinical entry for 1.45 by [Dr A] when he first sees the baby, don't we?

EVANS: There was no blood. The blood was noticed for the first time at 08.00 hours, and therefore by putting 01.45 -- by talking about oropharyngeal bleeding I should have said "from around 08.00 hours". Got my time wrong, sorry about that.

MYERS: On paragraph 83 in the same report, you advise the need to look at nursing and medical care present during the night shift of the 14th and 15 June.

EVANS: Yes.

MYERS: So you're quite clear at the time of that, on your assessment, that you're looking at something that starts or has its start in the very early hours of 15 June, weren't you?

EVANS: What I confused was the fact that he wasn't as well as he had been at 01.45 hours and the fact that the bleeding was part

of his problem, although the bleeding did not -- was not found until 8 am. Okay? So I've got that wrong. I got it wrong. My responsibility is to correct any errors I have made.

So the baby was unwell from around 01.00 hours, but the bleeding in the back of the throat was noticed at around 08.00 hours. That's the key thing. If my report has confused the two things, my apologies.

MYERS: Is it not that at that case you were drawing a direct line in a deterioration that began at 01.45 and, as you saw it, culminated in bleeding being seen at 8 o'clock in the morning? Is that not what you were doing?

EVANS: He was seen at 1, 3 and 5 am, I think, and nobody commented on any bleeding. The bleeding was noticed at 8 am, and that's where I got it wrong.

MYERS: And you link that to the desaturation that he experienced at 7.15, don't you?

EVANS: Yes.

MYERS: Yes, you put bleeding together with desaturations being elements of the same event, don't you?

EVANS: Well, you can't... I... You cannot say that. What we appear to be certain about from the evidence we've heard from the local people is there was bleeding evident when the laryngoscope was passed into the mouth at 8 am --

MYERS: Just to pause there, I'm not going to debate -- there's an issue, and you know exactly what Mr Johnson was referring to earlier today, there's an issue as to when that blood was seen.

EVANS: That's fine. That's a matter for others, I accept that.

MYERS: Your evidence on this is -- you said, there's a collapse from 17.15 (sic) onwards, that was how you described it this morning when you gave evidence. He collapses from 7.15 (sic) onwards in the morning. Is that right?

EVANS: No, his deterioration was from -- well, it must have been from just before they decided to intubate him. The doctors decided to intubate [Baby N] at 8 am, so therefore his condition had deteriorated sufficiently by that time for him to require intubation.

MYERS: Yes.

EVANS: So his deterioration was pre-8 am. There was no suggestion that he required intubation during any of the earlier assessments by [Dr A].

MYERS: And we have the desaturation recorded at about 7.15 that morning, don't we?

EVANS: I'm sure it is. I can't remember what it was.

MYERS: If we put up tile 141, please, Mr Murphy. Tile 141.

And if we go behind that to remind ourselves of the timing. Scroll down, please. Thank you.

It's down, if we go to the bottom left, 07.15:

"Baby crying and dropped saturations."

Do you see that?

EVANS: Yes.

MYERS: I'd like us to be able to understand your evidence, and I don't say that to be rude, Dr Evans, but to understand it, you are linking that 7.15 desaturation to the blood that is identified in the course of intubation, aren't you, or are you saying they're two completely different events?

EVANS: No, I think connecting the two is not unreasonable from a clinical point of view.

MYERS: Even though no blood is seen at 7.15?

EVANS: As far as I know there was no blood seen, but there was blood at 8 am. We only know for sure, if we accept the evidence of the local people, there was blood at 8 am.

And you know, by 8 am he was very unwell. His sats had dropped to 48%, I couldn't remember that then. His saturations had dropped to 48%, very low -- this is paragraph 16 of my report -- and his heart rate had dropped to 80 and he was bagged and given Neopuff and so on. So therefore he was very unwell by 8 am. But at that time he was sufficiently unwell to require intubation.

MYERS: So contrary -- we've been over this: you don't say now at least that it began at 1.45 in the morning; you're clear about that?

EVANS: Got the time wrong, apologies.

MYERS: You identify the desaturation at 7.15?

EVANS: I have.

MYERS: And the desaturation which, following this through, leads to the requirement for an intubation?

EVANS: Yes.

MYERS: And you draw the link between that desaturation and blood at the time of intubation?

EVANS: Sorry, say that again.

MYERS: You draw the link between that desaturation and blood at the time of intubation?

EVANS: Well, something caused the desaturation. Would blood in the back of the mouth cause desaturation? Yes.

MYERS: Right.

EVANS: You can't go further than that.

MYERS: You accept no injury at any point is identified to the oropharynx by any of the numerous practitioners who saw [Baby N] that day?

EVANS: I'm not sure you can say that. All I've read is that there was swelling of the epiglottis and, in my opinion, the swelling to the epiglottis reflects trauma. The epiglottis is a very soft piece of tissue that overlies the airway and it doesn't take a lot to traumatise it.

MYERS: Do you agree no source of blood, as in a fresh-flowing source of blood, is identified in the oropharynx or in that area by any practitioner?

EVANS: Well, if the area's covered in blood, you're not going to find any tear or abrasion underneath.

MYERS: It's not covered in blood throughout the whole period the practitioners are looking at it, is it? We have heard from them.

EVANS: It's the area -- there was so much blood there they couldn't intubate, let's put it that way.

MYERS: At this time it is said that the intubation had to stop because of blood?

EVANS: That's what they said.

MYERS: At other times the only reference has been to swelling?

EVANS: Yes.

MYERS: At no time has anybody identified any injury in or around that mouth, despite repeatedly looking at it through a laryngoscope, have they?

EVANS: That is incorrect, because what you've got there is a swollen epiglottis and, in my opinion, that swollen epiglottis -- that epiglottis was swollen as a result of trauma.

MYERS: You are seeking, again, to support the allegation, aren't you, by reference to a theory that can do that but not by the basic facts?

EVANS: No, I am putting clinical facts together in a way that makes clinical sense.

MYERS: I suggest you're putting things together to try to construct an allegation, Dr Evans, on this case here.

EVANS: No: clinical consistency --

MYERS: When you spoke about your involvement in this case at the start of this trial, you talked about being contacted by the National Crime Agency; do you remember that?

EVANS: Yes.

MYERS: Is that how you recall this, they contacted you?

EVANS: We got in touch, yes.

MYERS: And they wanted you to deal with this?

EVANS: Well, the way it works -- by this time I think I'd been in touch with the NCA about 40 times or so where -- what happens is a police authority gets in touch with the NCA, we have to look for an opinion from somebody of my professional background, we've got a baby here with abusive head trauma or suspicious injuries or whatever, you know, and a police authority in the West Midlands or West Mercia or wherever, Humberside, I've been involved with loads of them, want a medical opinion. I reply to the NCA saying, tell the police authority to get in touch with me. That's the way it works.

And in this particular case, it was Cheshire Police.

I'd not had any dealings with Cheshire Police. I think Cheshire Police got involved in May 2017. They got involved with me, I think in June or July 2017. And someone from Cheshire Police rang me up and I said, "I'm not sure what's going on here, I'll come up and talk to and you we'll take it from there". So that's how it started.

I went up to --

MYERS: It's how it started that I want to ask you about so let's stick with that, Dr Evans, and I would be grateful if we can look at an email at D24, please, Mr Murphy.

