Neutral Citation Number: [2024] EWCA Crim 748

Case No: 202303209B4

**IN THE COURT OF APPEAL (CRIMINAL DIVISION)**
**ON APPEAL FROM MANCHESTER CROWN COURT (CROWN SQUARE)**
**The Honourable Mr Justice Goss**
**T20217088**

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 2/7/2024

**Before :**

**PRESIDENT OF THE KING'S BENCH DIVISION**
**DAME VICTORIA SHARP**
**VICE-PRESIDENT OF THE COURT OF APPEAL, CRIMINAL DIVISION, LORD JUSTICE HOLROYDE**
and
**MRS JUSTICE LAMBERT DBE**

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**Between :**

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| **LUCY LETBY** | **Applicant** |
| **- and -** | |
| **REX** | **Respondent** |

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**Mr Benjamin Myers KC and Ms Fiona Clancy** (instructed by **Russell and Russell**) for the **Appellant**
**Mr Nicholas Johnson KC, Mr Simon Driver and Mr Philip Astbury** (instructed by **Crown Prosecution Service**) for the **Respondent**

Hearing dates: 22, 23 and 25 April 2024

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# Approved Judgment

This judgment was handed down remotely at 16.30 on 2 July 2024 by circulation to the parties or their representatives by e-mail and by release to the National Archives.

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WARNING: reporting restrictions may apply to the contents transcribed in this document, particularly if the case concerned a sexual offence or involved a child. Reporting restrictions prohibit the publication of the applicable information to the public or any section of the public, in writing, in a broadcast or by means of the internet, including social media. Anyone who receives a copy of this transcript is responsible in law for making sure that applicable restrictions are not breached. A person who breaches a reporting restriction is liable to a fine and/or imprisonment. For guidance on whether reporting restrictions apply, and to what information, ask at the court office or take legal advice.

The following reporting restriction orders are in place.

a. The reporting direction order made by Steyn J under sections 45 and 46 of the Youth Justice and Criminal Evidence Act 1999 dated 15 January 2021.
b. The reporting direction order made by Goss J under section 46 of the Youth Justice and Criminal Evidence Act 1999 dated 7 October 2022.
c. The reporting direction order made by Goss J under section 46 of the Youth Justice and Criminal Evidence Act 1999 dated 2 March 2023

**Dame Victoria Sharp, P. :**

1. Reporting restriction directions are in place. These orders, made under sections 45 and 46 of the Youth Justice and Criminal Evidence Act 1999, prevent the reporting of the names of certain persons who were witnesses or were otherwise concerned in the proceedings, and the reporting of any other matter which would be likely to lead members of the public to identify any of those persons. The persons concerned include living children who have been the victims of offences; living children who are the siblings of victims; parents of deceased children who are the victims of offences and some medical and nursing personnel. In the light of these reporting restrictions, the babies referred to in this judgment are anonymised and we refer to them by letter only.

2. Reporting restrictions also prohibited the reporting of this application for leave to appeal against conviction and of this judgment until the conclusion of the applicant's retrial on one count of attempted murder (count 14) or further order of the court. The applicant has now been convicted of that offence, and this judgment and the hearing of the application can now therefore be reported.

*Introduction*

3. The applicant was a qualified nurse working at the neonatal unit (the unit) at the Countess of Chester Hospital (the hospital). She was charged with 22 counts of murder or attempted murder in respect of 17 babies.

4. The prosecution case at trial was that between 2015 and 2016, the applicant serially harmed babies in her care with the intention of killing them. She did so by various means: by causing air embolus by introducing air exogenously via intravenous lines; by forcing air into the abdomen via nasogastric tubes; by force feeding milk; by poisoning through exogenous administration of artificial insulin and by physical trauma causing bleeding or internal injury. The applicant alone was present on the unit at the time of all of the deteriorations and deaths. . The case was a circumstantial one. To prove it, the prosecution relied upon expert medical witnesses, in addition to evidence from numerous medical professionals, nurses and doctors, associated with the care of the babies named on the indictment at relevant periods and on many other strands of evidence, such as the applicant's shift patterns, and the records of the treatment of the babies concerned.

5. The defence mounted a robust approach to the evidence that was called. Serious allegations were put to the numerous professional witnesses (including expert witnesses) who were called on behalf of the prosecution. Two points may be noted at the outset. First, though the defence instructed a number of expert witnesses of their own, and many reports were served from them before and during the trial, no expert evidence was called on the applicant's behalf. The entirety of the evidence called for the defence consisted of the applicant's own testimony, and that of an estate plumber, who had worked at the hospital since 1986. He gave evidence about certain plumbing problems that had occurred at various points in the unit; and of two particular incidents in the unit, but not on a date or around the time of any incident in the indictment.[1]

[1] He gave evidence that there had been various issues with the drainage system in the Women and Children's building at the hospital where the unit was based: two specifically (when a handbasin in Nursery 1 in the unit was backed up with foul water, and once when the floor was flooded in Nursery 4, because a tap was left on).

Secondly, to make a somewhat basic but related point, what was put to the prosecution witnesses in cross-examination, was not evidence, save to the extent it was accepted by the witness. More specifically, in the context of this appeal, suggestions made in cross-examination which were not accepted by prosecution witnesses and were not supported by evidence called on behalf of the applicant, are, as the respondent has submitted, irrelevant.