It's just one email I want to ask you about. We can all see this. We can see at the top:

"Dewi Evans, 21 May 2017. To: the National Injuries Database re Op. Suspicious Unexplained Death."

Do you see that?

EVANS: Yes.

MYERS: You'd been working with this body on a different investigation at this point, not this one, and the National Injuries Database provides support and advice for the serious crime investigation roles of the National Crime Agency, don't they?

EVANS: Sorry, say that again.

MYERS: The National Injuries Database, who you're emailing, provide support and advice for serious criminal investigations involving forensics to the NCA, the National Crime Agency?

EVANS: They're called FMAT, the Forensic Medical Advice Team, now. But anyway, same lot.

MYERS: So you're talking to your contact:

"Dear Nick. I've received a lots of documents from [and we have redacted other details] the police op [whatever], but not the autopsy result. I'll liaise with DS [redacted] directly. Should sort quickly once I get all the files. Incidentally, I've read about the high death rate for babies in Chester and that the police are investigating. Do they have a paediatric/neonatal contact? I was involved in neonatal medicine for 30 years, including leading the intensive care set-up in Swansea. I have also prepared numerous neonatal cases where clinical negligence was alleged. If the Chester Police have no one in mind, I'd be interested to help. Sounds like my kind of case. I understand

that the Royal College has been involved, but from my experience the police are far better at investigating this sort of problem."

First of all, I'd be grateful if you can answer the specific questions I ask, Dr Evans. This is you contacting the NCA, isn't it? Yes? You contacting them?

EVANS: Well, it isn't, it's about another case. I can't remember what that other the case was. So I got in touch with them. This is the way the NCA works. As I said, I'd done dozens of cases for the police authorities via the NCA by 2017.

MYERS: This is you putting yourself forwards, in effect touting for this job, isn't it?

EVANS: I dislike emotive terms like that (overspeaking) --

MYERS: All right. Putting your forwards for this job.

EVANS: I was offering my professional opinion if that was in their interest. Okay?

MYERS: "Sounds like my kind of case."

Yes? That's you advancing yourself as someone who can do for them what they require, isn't it?

EVANS: And it looks as if I have.

MYERS: It's you ready to give them what they want, isn't it?

EVANS: No, no. I have dealt with several police cases where I went through the report and I said, look, this case does not cross the threshold of inflicted injury or suspicious injury or whatever. My case -- my opinions are impartial and independent. The other thing that -- might be worth telling you, Mr Myers, at this stage is this: in the past 5 years I don't only give evidence via the NCA or to the police authorities, I also give evidence to law firms representing defendants. In fact, in the last 5 years I have given more -- prepared more reports for lawyers acting for defendants than for the prosecution or the police.

Now, lawyers acting for defendants are not known for looking for evidence from doctors who rubber stamp prosecution expert evidence. As a result of the numerous cases where I've acted for the defence -- I think my record is somebody being found not guilty in half an hour because the prosecution case was awful, that was my opinion anyway. All of this is in the public domain by the way.

Therefore I act for the defence if I'm asked for.

Most of my work is, as it is for most paediatricians, for the Family Court. And in the Family Court, it's complicated, but you act as what we call a joint expert witness. And I think the members of the jury need to know this: you act for the local authority, the people acting for mother, father, child.

And we had this discussion a few weeks ago: as far as I know, in the Family Court, I've had no judgments against me apart from one that was reversed on appeal, apart from the altercation Mr Myers raised recently (overspeaking). I need to explain this, I need to explain all of this because I think the members of the jury need to know that I give an opinion if asked and if it's within my expertise. Now, with neonatology being part of my clinical practice for a long, long time, this very much was within my clinical remit or, to use a lay term, "Sounds like my kind of case", okay? I can't even remember who Nick was actually but there we go.

So therefore that's how people correspond. It's not, dear sir, yours truly and all that sort of stuff.

That's how emails work, okay?

MYERS: Thank you.

EVANS: Therefore that's how I got involved with this case: NCA and me first, Cheshire Police followed.

MYERS: And when you make reference to the family matter, you just talked about the Family Courts, that was the matter that's been raised with you before during this case, the ruling from Lord Justice Jackson, isn't it?

EVANS: Yes, that is true.

MYERS: This is a record dated 21 May 2017 -- take it down, Mr Murphy, please. We'll go back to it if we need to.

I'm going to suggest to you, Dr Evans, that at some point before you started writing reports, you were told by the police of suspicions about suspicious rashes and air embolus (overspeaking) you were told that or it was indicated to you, I'm going to suggest, before you wrote any report.

EVANS: No, that is completely untrue. Okay? It is totally untrue. The first time I heard a local doctor mention the word air embolus was a couple of weeks ago. I'm not sure whether it was Dr Gibbs or Dr Jayaram, Dr Jayaram I think, when he talked

about the cold chill going down his spine. I knew nothing about air embolus. The first person I know of to raise the issue of air embolus in this particular series of cases was me. And I did that in case number 1. Okay?

In the first case I thought, oh my God, what's going on here? This is -- you know it was very much an "oh my God" scenario.

I'm not going to go at length about case number 1.

For [Baby A], if we remember, I formed the view that it was his collapse and the inability of the staff to resuscitate him was the result of his receiving air embolus. I did not know at the time about the skin discolourations; I heard about that later. I did not know at the time about Owen Arthurs' finding of air embolus on post-mortem X-ray (overspeaking) --

MYERS: That's your characterisation -- if we can just pause for one moment, Dr Evans --

EVANS: Just a minute. I want to finish this.

MYERS: My Lord --

EVANS: I want to finish this because if you're going on wild goose chases, I want to --

MR JUSTICE GOSS: You can finish the answer and then you ask the question.

EVANS: Therefore I didn't know any of that. But that's what led me --

MR JUSTICE GOSS: You have said all this before. We've heard all this before.

EVANS: I had nothing at all -- I knew nothing at all, sorry, about air embolus from the police. I was not told anything about any suspect or named anybody and I knew absolutely nothing and, as I said at the beginning of this trial, it's quite important to repeat this, at the beginning of this trial my role --

MR JUSTICE GOSS: You have said this, Dr Evans. I know.

You've said it at least once, more than once.

EVANS: Yes, I know.

MR JUSTICE GOSS: All right? Ask your question, Mr Myers.

MR MYERS: So far as Owen Arthurs is concerned, that is matter that is to be determined in the case.

EVANS: So what now?

MYERS: So far as Owen Arthurs is concerned, what his X-ray shows or doesn't show is a matter that the jury are going to determine in this case. You understand that, don't you?

EVANS: I do understand that, yes.

MYERS: What I want to ask is this: one of the cases that you referred us to and that you rely upon when saying that on the 2nd or 3 June [Baby N] had an air embolus over that period is a case that concluded with a post-mortem X-ray taken 12 hours after death, reported to show air in the pulmonary and systemic circulation as well as air in the portal venous system beneath the diaphragm. That was indicative of air embolus in that case of Sowell, wasn't it?

EVANS: That seemed to me -- yes, that's correct.

MYERS: That is direct evidence of air in the pulmonary and systemic circulation, so in the lungs and in the cardiovascular system?

EVANS: Yes.

MYERS: And in fact we do not have that in this case, do we? We don't have that, do we?

EVANS: Right. Professor Arthurs' opinion is his opinion, but when I heard his evidence, he said you do not need to find air in the circulation in -- in the post-mortem circulation of babies to confirm air embolus. That is what he said. That's his opinion, he's the radiologist, I am not.

MYERS: You relied upon that case to support what you are saying here and, do you agree, we do not find air in the pulmonary or systemic circulation in any of the cases we're dealing with in this trial, do we?

EVANS: This Sowell case was a massive air embolus where a baby died and he was several weeks old, so the comparison is not exact. The comparison is not exact.

MYERS: You're the one making the comparison, aren't you, Dr Evans?

EVANS: No, no, the comparison -- I quoted these papers because of the association between air embolus in these two cases and

screaming. The baby screamed. I didn't know about that until I did my online searches for air embolus. Didn't know that.

MR MYERS: Those are my questions, my Lord.

MR JOHNSON: Does your Lordship have any questions?

MR JUSTICE GOSS: I don't. Thank you very much, Dr Evans.

That completes your evidence at this stage.

(The witness withdrew)

MR JOHNSON: Dr Bohin, please.

MR JUSTICE GOSS: Shall we have the break now?

MR JOHNSON: Of course, I never refuse a break. Thank you.

MR JUSTICE GOSS: A ten-minute break.

(3.02 pm)

(A short break)

(3.12 pm)

(In the absence of the jury)

MR JOHNSON: Just before the jury comes in, we haven't been able to agree an interview summary for this case. The reason, in a sentence, is because essentially we're advocating for an entirely different interpretation of a particularly critical element of the interview, so we were simply proposing to tell the jury that this -- the interview for this case is not capable of being summarised into a page and just leave it at that.

They're going to hear the interview soon anyway.

MR JUSTICE GOSS: Yes, fine. Thank you.

One other thing before the jury come in, before I forget, you'll remember they requested an updated glossary. That's in hand, is it?

MR JOHNSON: It is.

MR JUSTICE GOSS: Good.

MR JOHNSON: I'd forgotten to copy it, I'm afraid, but it's done and we'll give it to them first thing tomorrow if that's acceptable.

MR JUSTICE GOSS: Certainly, yes.

(In the presence of the jury)

MR JOHNSON: Dr Sandie Bohin, please.

DR SANDIE BOHIN (recalled)

Examination-in-chief by MR JOHNSON

MR JOHNSON: Welcome back, Dr Bohin. For the sake of the recording would you identify yourself, please?

BOHIN: Yes. I'm Dr Sandie Bohin.

JOHNSON: Thank you. You have written three separate reports in this case; is that correct?

BOHIN: That's correct.

JOHNSON: Two deal with peripheral issues, putting it neutrally.

The substance of your opinion in the case is in your report dated 18 April 2019; is that correct?

BOHIN: Yes, that's correct.

JOHNSON: Thank you very much. Were you instructed on the same basis as you were instructed in all the previous cases?

BOHIN: Yes, I was.

JOHNSON: In coming to your opinion, did you rely on the documents which you have set out in paragraph 4.3, namely a copy of the notes from the Countess of Chester, X-rays, medical records from Alder Hey, a binder of 1,265 pages, and the witness statement of Dr Dewi Evans, dated 17 January 2019?

BOHIN: That's correct.

JOHNSON: Thank you. Did you thereafter, at section 6, set out a summary of the relevant chronology for [Baby N] from his birth in the early afternoon of 2 June and concluding that section of your report at paragraph 6.6 where you mentioned the fact that at 01.10 hours [Baby N] had desaturated?

BOHIN: Yes, that's correct.

JOHNSON: You recorded that that had happened when the nurse looking after him, who we now know was Christopher Booth, I think you put "was on her break".

BOHIN: Yes.

JOHNSON: You made the assumption that the nurse was female. You record the fact that [Baby N]'s saturations fell to 40%.

You quote from the nursing records. You quote partially from the medical records, including the fact that Dr Loughnane had recorded the fact that [Baby N] was screaming; is that right?

BOHIN: That's correct.

JOHNSON: You then record the fact, as we've seen from the note itself during the cross-examination of Dr Evans, you record the fact that Dr Loughnane was called away and that when she returned, [Baby N] was settled and sleeping and his observations were normal?

BOHIN: That's correct.

JOHNSON: You then record the fact that after that event, [Baby N] remained well until the early hours of 15 June?

BOHIN: Yes.

JOHNSON: That he was self-ventilating in air and receiving feeds?

BOHIN: That's correct.

JOHNSON: You observe, for obvious reasons, the fact that there was no record of any bruising or spontaneous bleeding and the fact that [Baby N]'s brain MRI, as taken at Chester, was normal?

BOHIN: That's correct.

JOHNSON: Since that time have you seen further brain imaging and a report from Professor Stivaros?

BOHIN: Yes, I have. I don't profess to be able to report on the brain imaging, but I've certainly seen those images and his report.

JOHNSON: And can you confirm that rather than dealing with his individual -- his evidence individually, can you confirm that Professor Stivaros' view was that the position was normal so far as [Baby N]'s brain was concerned?

BOHIN: Yes. That's correct, and in particular because of the history of haemophilia, where, as we heard this morning from Professor Kinsey, babies are likely to have bleeds into their brain if they do have any bleeding, so he was very specifically looking to see if there was any bleeding and there wasn't.

JOHNSON: Thank you. Moving back then to the events of the early hours of 15 June, at your paragraph 6.9 did you observe that the records confirmed that following a feed at 01.00 hours [Baby N] became pale, mottled and veiny with slightly abdominal distension?

BOHIN: Yes.

JOHNSON: That he was reviewed by the medics at 01.45?

BOHIN: That's correct.

JOHNSON: We know what [Dr A]'s findings were. There was a further examination at 03.45; is that right?

BOHIN: That's correct.

JOHNSON: That examination was normal. The mottling that had previously been observed had resolved?

BOHIN: That's correct.

JOHNSON: But there were some self-limiting desaturations recorded in the records?

BOHIN: The nursing records said that there were self-limiting desaturations, yes.

JOHNSON: Thank you. You record that a partial septic screen was performed and intravenous cefotaxime was given?

BOHIN: That's correct.

JOHNSON: You then recorded a further medical entry at 05.15, which noted the persistence of mottling?

BOHIN: Yes.

JOHNSON: The prolongation to 3 to 4 seconds of the capillary refill time?

BOHIN: Yes.

JOHNSON: And the fact that a bolus of normal saline was given at that stage and [Baby N] was put nil by mouth?

BOHIN: That's correct.

JOHNSON: Do you then refer to Jennifer Jones-Key's nursing note at 07.15 concerning [Baby N]'s crying and dropping his saturations at 7.15 am?

BOHIN: Yes.

JOHNSON: And the fact that he was seen by "Neonatal Nurse Lucy"?

BOHIN: Yes.

JOHNSON: Following that, do you observe that after handover, [Baby N]'s saturations dropped again, he required bagging, and that care was handed over to "Nurse Lucy"?

BOHIN: Yes.

JOHNSON: Next, do you record [Dr A]'s examination or review of [Baby N] after a profound desaturation to 48%?

BOHIN: Yes.

JOHNSON: That he was given medication in preparation for intubation at around 08.00 hours?

BOHIN: Yes.