6. As the judge explained it to the jury in his summing-up:

> "What counsel say to you is not evidence. They are advocates, not witnesses. Their role is to present their respective cases, to question witnesses and to advance arguments on the evidence for you to consider. So where a witness agrees with a proposition in a question then it is the reply of the witness that becomes the witness's evidence. Where a witness does not accept the factual proposition in the question then the question itself is not evidence. Counsel are quite entitled to and do, of course invite you to reach certain conclusions on the evidence. They cannot give evidence of what did or did not happen, they can only make submissions on the evidence and invite you to conclusions on it."

7. The applicant's trial commenced on 4 October 2022 at the Crown Court at Manchester Crown Square before Goss J (the judge) and a jury. Verdicts were returned between 8 and 16 August 2023. The applicant was convicted of seven counts of murder, seven counts of attempted murder and was found not guilty on two counts of attempted murder. The jury were unable to reach a verdict on a further six counts of attempted murder, and on 18 August 2023, they were discharged.

8. On 21 August 2023, the applicant was sentenced (in her absence) to life imprisonment on each count on which she was convicted with a whole life order on each count.

9. The convictions for murder were on counts 1, 3, 4 , 5, 12, 20 and 21. These were for the murder of Baby A (count 1); Baby C (count 3); Baby D (count 4); Baby E (count 5); Baby I (count 12); Baby O (count 20) and Baby P (count 21). The convictions for attempted murder were on counts 2, 6, 7, 8, 15, 16 and 17. These were in respect of Baby B (count 2); Baby F (count 6), Baby G (counts 7 and 8); Baby L (count 15); Baby M (count 16) and Baby N (count 17).

10. The familial relationship between some of the babies was as follows. Baby A and B (counts 1 and 2) were twins. Babies E and F (counts 5 and 6) were twins. Babies L and M (counts 15 and 16) were twins. Babies O and P (counts 20 and 21) were two of three triplets (the third triplet was transferred out of the unit, immediately after the deaths of babies O and P).

11. The two counts of attempted murder on which the applicant was acquitted were count 9 (Baby G) and count 10 (Baby H). The counts of attempted murder on which the jury were unable to reach verdicts were count 11 (Baby H); count 13 (Baby J); count 14 (Baby K); counts 18 and 19 (Baby N) and count 22 (Baby Q).

12. The applicant now renews her application for leave to appeal against conviction on four of the five original grounds advanced (grounds 1, 2, 3 and 5), following refusal by the single judge (Sir Robin Spencer). She is represented as she was at trial by Mr Myers KC and Ms Clancy. The Crown is represented, again as below, by Mr Johnson KC, Mr Driver and Mr Astbury.

13. The grounds on which leave is sought are these:

    i) the judge was wrong not to direct the jury to disregard the evidence given by Dr Dewi Evans; and was wrong to admit further evidence from him (ground 1);

    ii) the judge was wrong to reject the submission of no case to answer made by the defence at the conclusion of the prosecution case (ground 2);

    iii) the judge was wrong to direct the jury that they did not have to be sure of the precise harmful act or acts on any given count on the indictment (ground 3);

    iv) the judge did not take the correct course in investigating a potential jury irregularity arising out of a complaint first made to the court on 2 August 2023 (ground 5).

14. A proposed ground 4 (that the jury were wrongly directed on evidence relating to the persistence of insulin in the bloodstream) was withdrawn following the refusal of leave to appeal by the single judge.

15. The applicant also seeks leave to admit fresh evidence. This is in the form of two reports by Dr Shoo Lee, a neonatologist and co-author of a paper, "Pulmonary Vascular Air Embolism in the Newborn" published in the Archive of Childhood Diseases in 1989 (the Lee and Tanswell paper). The Lee and Tanswell paper featured prominently in the trial. The stated purpose for adducing the evidence is to support the position of the defence taken at trial that two of the prosecution's medical experts, Dr Evans and Dr Sandie Bohin, applied skin discolouration as a means of diagnosing air embolus outside any reliable basis for doing so and they did so outside the specific parameters of the research concerning discolouration as a sign of air embolus.

16. The applicant seeks leave to vary her grounds of appeal, if necessary, by the inclusion of a further ground of appeal (which would be ground 6) namely that the effect of the evidence of Dr Lee in conjunction with the weaknesses in the scientific evidence relied upon by the prosecution at trial to prove air embolus is such as to render the convictions on counts 1 to 5, 12, 16, 17 and 20 unsafe and thereby undermines also the safety of the conviction on the remaining counts on which the applicant was convicted, counts 6, 7 8, 15 and 21.

17. A trial of this nature and length inevitably places a considerable burden on all concerned. In our judgment, the judge handled the trial with exemplary skill and patience. The various rulings challenged in this renewed application were swiftly delivered in every case, and were thoughtful, fair, comprehensive and correct. Detailed reasons were given for refusing leave to appeal by the single judge. He found it necessary, as have we, to read a vast volume of material (including from the transcripts

of evidence) well beyond the material specifically relied on by the defence, in order to examine the matters complained of in their full context.

18. We agree with the single judge's reasons for refusing leave and with his conclusion that none of the grounds advanced are arguable. We do not consider that the criteria for the admission of fresh evidence have been met. It follows that, in accordance with the announcement of our decision on 24 May 2024, all applications, including the application for leave to adduce fresh evidence, are refused.

19. Before turning to the substance, we should record our grateful thanks to all counsel and solicitors involved. Presenting the case was inevitably a demanding endeavour given the need to contain the detail within manageable proportions, including for the purposes of oral argument. We should also record our gratitude to Yasmin Shafi of the Court of Appeal Office for her considerable assistance in preparing this application for the court.