JOHNSON: And whether before or afterwards, before or after an attempt to intubate, blood was seen in the oropharynx?

BOHIN: That's correct.

JOHNSON: Thereafter, at 09.45, did you observe that the notes recorded dry blood in [Baby N]'s mouth and on his lips?

BOHIN: Yes.

JOHNSON: He remained mottled and he was having intermittent episodes of extensive posturing and arching?

BOHIN: That's correct.

JOHNSON: Could you just translate that into language I can understand, please?

BOHIN: Usually, newborn babies like to be -- adopt a flexed posture. That's where your arms and legs are bent, and anyone

who's seen a newborn baby know they like to be scrunched up. If you have extensive posturing, your arms are straight and twisted out, that's a very abnormal movement, and your legs are pointing straight with your toes pointing downwards. So that's a very abnormal posture for a newborn baby to adopt.

JOHNSON: You then record the advice from Alder Hey to give factor VIII?

BOHIN: Yes.

JOHNSON: The fact that that was administered at 11.00 hours and a clotting screen was performed at that time?

BOHIN: Yes.

JOHNSON: There was a further desaturation at 14.50 down to 44%?

BOHIN: Yes.

JOHNSON: And fresh blood was noted in [Baby N]'s mouth and 3ml of blood was aspirated from the nasogastric tube?

BOHIN: Yes.

JOHNSON: Dr Mayberry then intervened. He saw what he has told the jury he saw in [Baby N]'s throat.

BOHIN: Yes.

JOHNSON: The anaesthetists were called, the local anaesthetists first of all, and then that was followed by the team from Alder Hey and the events of about 19.40 to 19.45 when [Baby N] was intubated by Dr Potter and the events happened that we heard of yesterday from a number of the medical practitioners?

BOHIN: Yes, that's correct.

JOHNSON: This included, of course, several doses of adrenaline, an infusion of adrenaline, together with two doses of sodium bicarbonate?

BOHIN: That's correct.

JOHNSON: Can we move then to your observations and opinion, Dr Bohin. I'm looking now at your paragraph 7.1.

Can you summarise the position for us from [Baby N]'s birth through to the events of the early hours of the following day, 3 June?

BOHIN: Yes, of course. [Baby N], as we know, was born early.

He was premature but only 5 weeks premature. And in keeping with that degree of prematurity he was a well baby. He developed some grunting after birth, so some respiratory distress after birth, and this continued for 4 hours. And therefore he was started on antibiotics after a septic screen. And that's completely standard practice in neonatal medicine.

The CRP at that time was less than 1 and his blood cultures were subsequently negative but nevertheless that was the right course of action to take. As part of that septic screen a chest X-ray was taken and that showed signs in both lungs of possible infection, but regardless of that, he settled down quite quickly and was soon in air and all his observations were normal.

So whether he would have settled anyway or because of the antibiotics, we'll never know. But in any case he settled.

JOHNSON: Thank you. Just interrupting you for a second, so far as the chest X-ray is concerned, that has been seen by Professor Arthurs, hasn't it?

BOHIN: Yes, it has.

JOHNSON: You know what he says. We are not going to advertise it now, but in due course you know that he will come and tell the jury about his views --

BOHIN: Yes.

JOHNSON: -- as far as that is concerned?

But just staying within your expertise if we could, could we move on to the events of 01.00 or 01.15 on the morning of the 3rd, please?

BOHIN: At just over 11 hours of age, so at around 01.00 hours the 3rd, [Baby N] had a profound desaturation to 48%, which is a significant desaturation as we have heard.

This is a life-threatening desaturation. He was noted to be crying and the registrar said was screaming and that he apparently cried for 30 minutes, which is really very, very unusual for babies to cry for that length of time.

It's rare for preterm babies to cry for long periods. Of course they cry, all babies cry, but they don't cry for long periods unless they're in significant pain or discomfort because they very easily can be settled. We have to undertake quite uncomfortable and distressing procedures often on newborn babies

and some of those procedures are painful, so of course they do cry. But you can usually cuddle them or settle them with a dummy or contain them and they stop crying quite quickly.

In my experience they don't continue to cry for 30 minutes and nor would a neonatal nurse let them cry for 30 minutes without trying to comfort them in some way. I have never heard a neonate scream. Babies will cry, but I've never heard them scream. So on reviewing the notes, there was nothing to indicate that [Baby N] had undergone any sort of painful or unpleasant procedures immediately prior to that event to account for what was clearly a very prolonged episode of distress.

JOHNSON: Did you, in the context of all that, come to any view as to the possible causes for why [Baby N] would have been demonstrating that type of behaviour?

BOHIN: Well, I could only conclude that this was secondary to an inflicted painful stimulus because something had caused him to be very unsettled, to desaturate with a life-threatening desaturation, and then cry and scream for that period of time.

Once he had settled, everything reverted to normal, and that was extremely odd, and the only thing I could think of to account for that was an inflicted painful stimulus.

JOHNSON: Did you feel that you were able to go any further than saying that, an inflicted painful stimulus?

BOHIN: No.

JOHNSON: Can we move on, please, to 15 June 2016. In your paragraph 7.5, did you record the fact that following that event in the early hours of 3 June, until almost exactly the same time on the 15th, [Baby N] had remained well?

BOHIN: Yes, he hadn't given any cause for concern to the clinical staff.

JOHNSON: We have heard evidence over the last couple of working days that he began to have desaturations and became mottled at various stages at about 1 o'clock, some time after 3 am and some time after 5 am.

BOHIN: Yes.

JOHNSON: Did you see anything unusual in that sequence of events up to and including the events at about or just after 5 am that morning?

BOHIN: Well, I mean, it was odd. We knew that in the past he had had lot of self-correcting desaturations, which would be normal for a baby of this age. But on these occasions there seemed to be mottling, which was coming and going, depending on -- [Dr A] saw it, then it seemed to have gone, then it came back again, so that was something that was present. That isn't diagnostic of anything, but it does alert you to the fact that something may not be well and you need to keep a watch on things to see if the baby may be developing any infection and to look at their observations to see if things are deteriorating. That was exactly what [Dr A] said.

And eventually, he decided that things were so not right that he changed the antibiotics to a different antibiotic. Then because of the continued desaturations, he decided he ought to intubate and ventilate [Baby N] because although he didn't quite know why this was happening, he felt that he needed respiratory support.

JOHNSON: We know there was a marked desaturation at about 07.15 and that at or about 08.00 that morning when [Dr A], having medicated [Baby N] for intubation, decided to look into his mouth, he saw, either before or after he'd tried to intubate him -- and you will understand, I'm sure, that there is controversy about this as between the prosecution and the defence --

BOHIN: Yes.

JOHNSON: -- he saw blood.

BOHIN: Yes.

JOHNSON: If the blood was there before the attempt to intubate, which is a matter the jury will have to decide, can you conceive of any natural cause for that having happened?

BOHIN: I looked -- well, firstly there was -- it was not possible to establish with certainty where that blood may be coming from. [Dr A] was the only person that looked down and he couldn't establish where that blood was coming from. But in any case, blood was in the oropharynx and I felt that there were three possibilities.

One, there could be local bleeding within the mouth.

Secondly, there could be bleeding from the stomach or the gut, which had come up into the mouth. Or thirdly, there could be bleeding from below the vocal cords.

Those were the three things that I felt needed to be considered and either confirmed or excluded.

JOHNSON: What views did you reach?

BOHIN: Well, the chest X-ray taken on the 15th was reported as being compatible with infection rather than pulmonary haemorrhage, but regardless, [Baby N] wasn't a baby that was likely to have pulmonary haemorrhage. We see it in babies who are much more premature and in older babies when they have been very unwell for a long time. And he didn't fit into that category. So he wasn't a baby that you would suspect to have a pulmonary haemorrhage.

Babies who do have pulmonary haemorrhage, it can be catastrophic. What you see when you try to intubate them is copious amounts of blood coming up from the vocal cords and when you suck it out it's replaced by more blood that you can see coming up from below the vocal cords and that wasn't something that [Dr A] described. He did say he was unable to view the tracheal inlet when suction was applied, but he didn't say he could see blood coming up from below the vocal cords.

And my other reason for thinking this was not a pulmonary haemorrhage was the swiftness of the recovery, because babies who have pulmonary haemorrhage need almost certainly ventilating and they need ventilating at very high pressures, whereas, as we know, [Baby N] wasn't intubated on that occasion, but was put on to BiPAP and was ventilated on BiPAP at very low pressures. So again, that doesn't fit with a pulmonary haemorrhage.

Bleeding locally from the mouth or stomach. If there'd been bleeding from the stomach we would have had repeated aspirates from the nasogastric tube thereafter, and that didn't happen. So I felt that actually, it couldn't have come from the stomach.

JOHNSON: So far you favour excluding pulmonary haemorrhage, from the lungs?

BOHIN: Yes.

JOHNSON: Gastrointestinal --

BOHIN: Yes.

JOHNSON: -- ie from the stomach, haemorrhage? So what --

BOHIN: We're left with local trauma to the mouth. At that stage, I can't confirm or refute local trauma to the mouth. All we had at that stage was [Dr A]'s account that he couldn't see a -- he didn't say he saw a bleeding point, all he saw was lots and lots of blood, so we can't say whether that was from the mouth at that stage.

JOHNSON: Would you agree with -- from your paediatric perspective, would you agree with Professor Kinsey, who told us that she would exclude spontaneous haemorrhage, in other words there has to be a cause?

BOHIN: Yes, there needs to be some sort of trauma to the mucosa to then have a reaction which either causes a bruise or, if that bruise is sufficient, the skin gets breached and it then causes a haemorrhage. But in babies with haemophilia, as she said this morning, that degree of haemophilia, they don't just haemorrhage spontaneously.

JOHNSON: Because of the existence of haemophilia in this case, and I'm looking at your paragraph 7.14, did you specifically say that a more haematologically specialised opinion should be sought to cover the possibilities?

BOHIN: Yes, because in my professional career I have only looked at three babies with haemophilia. It is rare, but I have looked after three babies and therefore I am not an expert on haemophilia and she is. So I felt someone else should give an opinion on that.

JOHNSON: So summarising the position, Dr Bohin, could you deal first with the events of 3 June as to what your view was -- what the evidence drove you to conclude must have happened in the early hours of the 3rd?

BOHIN: For me, my opinion was that the most likely cause of the event on the 3rd was inflicted trauma to the mouth or oropharynx.

JOHNSON: So far as the events of the 15th, and we have an ongoing situation from 7.15 through to almost exactly 12 hours later, actually, culminating in a fairly catastrophic collapse requiring the administration of adrenaline and other drugs, could you identify a natural cause for that series of events?

BOHIN: I can't identify a cause for the bleeding, a natural cause for the bleeding that caused [Dr A] to fail his attempted intubations in the early morning. But of course thereafter -- well, I think there was some sort of inflicted trauma that caused the bleeding, and I know that's a matter of debate at the moment, but I think there was some inflicted trauma which led to bleeding, which caused [Dr A] not to be able to intubate. Thereafter, with successive people trying, it becomes much more difficult. As we heard yesterday from Dr Potter, the more people that try, there causes more swelling of the back of the throat, so the anatomy becomes very distorted, and so the more people that try, the more difficult it becomes.

And we know from the other medical staff that tried to intubate that there appeared to be a swelling at the back of the throat so we know that the anatomy was distorted.

I think this culminated in the cardiac arrest because the airway then was just not sustained by the laryngeal mask because of the degree of swelling in the airway.

MR JOHNSON: Thank you, Dr Bohin. Would you wait there for some further questions, please?

Cross-examination by MR MYERS

MR MYERS: Dr Bohin, following the same order and starting with 3 June, your conclusion is that what happened -- first of all is consistent with inflicted painful stimuli; is that correct.

BOHIN: Yes.

MYERS: And can be explained by that, that's what you say?

BOHIN: Yes.

MYERS: In particular, by inflicted trauma?

BOHIN: Well, inflicted injury, so yes, trauma.

MYERS: Trauma, yes. So something done physically that created a painful stimulus?

BOHIN: Yes.

MYERS: From what we see, do you agree there are, on the available evidence, no physical signs, by which I mean marks or anything like that, which indicate the infliction of trauma?

BOHIN: There are no marks, but there's a life-threatening desaturation.

MYERS: Yes. But starting, first of all, with the specific mechanism of trauma, someone physically doing something to the baby, there's no physical evidence of an assault?

BOHIN: There's no external advice, but nobody looked in his mouth at that time, so what we don't know is if there's any trauma to his mouth. I've got no reason -- I don't know, there might be. But she only looked at the outside of the baby when she came, Dr Loughnane. She didn't look in his mouth.

MYERS: If he was screaming would his mouth have been open possibly?

BOHIN: Possibly I don't know if she would have looked in, I doubt it very much.

MYERS: If he is a haemophiliac, as we have heard, and he's bleeding --

BOHIN: He wasn't bleeding at that point, was he?

MYERS: He wasn't bleeding at any point, was he?

BOHIN: Not on the 3rd.

MYERS: So what is it inside the mouth that would be seen?

BOHIN: She may have seen a swelling inside the mouth, as other people did with when they looked in the mouth prior to intubation. She may have seen something but she didn't look in the mouth.

MYERS: We know that swelling in the area of the epiglottis is (inaudible: coughing) intubations, isn't it?

BOHIN: Yes. She wouldn't have seen that far down.

MYERS: No. So coming back to it, there's certainly no blood notwithstanding [Baby N]'s condition, is there?

BOHIN: There was no blood on the 3rd that we could see.

MYERS: No, that we could see. And no other external marks or signs of any type of physical trauma that had been inflicted, is there?

BOHIN: No.

MYERS: You haven't suggested this is an air embolus?

BOHIN: No, I haven't.

MYERS: Right. I'm just checking that.

With regard to the screaming, as it's described by Dr Loughnane, and we can just put up -- we've seen it plenty of times, but it's easier to see -- tile 174 on [Baby N] 1, please, Mr Murphy. Just so we have it there if anyone wants to see it.

The person who used the word screaming is one person and it's Dr Loughnane, isn't it? That's a matter of record, Dr Bohin.

BOHIN: Yes.

MYERS: We know from the swipe data, Dr Loughnane attended at about -- entered at about 1.07 and left at 1.20.

BOHIN: Yes.

MYERS: So she was there for 13 minutes.

BOHIN: Yes.

MYERS: And when she returned, if we scroll down:

"After being crash bleeped away, on return, asleep."