*Background*

20. Between June 2015 and June 2016 there was a significant rise in the number of deaths and sudden and serious collapses of babies at the unit at the hospital. On 8 June 2015 at 20.58, Baby A died following his sudden collapse. The following evening his twin sister, Baby B, also collapsed although she was successfully resuscitated. These events were followed by the deaths of Baby C on 14 June 2015 and Baby D on 22 June 2015. The collapses were unexpected in that, although the babies were premature, their condition immediately before the collapse was judged by the treating medical and nursing team to be relatively stable. The events prompted an informal review by two of the consultants at the unit, Dr Stephen Brearey (the neonatal lead) and Dr Ravi Jayaram (the lead clinician with responsibility for management issues) who identified the presence of the applicant as a common factor in all of these sudden collapses and deaths. In February 2016 there was a further review to consider the continuing rise in unexplained collapses and deaths on the unit. The applicant continued to work in the unit.

21. On 21 June 2016, at around 14.24, triplets were born. One of the triplets, Baby O died on 23 June 2016 and his brother, Baby P died on the following day. The applicant had been their designated nurse. Another baby collapsed suddenly and unexpectedly on 25 June 2016. By this stage, the concerns of the most senior consultants on the unit led them to remove the applicant from all clinical duties. In April 2017, senior doctors from the unit first made contact with the police. There were meetings with the police and the consultants on 27 April 2017 and 15 May 2017 which precipitated the police investigation.

22. During the police investigation which followed, Dr Evans, a retired consultant paediatrician was instructed to review clinical records of the babies in the unit who had died or collapsed suddenly. Initially he reviewed 33 sets of clinical records where an infant had died or deteriorated and where the event was unexpected and/or unexplained. He was later sent a further 28 sets of records for review. The purpose of the review was to consider, in each case, the cause of the collapse of the baby. He produced a very large number of reports including a general statement dated 17 April 2019 setting out his background and experience and a glossary of terms; a review of published literature regarding air embolus in newborn infants dated 3 July 2019 and a series of reports

considering the events surrounding the deaths or collapses of babies who were on the subject of charges.

23. Dr Evans remained the lead expert throughout the investigation and trial. His conclusions were peer reviewed by Dr Bohin, a currently practising consultant neonatologist from Guernsey. Her specific instructions (as set out in her report on Baby A of 29 November 2020) were:

    i) to peer review the work and statements submitted by Dr Evans using his statements, additional material and access to the same medical files he used in forming his opinion;

    ii) to provide section 9 statements of those reviews conducted in a thorough and transparent manner, to continue to assist the investigation in answering the question of "what happened to each baby" and provide detailed explanations of areas of inconsistency in respect of the views of other experts; and so

    iii) to provide a robust clinical review of Dr Evans' opinions, setting out whether she agreed or disagreed with him and, as appropriate, to provide an alternative causation for the collapse.

24. Dr Evans advised the police on the instruction of experts from specific specialisations and further experts were instructed and provided reports as set out below:

    i) Dr Andreas Marnerides, forensic pathologist and histopathologist;

    ii) Professor Owen Arthurs, consultant paediatric radiologist;

    iii) Professor Sally Kinsey, consultant paediatric haematologist;

    iv) Professor Peter Hindmarsh, consultant paediatric endocrinologist;

    v) Professor Stavros Stivaros, consultant paediatric neuroradiologist;

    vi) Dr Simon Kenney, consultant paediatric surgeon.

*The issues at trial*

25. Relying upon this body of medical evidence, the prosecution identified the various mechanisms by which it asserted that the babies had been harmed. The mechanisms were:

    i) air embolus caused by air being injected into the vasculature via intravenous lines: this was advanced as the sole cause of the collapse of Baby A, Baby B, Baby D and Baby M and as a contributory factor in the collapse of Baby E, Baby I and Baby O;

    ii) air forced down a nasogastric tube: this was alleged to be the cause of the collapse and death of Baby C, Baby I and Baby P;

iii) insulin poisoning: it was alleged that the bags of fluid being administered intravenously to Baby F and Baby L were adulterated by the addition of exogenous insulin;

iv) overfeeding with milk: Baby G;

v) trauma: Baby E and Baby O.

26. The various counts and the mechanism alleged for the babies concerned, are set out in the table below.

| Count | Baby | Charge | Date of death/collapse | Mechanism |
|---|---|---|---|---|
| 1 | A | Murder | 8 June 2015 | Air embolus |
| 2 | B | Attempted murder | 9/10 June 2015 | Air embolus |
| 3 | C | Murder | 14 June 2015 | Air via nasogastric tube |
| 4 | D | Murder | 22 June 2015 | Air embolus |
| 5 | E | Murder | 4 August 2015 | Acute bleeding/air embolus |
| 6 | F | Attempted murder | 5 August 2015 | Insulin poisoning |
| 7 | G | Attempted murder | 7 September 2015 | Overfeeding with milk |
| 8 | G | Attempted murder | 21 September 2015 | Overfeeding with milk |
| 12 | I | Murder | 23 October 2015 | Air via nasogastric tube/air embolus |
| 15 | L | Attempted murder | 9/11 April 2016 | Insulin poisoning |
| 16 | M | Attempted murder | 9 April 2016 | Air embolus |
| 17 | N | Attempted murder | 3 June 2016 | Throat trauma |
| 20 | O | Murder | 23 June 2016 | Injury to liver/air embolus |
| 21 | P | Murder | 24 June 2016 | Air via nasogastric tube |

27. The prosecution maintained that the applicant's responsibility for the deaths and sudden collapses of the babies could be inferred from a raft of circumstantial evidence. The applicant alone was present on the unit at the time of all of the deteriorations and deaths and was the common factor in all of the cases. She appeared to be fixated with being involved in events in the intensive care nursery and involved herself unnecessarily with babies who had been designated to other nurses. She created, it was alleged, false entries on certain documents to hide her activities, to provide her with an alibi or lay the ground for invented explanations. She retained and took home a large number of handover sheets as "trophies" of her crimes. These handover sheets were confidential documents and should not have been removed from the unit. Over 200 were found hidden under the applicant's bed. After the collapse or death, she searched for the names of some of the babies on the indictment and searched out their families on Facebook. Various handwritten notes were found at her home. One of those notes

concluded with the words: "I am evil, I did this." The prosecution relied upon this evidence as amounting to a confession.

28. The prosecution case included two counts of attempted murder (counts 6 and 15) in which it was alleged that the applicant had poisoned babies (Baby F and Baby L) by adulterating their drip feed with synthetic insulin.

29. In both cases of poisoning, the prosecution relied upon the evidence of Professor Hindmarsh, a consultant in paediatric endocrinology. He gave evidence in the case concerning Baby F, that the blood test results demonstrated that he had been given exogenous insulin over a period of 17 hours and that the insulin had been administered at a constant level over that time. One bag which was already running had been spiked. Another bag of stock insulin had also been contaminated. The same person must have contaminated both as the level of insulin added to the two bags was similar. In the case of Baby L, Professor Hindmarsh said that the baby's hypoglycaemia had continued from 9 April until around 15.00 on 11 April and that the only way in which the hypoglycaemia could have been induced was via the administration of insulin in the feed. He calculated that either 2 or 3 bags of fluid had been contaminated.

30. At trial, the integrity of the blood samples and reliability of the biochemical testing was challenged by Mr Myers. However, in her evidence at trial, the applicant admitted that both babies had been poisoned by insulin, but denied that she was the poisoner. The prosecution relied upon the unlikelihood of there being two poisoners at work on the unit. As the judge expressed it shortly before the jury retired to consider their verdicts:

> "If you are sure that two of the babies…had Actrapid, manufactured insulin, inserted into the infusion bag that were set up for them 8 months apart in August 2015 and April 2016 respectively, and you are sure that that was done deliberately, you then have to consider whether that may have been a coincidence, two different people independently acting in that way or were they the acts of the one person and, if so, who."

31. In her evidence the applicant denied intentionally causing any harm to any of the babies. She provided explanations for the various strands of circumstantial evidence, explaining for example that she was one of the most newly qualified intensive care nurses on the unit and she was enthusiastic and very committed to her work. She said that she searched regularly on Facebook for people who came into her mind and those searches for the bereaved families should be seen in the context of the hundreds of other searches she made. She said that she had taken the handover sheets home by accident and then forgotten about them and that, in any event, only 21 of those sheets related to babies on the indictment.

32. The medical evidence called by the prosecution on the causes of the collapses of the babies represented the bulk of the evidence at trial. Important aspects of the prosecution case were nonetheless challenged. The applicant did not accept that the collapses of the babies were either sudden or unexpected and the interpretation of the babies' vital signs in the periods before their collapses was the subject of cross-examination of medical and nursing witnesses and experts. Mr Myers on behalf of the applicant

challenged the good faith of some of the medical witnesses on the grounds that the applicant was being scapegoated for substandard care in the unit due to understaffing and the increase in the numbers and vulnerability of the babies in the unit.

33. Mr Myers also challenged the sufficiency of the scientific evidence underpinning the diagnosis of air embolus and the basis for the experts' conclusions in each case where air embolus was advanced as the cause or the contributing cause of the collapse. The evidence on this topic was given by Dr Evans, Dr Bohin and Professor Arthurs who each gave evidence count by count and who gave evidence on many occasions throughout the trial. Both generally and in respect of each baby the experts were closely questioned about their clinical experience and knowledge of air embolus and the basis upon which the diagnosis was being advanced in respect of each baby affected.

34. The status of the evidence of Dr Evans, the prosecution lead expert, emerged as an issue as the trial progressed. Midway through the prosecution case, on 5 January 2023, the applicant made an application that any further evidence from Dr Evans should be excluded and that the jury should be directed to disregard the expert evidence which he had already given (which related to seven babies and the first nine counts on the indictment). The application was made on the basis that Dr Evans had demonstrably established that he was not an independent expert. It was submitted that he had constructed theories designed to support allegations on the indictment rather than forming and presenting an independent opinion on the facts; he had been hostile and emotive, dogmatic and biased in his responses to questions on behalf of the applicant and that he was too closely aligned to the police having acted, in effect, as their investigator. A non-exhaustive catalogue of statements made by Dr Evans was provided which was said to demonstrate the extent to which he had stepped outside the proper boundaries of an expert witness. These complaints went not to the weight to be attached to his evidence but were submitted to be so fundamental that they went to the admissibility of his opinion.

35. The defence also relied on a decision on the papers by Peter Jackson LJ in an unrelated application for permission to appeal to the Civil Division of the Court of Appeal in care proceedings, which was deeply critical of a report from Dr Evans relied upon in support of that permission application. Peter Jackson LJ said the contents of that report had all the "hallmarks of an exercise in working out an explanation which exculpates the applicants." He commented that the report ended with "tendentious and partisan expressions of opinion that are outside Dr Evans' professional competence and have no place in a reputable expert report."