BOHIN: Yes.

MYERS: Right. So actually, I know we are talking about 30 minutes as if that's a given fact. In fact, Dr Loughnane was only there for 13 minutes, wasn't she?

BOHIN: But there's a nursing note that says the crying went on for 30 minutes.

MYERS: Crying, yes.

BOHIN: So Dr Loughnane says this baby was screaming --

MYERS: Yes.

BOHIN: -- and that is just such an unusual thing for someone to write in the medical notes. That is really, really unusual. So she hasn't said how long the baby was screaming for, but she notes that the baby was screaming. So that's a fact she said that.

The nursing note says that the baby was crying for 30 minutes, but in fact nobody saw what happened because the nurse -- we don't know which nurse was looking after him at the time because the nurse who was looking after him had gone on a break and it's not been able to be established who was overseeing [Baby N] at the time this all started.

MYERS: And no one else has come along to say, "I couldn't believe the screaming I was hearing that night", as a matter have they?

BOHIN: No.

MYERS: No. So it's not --

BOHIN: But we don't know who else was there.

MYERS: It's not so extraordinary for a baby to cry, maybe, for 30 minutes, is it?

BOHIN: It's absolutely extraordinary for a baby to cry for 30 minutes. It's such a long time.

MYERS: I am going to suggest it's the screaming that you have fixed on, the word screaming, Dr Bohin.

BOHIN: That's such an unusual description of how a baby is and for a baby on a neonatal unit to cry for 30 minutes is an extraordinarily long time.

MYERS: A baby can, even at that age though, cry for that length of time, can't he or she? You must have experienced that?

BOHIN: No, not in my experience no.

MYERS: You've never experienced a neonate crying for 30 minutes?

BOHIN: No.

MYERS: In any event, you have put this down to an inflicted painful trauma?

BOHIN: Yes, I did.

MYERS: As a matter of record, notwithstanding the use of the word "screaming", it seems that Dr Loughnane didn't escalate this with any further concern, did she?

BOHIN: No because when she came back the baby was asleep, all observations were normal, so there was no need -- and the increased work of breathing had improved. So there was no need to escalate it further. But what she did say was that they would do a blood gas at 2 o'clock as she had previously planned. So she had said, we don't know what this was, but we'll observe it, which was the correct thing to do.

MYERS: You can't say for sure what it was?

BOHIN: No, I can't.

MYERS: But your explanation is, as you said, inflicted trauma?

BOHIN: Yes.

MYERS: Right. Can I just have a look at something in the entry please at tile 20, which relates to a note by Caroline Oakley.

This is actually the afternoon before on 2 June. The entry is on the right-hand side. We can see:

"2 June 2016, 18.47. One desat to 67% on handling and upset. Oxygen with effect."

We can see that. You can see that?

BOHIN: Yes.

MYERS: Of course we don't know how long that upset is, do we?

BOHIN: No.

MYERS: But it is an example, actually hours before the one we're looking at on the 3rd, of a desaturation, accompanied by being upset, isn't it?

BOHIN: Yes.

MYERS: No obvious indication of why the baby was upset?

BOHIN: No. In the few lines above it says an orogastric tube was passed, so I don't know if it's related to that, because that also says:

"Reviewed by Dr Ukoh. Awaiting blood results before giving vitamin K."

So that suggests actually those two things are linked.

MYERS: Well, we've got actually above it:

"Dropped sats..."

Can we all see about four lines up on the entry above:

"Dropped saturations to 67% when upset. Temperature recorded and required 60% oxygen to recover. OG tube passed"?

BOHIN: Yes, so I think that's probably the same event.

MYERS: If that's right, if the order is correct, that happens after the crying and upset, doesn't it?

BOHIN: Then there's an orogastric tube passed. So I don't really -- but an orogastric tube is passed and then the baby is fed so you'd imagine the baby has recovered and is very well or she wouldn't have fed the baby.

MYERS: On this occasion, in the afternoon of 2 June, [Baby N] required 60% oxygen to recover; is that right?

BOHIN: That's what it says. We don't know how long it took but that's what it says.

MYERS: All right. I just want to look at a couple of entries over the intervening period before we get to 15 June -- and I'm not suggesting they are of the magnitude of either of the events that we're dealing with but just to follow through. If we got to J19206, which is 7 June, ladies and gentlemen.

These additional tiles will be available eventually if they're not right on there at the moment.

J19206. Moving forward to 7 June. The note starts, it's a note at 20.14, bottom left. We can read the general observations relating to [Baby N] there. I just want to go across to what's on the top of the opposite page that carries on from this note.

If we were to read across and up, it's got:

"Passing urine and bowels opened. Has been unsettled at times since going on to phototherapy. Appears slightly mottled. Dr Cooke aware."

I only identify that so we can see there's a reference to "mottled", actually, on 7 June.

Do you see that, Dr Bohin?

BOHIN: Yes.

MYERS: Then just forward to the next day, 8 June, which is J19209. It's a note at 05.26 by Abigail Jeffels and it's a reference to:

"Desaturation in the middle of the night, self-limiting, did take a while to saturate."

BOHIN: Yes.

MYERS: Then finally, just before we get to the 15th, 10 June, which is at 19216. So this is at 03.52 on 10 June.

It's an entry by JW, Nurse Williams:

"Nursed in cot, self-ventilating in air. Nursed on Philips monitor. Observations stable overnight. Awake and crying frequently during the nights. Feeds changed to demand and has fed two to four-hourly overnight."

So crying frequently on that occasion but plainly not suggested on the level that you have identified on that last occasion?

BOHIN: No, and it looks like this -- they've -- the nursing staff, who are very key to working out why babies are crying, felt that actually he was crying then because he was hungry, so they changed his feeds to demand feeding, which means that you feed when the baby wakes up to cry, as opposed to the very regimented feed pattern which he'd been on before.

MYERS: You link that crying there to being hungry?

BOHIN: He was on two to four-hourly feeds there and clearly wanted more volume. But what it doesn't say is that he cried for 30 minutes between feeds.

MYERS: No, it doesn't give any timing at all, does it?

BOHIN: No.

MYERS: Let's go to 15 June then please, Dr Bohin. We're familiar, because we've just been dealing with it, with notes that start either from the nurse or from the doctors round about 1.00 or 1.45 in the morning and then we have got a series of notes, really, going throughout the rest of the day at various points, haven't we?

BOHIN: Yes.

MYERS: Before about 1 o'clock, so far as we can see, [Baby N] was generally well, wasn't he?

BOHIN: Yes.

MYERS: And we've been told he was due to be going home?

BOHIN: Yes.

MYERS: And we've seen, I'm going to suggest, that there is certainly a deterioration that commences from about 1 o'clock.

BOHIN: Yes.

MYERS: And then there is a significant or more significant desaturation at 7.15, isn't there, the 48% desaturation?

BOHIN: Yes.

MYERS: And then the next event we come to, just in terms of pivotal times, is the intubation and the blood at 8 o'clock?

BOHIN: Yes.

MYERS: So far as the deterioration is concerned, it's reasonable to take the deterioration from 1 o'clock as running into the desaturation at 07.15 on one view, Dr Bohin, I'm suggesting.