36. The judge refused the application to exclude the evidence of Dr Evans. He emphasised that it was important to contextualise the role of Dr Evans at the various stages of the investigation into the events at the unit. His responses to questioning by Mr Myers were relevant to the jury's assessment of his evidence and the evidence in the trial as a whole. They could be the subject of comment and submissions at the end of the trial but did not render the evidence inadmissible.

37. At the close of the prosecution case a submission of no case to answer was made on the applicant's behalf on the grounds that:

    i) none of the experts who had given evidence on the topic of air embolus had a sufficient clinical experience and expertise to do so;

ii) the research basis for air embolus as cited in the evidence was too vague and inconsistent and failed to match the requirements of scientific evidence capable of supporting the diagnosis;

iii) the prosecution experts were inconsistent in their descriptions of the characteristics required to support the diagnosis of air embolism.

38. The judge ruled that there was a sufficient body of accepted expert medical opinion that administration of air into the venous system could cause air embolism which might be fatal. He acknowledged the rarity of the condition and that it followed that there was limited medical literature and research on the condition and that clinical experience was bound to be limited. He ruled however that it did not follow that the body of evidence taken as a whole was too vague or inherently weak to be admissible evidence. Such criticisms of the experts were, he found, matters for the jury to consider and evaluate along with the other evidence in the trial.

*The Air Embolus Cases*

39. In his general statement of April 2019 Dr Evans described an air embolus as: "a serious life threatening condition and found only as a complication of clinical care. If the volume of air is sufficiently large, the result is fatal. Direct injection of air via a syringe and needle is always intentional. The injected air passes through the veins eventually reaching the right side of the heart and through the pulmonary artery into the lungs. The air functions like a "bolus" or "clot" and has the same effect as a solid embolus. It obstructs the blood supply and causes rapid demise and death."

40. Dr Evans produced his "*Review of Published Literature regarding Air Embolus in the Newborn Infant*" in July 2019 by which time he had provided over 40 reports for the police investigation. The impetus for this work was his growing concern that the causes of the collapses and deaths of several of the babies at the unit had been the intentional introduction of air in the babies' circulation. The document reviewed 18 studies or case reports drawn from the world literature where death had been attributed to air embolus. He observed that the individual cases reported in the various papers demonstrated features similar to those observed by the members of clinical staff called to resuscitate the infants at the unit.

41. The review comprises a summary of the various reports and studies. Dr Evans noted the handful of reports in which skin discolouration had been observed. In one such study the baby was reported to have become cyanotic with grunting and a mottled skin. Another study referred to the infant's skin turning "blue black with blotchy redness" with "extremely pale" feet. He reviewed the Lee and Tanswell paper. That paper reported that the world literature (as at 1989) was limited to 50 described cases of air embolus. The authors noted that "the presenting signs of pulmonary vascular embolism were usually sudden and dramatic." The most common signs included "sudden collapse with either pallor or cyanosis, hypotension, bizarre ECG irregularities varying from tachycardia to bradycardia." The authors also noted "blanching and migrating areas of cutaneous pallor" in several of the cases and in one of the author's own cases "bright pink vessels against a generally cyanosed cutaneous background" had been observed. Dr Evans noted that the authors attributed this to the presence of direct oxygenation of erythrocytes adjacent to free air in the vascular system while the tissues continue to be poorly perfused and oxygenated.

42. At the end of his literature review, Dr Evans observed that several of the deaths in the cases referred to him for review by the police, occurred in infants who were previously stable and whose collapse was therefore both sudden and unexpected. Most concerning was that the infants failed to respond to resuscitation. He remarked that pre-term infants are at increased risk of numerous complications: infections; haemorrhage or feeding difficulties. However neonatal nursing and medical staff are familiar with the signs of an unwell infant and are aided by sophisticated monitoring equipment. He said "irregular breathing, cessation of breathing (apnoea), alterations in temperature or variations in heart rate, reduced heart rate or increased heart rate, are common features that signal deterioration irrespective of the cause. Resuscitation is usually effective. If the infant fails to respond one usually can find a cause in the form of overwhelming infection, severe haemorrhage or total systems failure. It is therefore concerning and unusual to discover an infant failing to respond to standard resuscitation procedures and where investigations after the death fail to identify an obvious cause of death."

43. Sudden collapse and a failure to respond to resuscitation were, he observed, characteristics of several of the babies whose records he had reviewed for the police. These features were "characteristic of the description of the babies in the studies described above whose death was attributed to air embolus." He added that the infants whose clinical records he had reviewed for the police and who had collapsed and in whom resuscitation was unsuccessful, had the skin characteristics of air embolus. The Lee and Tanswell paper had noted "blanching and migrating areas of cutaneous pallor in several cases" and one case of "bright pink vessels against a generally cyanosed cutaneous background." Another author had described an infant's skin turning blue black with blotchy redness.

44. Dr Evans cross referenced these descriptions with the account of the skin changes observed in Baby A. He concluded that the "descriptions of the clinical features of infants proven to have died from the effects of air embolus and described in many of the enclosed publications show marked similarities to the pattern of collapse and death of many of the babies."

45. At trial Dr Evans explained that the Lee and Tanswell paper was the best known in relation to pulmonary vascular air embolism in the newborn. He said that the Archives of Disease in Childhood, where the paper was published, was a monthly academic journal which was well read by all paediatricians. In his evidence he noted that discolouration of the skin might be a characteristic of air embolus but that it had only been seen in 11 per cent of the cases considered in the paper. He said that in cases of circulatory collapse, babies become hypoxic and go blue; and if the blood pressure drops then the baby can go white. He explained that "the colour changes which you find in collapsed babies is a combination of blue and white because they are white if there is no blood getting into the peripheries and they are blue if the blood that does get there is hypoxic." He said therefore that "the fact that they are bright pink is remarkable. It's very unusual". The authors attributed the pink colour to the direct oxygenation of red blood cells by the free air in the circulation.

46. Neither Dr Evans nor Dr Bohin had any, or any significant, direct experience of patients with air embolus. In his evidence at trial Dr Evans explained that he was proud that in thirty years of practice as a consultant paediatrician in Swansea, there had been no neonatal cases of air embolus on the unit at which he worked. He described the one incident of which he was aware in which a baby had suffered an air embolus as a

complication of what should have been routine surgery. He was aware of the incident which had resulted in a criminal trial, but, he said, that was the closest he had got to a baby with air embolus.

47. Dr Bohin said that she had seen only one case of air embolus in her clinical practice and this was when she had been a senior registrar in Leicester. It was before 1996 therefore (when she became a consultant). One of the patients who was undergoing a heart and lung bypass suffered an air embolus. She said that it is a recognised complication of that particular process that you can get air bubbles in the cardiac bypass circuit. The patient affected was a neonate but not a premature neonate.

48. Professor Arthurs is a consultant paediatric radiologist at Great Ormond Street Hospital. He gave evidence that (as a radiologist) he would rarely see an air embolus as a cause of death or as a radiological diagnosis because an air embolus sufficient to cause clinical symptoms is usually so massive that the focus of the clinical and nursing team will be on resuscitation and not on obtaining imaging. The absence of air does not mean therefore that the embolus was not at one time present as it may well have disappeared by the time that the radiograph is taken. He said that he had undertaken a detailed study or review of 500 cases (38 of whom were babies under the age of 2 months at the time of death) from Great Ormond Street Hospital in order to satisfy himself that the finding of the line of gas in one of the large vessels of the body, such as found in Baby A, was unusual (as opposed to it being present but overlooked). He found that about 25 per cent of the babies that he reviewed had gas in the large vessels. Of the 38 babies who were under 2 months of age, he found 8 cases where there was gas in the great vessels; and these babies had died of trauma, sudden unexpected death in infancy, congenital heart disease and disseminated malignancy. That detailed review therefore found no unexplained cases of gas in the great vessels.

Count 1: Baby A

49. Babies A and B were twins born by caesarean section at 20.31 on 7 June 2015 at 31 weeks and 2 days. The delivery was straightforward. At 20.58 on 8 June Baby A (a boy) was pronounced dead. At 00.30 the following day 9 June Baby B, his sister, collapsed and required resuscitation but survived. Both babies were described by their treating clinicians and nursing staff in their evidence given at trial to have been in good condition in the period immediately before their collapse. Baby A required some breathing assistance but was otherwise stable. Baby B had been the first twin and had required more initial resuscitation than her brother having been born blue and floppy with a low heart rate. She was, however, at the time of her collapse thought to be progressing well and to be stable.

50. It was the prosecution case that the applicant, who was standing by Baby A's cot at the time of the collapse, murdered Baby A by deliberately administering air into his venous system through the line by which he was being given intravenous fluids and that she attempted to murder Baby B by (again) injecting air into her venous system.

51. The shift leader on duty at the time of Baby A's collapse said that she had never seen a baby look that way before. Baby A was, she said, "very white with sort of purply blotches and very cyanotic." Dr Harkness, a registrar who was then in the fourth year of his neonatal training, an ST4, described the skin discolouration as purple/blue with red and white patches which were all over the body from shortly after the collapse until

the death. He said that the only other time that he had seen this sort of discolouration was on Baby E. Dr Jayaram, the on call consultant, arrived at 20.23 and described Baby A as having unusual patches of discolouration. The skin was very pale to blue but there were unusual pink patches mainly on the torso which would "flit around." It was, he said, very unusual and not something which he had seen before. He had not included this description in the clinical notes as he had not then appreciated its significance. He had however later become aware that his colleagues were describing a rash and so he had then undertaken a literature review and came across the Lee and Tanswell paper. He said that he remembered reading the description of the skin changes in that paper which made him feel "quite cold and worried." He categorically denied (an allegation put to him by Mr Myers) that those descriptions had influenced his account of what he had seen. He said he had undertaken the review, precisely because of what had been seen – an explanation later corroborated by contemporaneous emails.

52. Dr Evans said that he had prepared a number of reports about Baby A but that he had not known about the reported skin discolouration when he had first made the diagnosis of air embolus as the witness statements (of the medical professionals treating Baby A) had not been sent to him. He had made a diagnosis on the basis that:

    i) Baby A had collapsed suddenly when in a stable condition;

    ii) there was no evidence of infection or lack of oxygen and the modest fluid loss which had resulted from a delay in putting the line up had not been sufficient to cause the sudden onset unexpected collapse;

    iii) the sudden collapse of a baby, even in the neonatal unit was unusual. Typically there would be warning signs and babies do not go from a normal heart rate and normal oxygen saturations without some warning signs;

    iv) when he had prepared his first report the only other contender for the collapse was the administration of a noxious substance but he accepted in his evidence that there was nothing to support that diagnosis. He was therefore left with air embolus as the explanation;

    v) if the witnesses' accounts were reliable then the pattern of discolouration and flitting movements was what you get in air embolus.