BOHIN: Well, I think things were clearly not right at 1 o'clock because they'd asked for a medical review and there were signs that [Baby N] was slightly mottled. But the blood gas was normal, the examination, other than the mottling, was unremarkable, so the plan was to observe.

So that was a hint that things may not have been right.

He continued to -- he didn't collapse at that stage but he continued to sort of grumble along and not be quite right. But again, there were no other objective signs that he was ill because the blood gas was normal. A second antibiotic was added after a septic screen.

There was no evidence of infection on that screen at that time, but it was the right thing to do to start him on antibiotics.

It was only at 5.15, when the capillary refill time was longer than one would like, that a bolus of normal saline was given and he was put into oxygen and his feeds were stopped. So at 5.15 things took even more of a deterioration than they had before. So he was non-specifically not quite right before that but I wouldn't say that he was unwell. But it was certainly after 7.15 that things were much worse.

MYERS: There's an underlying problem, whatever that is, running through the night that led to him being nil by mouth by about 5 o'clock in the morning?

BOHIN: Yes.

MYERS: That is possibly connected to a more dramatic deterioration or desaturation at 07.15, isn't it?

BOHIN: I can't tell if they are connected or not. Those two things happened. They may be connected. I have no proof that they are connected.

MYERS: And in fact, although it has not been referred to, I think, as you've gone through it just then -- I don't criticise you for this -- there were desaturations during the night, weren't there, that we've heard about?

BOHIN: Self-correcting desaturations, so they're ones that correct themselves.

MYERS: And desaturations, according to Nurse Jennifer Jones-Key, in the morning shortly before 07.15 in fact is her evidence?

BOHIN: Her evidence was that there were five, I think, that occurred shortly before 07.15.

MYERS: All right. So on one view we've got issues with [Baby N] running from about 01.30 in the morning right the way through to 19.45 with the most serious incident when the Alder Hey team arrived, a gradual accumulation?

BOHIN: I'm not sure it's a continuum, if I'm honest. Clearly he wasn't right from 1 o'clock in the morning. But at 05.15 things had certainly taken more of a turn for the worse in that he became more unwell, but obviously the main collapse was after 7.15 when [Dr A] tried to intubate and failed. Thereafter, he didn't really continue to deteriorate because he was very settled on BiPAP for a period of time so he didn't continue to deteriorate then.

MYERS: I was picking up in fact on the question that there'd been a course that had run from 8 o'clock to 19.40 or thereabouts, I think you were asked by the prosecution, and I'm just establishing that in fact, if we go back, we can take this back from 01.45 right the way through, can't we?

BOHIN: As I say, I think the objective evidence is from 05.15.

Before that he was reviewed but there was nothing dreadfully amiss on those occasions. The right thing was done in terms of the medical -- you know, he had a gas and he had a partial septic screen and he was observed. But all his observations at that time, in between times, were normal. So there was nothing objective there but things had changed by 05.15, so for me things had changed from 05.15 more dramatically.

MYERS: Thank you. Moving forwards then to 8 o'clock, which you've answered questions about, we know there's an issue about when blood was first visible.

BOHIN: Yes.

MYERS: But however it comes about, your conclusion was that the blood at that time is due to trauma to the mouth, throat or oropharynx area; would that be right?

BOHIN: Yes.

MYERS: So in your view we can localise where the source of the blood is to that?

BOHIN: Yes.

MYERS: Do you agree we can't actually establish with any certainty precisely where the blood originated from that we see at 8 o'clock? We've got the rough area but not with a precise position?

BOHIN: That's correct.

MYERS: And you've touched on what happened as the day went on.

But a number of other medical practitioners saw [Baby N] during the day that followed, didn't they, to perform intubation?

BOHIN: Yes.

MYERS: There is no specific site of trauma identified at any point, is there?

BOHIN: There's not. But I think, as Dr Potter said yesterday, when you're the person that's performing a life-saving manoeuvre, your prime objective is to, as I think he put it, put the tube in the hole. So what you don't do is spend a lot of time looking round the anatomy. If you can't achieve your objective by placing the tube in the right place then clearly you will write down why that is the case. But if you get the tube in, then you're not -- you don't have a good look around because the baby becomes unwell. Every time somebody tries the baby becomes more unwell. So if you have a look and you can't see the anatomy because it's obscured, the right thing to do is stop. So I think those that saw something odd wrote that they saw something odd but the fact that it isn't there, I don't think we can take much from that.

MYERS: The principal thing was the description of some sort of swelling, wasn't it?

BOHIN: There was some sort of swelling that Dr Mayberry saw and the two anaesthetists saw later on. I don't think Drs Saladi and Brearey mentioned seeing any swelling.

MYERS: Dr Potter, for his part, if we recall, described seeing something about the structure of throat in that part that he thought might be unusual and particular to [Baby N], didn't he?

BOHIN: Yes, he said he could see the arytenoid cartilages but there was something above that which may have meant that his voice box was more anterior than in other children and that

slightly obscured his view. But of course by then [Baby N] had had dexamethasone and six doses of adrenaline by the time he came to have a look.

MYERS: We dealt with that with Dr Potter yesterday, didn't we, when he talked about --

BOHIN: I disagree with Dr Potter on that, to be honest.

MYERS: Well, we have heard his evidence on that. And in fact it turned out he referred to the fact that one of his colleagues, some months later, performed a procedure on [Baby N] where she had to apply a little pressure to be able to get that to work correctly, didn't she, cricoid pressure?

BOHIN: And I think, as she said in her read-out statement, that's not at all unusual for that to happen. But of course he was 9 kilos by then and he was only 1.67 kilos at this stage.

MYERS: And, of course, Dr Potter has the benefit of having actually looked into [Baby N]'s mouth and dealt with it, doesn't he? He's the person who was there looking at it?

BOHIN: Yes.

MR MYERS: Yes, right. Thank you.

Re-examination by MR JOHNSON

MR JOHNSON: Just one matter please, Dr Bohin. You said you disagreed with Dr Potter about that and I just wanted to clarify precisely what it was you disagreed with him and why.

BOHIN: Dr Potter was asked whether the effect of dexamethasone that was given, I think, at about half past 5 -- um...

JOHNSON: I'll get the time.

MR JUSTICE GOSS: This was attributable to me, wasn't it, asking the question?

BOHIN: Yes, that was a very good question. It was about the dexamethasone given about 2.5 hours before the intubation. We know from research where dexamethasone is given to older children with croup, so that's not like this case but it's in older children, that actually it works within about 2 hours. So this is children who are toddlers, usually, who come into the emergency department with life-threatening croup and that treatment is to give them, dexamethasone, and that works within about 2 hours. So I'm not suggesting that all the swelling had

disappeared by 2 hours, but certainly we know that the onset occurs within 2 hours.

And in -- and there is a Cochrane -- there's a big research base on that and, in addition to that, although [Baby N] was given adrenaline because of his profound bradycardia and his cardiac arrest, for want of a better word, adrenaline is also given for people who have major anaphylactic reactions and initially it's given intramuscularly, but if people have life-threatening airway problems in anaphylaxis, adrenaline is given intravenously and it's given every 5 minutes. So that must work almost immediately or it wouldn't be given that frequently. And it was on that basis that I disagreed with Dr Potter that the effects of dexamethasone 2.5 hours earlier may have reduced the swelling so may have made his attempt at intubation easier.