53. His conclusion that air embolus was the cause of the collapse was therefore based upon a combination of factors. Individually none of those factors was diagnostic of air embolus. He accepted that changes in skin colour viewed in isolation could not lead to a particular diagnosis. He accepted that the diagnosis of air embolus was a diagnosis of exclusion, in the sense that you have excluded other explanations for the collapse, but he said that sometimes there is additional information, either discolouration or the presence of air in an x-ray, and those factors will enable you to firm up your diagnosis.

54. Dr Bohin explained that she would have expected Baby A to have had a number of problems in the neonatal period but, surprisingly, he had not and whilst he needed some respiratory support he was breathing room air. She accepted that it had not been ideal that Baby A had been without fluid for four hours but did not accept that this would have caused a sudden collapse. She disagreed with the suggestion that a baby in this condition might deteriorate dramatically and suddenly. She accepted that babies who

collapse may have rashes and they may go "gray ey blue" or white but, she said, "they don't have the type of rash that was described in A with this pink blotchy rash that seemed to fluctuate and come and go." Infections, sepsis or hypoxia would not cause that type of rash. She said that starting off with a list of differential diagnoses and then excluding things from that list left her with air embolus as the diagnosis. This explanation for the presence of the rash was the only plausible explanation for Baby A's condition.

55. Professor Arthurs said that Baby A's imaging showed the gas that would normally be seen in a post-mortem state. There was however another "line of gas" just in front of the spine. This was an unusual finding in the absence of a bony fracture or overwhelming sepsis. The presence of the line of gas was unexplained. He noted that Baby A had an umbilical venous catheter in situ and gas can be introduced into vessels through catheters and devices. He also had a longline. He concluded that the most "pragmatic conclusion" was that gas had been introduced via one or other of those lines. But, he said, the imaging is not diagnostic of how the gas was introduced: all the image shows you is gas in one of the large vessels of the body on a post-mortem radiograph. It was therefore consistent with, but not diagnostic of, air having been administered to Baby A.

56. Dr Marnerides identified the presence of an air bubble at post-mortem histology of the brain and lungs. He said that the presence of the air bubbles was highly suggestive of air embolus, although not conclusive.

Count 2: Baby B

57. Baby B was Baby A's female twin. The applicant was on the night shift 9/10 June. Her two designated babies that shift were in Nursery 3 (Nursery 1 was the intensive care unit, Nursery 2 was the high dependency unit and Nurseries 3 and 4 were special care babies' rooms). Baby B was in Nursery 1. Nonetheless the applicant became involved in Baby B's care and took blood gas readings for her at 00.16. At 00.30 Nurse W was in the nursery drawing up medication when the monitoring alarmed. She said that Baby B looked very pale and ill and had blotchy skin. She recorded that Baby B was cyanosed in appearance and that her colour changed rapidly to purple blotchiness with white patches. In her 20 years' experience as a nurse she had not seen such skin discolouration before. Dr Rachael Lambie was the registrar. Her unchallenged evidence was that the most memorable thing about Baby B was her colour. She was "dusky, so a grey-white colour and then there were patches of discolouration of the skin that were sort of reddy/purple. It would flash up, it lasted around 10 seconds, disappear and then reappear and it was flitting around her body." She said that the skin colouration was very unusual and not something which she had seen before or since. It was "a very strange and profound colour change." Dr Y (a consultant paediatrician at the hospital since 2005) saw discolouration which was purple and affected the right abdomen. She too was puzzled by its cause.

58. Dr Evans said that Baby B was stable before her collapse. She suffered a sudden apnoea and exhibited purple blotching of her body all over together with a slowing of her heart rate. He could think of no alternative explanations for the collapse: there was no evidence of sepsis; no evidence that Baby B had any problem with her lungs. There was nothing he said to explain this collapse which was so sudden and unexpected. The most striking feature of the presentation was the skin discolouration which appeared

and then disappeared. The pattern of collapse was similar in both cases of Baby A and B: "if the pattern is the same, it's more likely that the cause is the same." In differentiating between the outcome for the two babies he said that the volume of air which was instilled into the circulation was less in Baby B's case than in Baby A's case – which explained her survival.

59. Dr Bohin confirmed that Baby B was stable before her collapse. She told the jury that the usual conditions which you might expect in a premature baby, such as infection or cardiac arrhythmias could be discounted. She accepted that her diagnosis was based upon excluding other conditions, but she said she had been struck by the descriptions of florid skin changes observed by nurses and clinicians who had each remarked that the changes were very different from anything they had ever seen before. She said that she knew from her research that this skin discolouration can be present in cases of air embolus. She made her diagnosis therefore by excluding other conditions and because of the discolouration. She accepted in cross-examination that the fact of discolouration in itself, does not make the diagnosis one of air embolus.

Count 4: Baby D

60. Baby D was born on 20 June 2015 at 37 weeks' gestation. She weighed 7 pounds. She died aged 36 hours at 04.25 on 22 June 2015.

61. The first (of three) events occurred at 01.30 on 22 June 2015 when the designated nurse was on her break. Nurse Percival Calderbank checked on Baby D and found her to be settled and stable. She checked again 10 minutes later and found her to be satisfactory. Shortly after this, the monitoring alarm went off and Baby D was found desaturating and with her heart rate dropping. The applicant accepted that she made the unsigned manuscript entry in Baby D's blood gas chart timed at 01.14 shortly before the collapse. Nurse Percival Calderbank said that Baby D had a "reddy blue/reddy brown rash." She said that she had not seen anything like it before and described it as being like a mosaic. Baby D's designated nurse described Baby D's skin discolouration as being dark and unusual and a deep red-brown colour. She had not seen anything like it before. Dr Brunton, the on call registrar, arrived at 01.40 and recorded the presence of "extreme mottling with tracking lesions which were dark brown/black across the trunk."