I have to say, he did use something called a bougie, which is a kind of a firm tube, a thin tube, that he used in order to intubate, and anaesthetists don't do that unless there's a problem with intubation. So it made me think that actually the intubation wasn't as straightforward as we were perhaps thinking it might have been.

JOHNSON: Can I break all that down a little bit, please. Can we start with, just so that we have this reference, please, tile 288 in the second sequence. Thank you. That shows us that the dexamethasone was given at 17.35. Of course these events in which Dr Potter was most directly involved happened at 19.40. You say that dexamethasone is prescribed for croup. Older -- well, maybe not only old people remember croup. What is croup, first of all?

BOHIN: Croup is a viral infection of the throat, really, and it causes swelling of the throat, and children make a characteristic crowing sort of noise so you know that they've got some airway obstruction. They make a very characteristic noise and when they cough they bark like a seal and that shows you that the airway is narrowed in order to make that noise.

JOHNSON: So why would -- it's all very straightforward to you because you know all this, but we don't. Why would dexamethasone be given as a treatment for croup?

BOHIN: Because it's an anti-inflammatory, so it very quickly reduces swelling. So in young babies where they've got this swelling of the throat, it works very quickly to relieve that swelling so that you don't then have to go on to intubate them or give them respiratory support.

JOHNSON: Do anaesthetists deal with children suffering from croup?

BOHIN: Only if it's not worked and they need to intubate them as a matter of urgency.

JOHNSON: Who deals with children suffering from croup?

BOHIN: Paediatricians and the emergency department and GPs.

JOHNSON: Do you have experience of this?

BOHIN: I have experience of croup and also giving dexamethasone to babies who -- neonates on a neonatal unit who have been intubated for a long time because if you are a very sick newborn baby and you need to be on a ventilator for a period of time, the physical presence of a tube in your trachea causes localised swelling, and so when babies are well and can be extubated and that tube is taken out, there's usually quite a lot of swelling around the vocal cords, which means that babies then don't manage with the endotracheal tube taken out, and so we tend to give dexamethasone prior to extubating those babies to reduce any swelling so that when you do remove the breathing tube, the babies remain well and you don't have to replace it. So I've experience of both of those things.

JOHNSON: Thank you. Now turning to adrenaline in this context, you've talked about anaphylaxis?

BOHIN: Yes.

JOHNSON: Which is an overreaction of the system to something that you're allergic to; is that right?

BOHIN: Yes.

JOHNSON: And a classic, dangerous -- so the nut type allergy, a real nut allergy?

BOHIN: Exactly.

JOHNSON: So somebody who, if they have a particular nut, whether it's a peanut or a tree nut to which they are allergic, they can suffer an extreme allergic reaction?

BOHIN: Yes. It comes on very quickly, starts off with hives, they get a feeling of swelling in their throat, because that's exactly what's happening, swelling of their airway, and a feeling that they can't breathe. They can't breathe because their airway is being blocked because that is the symptom of the anaphylaxis.

JOHNSON: The treatment for that, the standard treatment, is an EpiPen, isn't it?

BOHIN: Yes.

JOHNSON: An EpiPen is something that is carried around or should be carried around by people who have a diagnosed --

MR JUSTICE GOSS: Are you happy with -- you're just leading the witness.

MR JOHNSON: I'm sorry.

Well, you tell us why an EpiPen is carried round by --

MR JUSTICE GOSS: Sorry. This is because you're not meant to lead your own witness. In other words, you shouldn't suggest the answer to your own witness. Cross-examining is very different. You suggest the answer and hope the witness will agree with your question.

BOHIN: People who have allergies, whether it be to peanut -- I think, you know, that's the commonest allergy certainly in the United Kingdom. Sufferers of severe peanut allergy carry an EpiPen, which is adrenaline in a little pen form, and if they are accidentally exposed to that allergen they know very quickly that they've been exposed to it and they use the EpiPen to give themselves an intramuscular injection, so they -- kind of usually in their leg or their tummy. They give themselves an injection and that EpiPen contains adrenaline.

They then go to an emergency department as quickly as possible because the adrenaline wears off and you may need -- depending on the amount of exposure and your symptoms, you may need more than one dose of adrenaline.

But, of course, if you arrive at an emergency department they are in a position where they can put in an intravenous line and give you adrenaline intravenously, which works much more quickly than intramuscularly.

Intramuscularly is brilliant, but intravenous is much better.

MR JOHNSON: In that context how quickly does adrenaline have to work to unblock the airway in order to have an effect?

BOHIN: Well, if you give it intravenously, it's immediate, but the effect is fairly short-lived, so you may have to give multiple doses of adrenaline and if then that doesn't work, you're left with having to put an airway into the patient and intubating them.

JOHNSON: Is that the reason you respectfully -- or you disagree with Dr Potter and his assessment in relation to dexamethasone and adrenaline?

BOHIN: Yes. I think the dexamethasone was given 2.5 hours before Dr Potter intubated, so I think that was time enough for the anatomy to change and the swelling to be reduced, making his intubation relatively easy compared to other people that had gone before him. We have to remember they were all experienced people, these weren't junior people that were trying to intubate [Baby N], these were consultants who -- even Dr Potter said he had known some of them and knew that they were experienced intubators, so I think the anatomy had probably changed a little bit by the time Dr Potter came to intubate.

MR JOHNSON: Thank you.

Does your Lordship have any questions?

MR JUSTICE GOSS: No, thank you.

It's not just nut allergies, it's bee stings, things like that, isn't it, that people --

BOHIN: Yes, it can be vegetables, you know, fruits.

MR JUSTICE GOSS: Wasp stings?

BOHIN: Yes, definitely.

MR JUSTICE GOSS: Thank you very much, Dr Bohin, that completes your evidence at this stage. Thank you for coming and giving it to us today.

MR JOHNSON: My Lord, Lucy Letby was, of course, interviewed. We've not been able to agree a summary because the important parts of this interview have to be looked at in context, so the jury will be hearing it in due course. It's not very far away, but we're not going to give them a summary at this stage.

MR JUSTICE GOSS: Yes. As I understand it, it's essentially something that isn't really capable of summary. That's really it, isn't it?

MR MYERS: Yes.

MR JUSTICE GOSS: You need a much fuller context than just a summary. That's why you're not getting a summary at this stage. But we are getting near to the time when you're going to get all

the evidence, as you've been promised, as you know, in much more detail as to what was said in the course of interviews.

So that then completes the evidence, does it, Mr Johnson --

MR JOHNSON: It does.

MR JUSTICE GOSS: -- in relation to [Baby N]?

MR JOHNSON: Yes. Well, we have Professor Arthurs, of course.

MR JUSTICE GOSS: Yes. But insofar as we can compartmentalise?

MR JOHNSON: We'll be moving on tomorrow to the [Babies O, P & R] twins.

MR JUSTICE GOSS: So we have the [Babies O, P & R] twins and then one more after that?

MR JOHNSON: Correct.

MR JUSTICE GOSS: So 10.30 tomorrow morning, please, ladies and gentlemen. Please remember your responsibilities as jurors, with which you're very familiar. Thank you.

(In the absence of the jury)

MR MYERS: We would be grateful if time could be given, my Lord.

MR JUSTICE GOSS: Yes. Thank you very much.

(4.10 pm)

(The court adjourned until 10.30 am on Wednesday, 8 March 2023)