62. Baby D was resuscitated but suffered a further collapse at around 03.00. Again, she recovered. Dr Brunton recorded that skin discolouration was also present at the time of the second collapse, but it was not so obvious as it had been previously. Baby D collapsed again for the third time at 03.45 when she stopped breathing. No skin discolouration was noted. On this occasion, Baby D could not be resuscitated. According to Dr Brunton, he had never seen a baby behave in that manner before or since.

63. Professor Arthurs identified a striking black line from left to right in front of the spine which was either gas in the aorta or the inferior vena cava. He said that he had never seen this quantity of gas in one of the main great vessels where no reason (for example, sepsis or trauma) could be found. It was also present in Baby A. He said that one of the explanations for this finding was that someone was injecting air into the child. In the absence of any evidence that suggested that Baby D had died of overwhelming sepsis or any of the other explanations that had been put forward he concluded that the radiographs were consistent with air embolus.

64. Dr Marnerides said that the presence of gas in the large intra-abdominal vessel was significant and that body decomposition could not explain its presence. Nor in his view could the presence of infection explain the death.

65. Dr Evans said that Baby D was stable and that the sudden nature of her collapse was incredibly unusual. She was recovering from pneumonia at the time of her collapse. The skin discolouration which came and went was not something which had been seen in a neonate before. The events were all therefore consistent with air embolus.

66. Dr Bohin said that Baby D had been born in good condition, her pneumonia had stabilised and she was recovering at the time of her collapse. Very graphic descriptions had been given by the nursing and medical team of the skin discolouration associated with the first two collapses and this sort of discolouration fitted with previous cases of air embolus seen in adults and to a lesser extent in children. In concluding that the cause of the collapse was air embolus she had excluded conditions which featured on her list of differential diagnoses and was therefore she said left with looking for something which was "unusual and odd."

67. Dr Bohin accepted in cross-examination that discolouration of the skin could be caused by conditions other than air embolus and that it was not possible to say what pattern of skin discolouration is specifically distinctive of an air embolus. However she said that "patchy discolouration that came and went" was "compatible with an air embolus taking into account the clinical situation which we had." It was put to her by Mr Myers that if discolouration of the skin were to be used as a means of identifying air embolus then "we need to have something which marks that out as an air embolus rather than anything else." Dr Bohin responded: "I'm not using discolouration alone… it's the constellation of features, not just of the clinical discolouration, although that absolutely forms a part of it because what has been described by clinicians, quite consistently, does not fit with any other known pathological process that I have seen in a neonate." She continued: "those types of skin lesions have been previously described in air embolus. ..we're looking for these patchy – not mottling…, I won't use that term because that will confuse people into thinking that mottling that we see in babies when they are in extremis for other reasons – these were described as tracking lesions, in some cases they were described as circular/oval lesions with a reddy brown discolouration that came and went."

Count 16: Baby M

68. Baby M was the fourth of four babies whose collapse was alleged to have been caused solely by the injection of air into the vasculature. Baby M was a male twin born at 10.13 on 8 April 2016 at 33 weeks and 2 days' gestation. His twin was Baby L (count 15) who was poisoned by insulin.

69. Baby M was born in good condition and the medical and nursing staff had no particular concerns. He was treated as a special care baby rather than a baby to be nursed as high dependency. At 16.00 on 9 April 2016, his monitoring alarms sounded. His heart rate and breathing had both dropped dramatically.

70. Dr Jayaram attended and noted that Baby M was generally pale, which he would expect in a cardiorespiratory arrest, but that there were also patches of very bright pink, or certainly more obvious pink, that flitted about, in the sense that they would appear and

disappear and then other ones would appear and disappear. Dr Jayaram said that once the circulation was restored and Baby M's heart rate got above 100, the pink blotches vanished. He said that they were very similar to those which he had seen on Baby A.

71. Dr Jayaram was once again challenged by Mr Myers about the absence of any note of the unusual skin colouring. He explained that his priority at the time had been dealing with the resuscitation, explaining things to the parents and then working out post resuscitation care. He also said that he was not aware of the clinical significance of the discolouration at the time. However he said that in June 2016 after a number of further unusual, unexpected and inexplicable events on the neonatal unit the whole consultant body at the unit had sat down and addressed the need to work out what was happening. One of the possible explanations which had emerged from that conversation had been air embolus as an explanation for the collapses. This meeting prompted him to do a literature search which is when he had found the Lee and Tanswell paper. He said that the following morning he had sent the link to his colleagues because that paper seemed to have described the skin discolouration that he and others had seen. He described the "physical chill" that had gone down his spine when he read the paper because it fitted so closely with what had been seen. When questioned further by Mr Myers he said that it had certainly not been the case of "let's look for something and, oh we've found this, let's make everything fit with this. Because actually that wouldn't be the right thing to do and there would have been no reason for me to look unless we'd seen this."

72. Dr Evans confirmed that Baby M was a preterm baby born in good condition and before his collapse there were no concerns regarding his clinical stability. The only concern was that his oral feeds had been discontinued at 15.00 because of bilious aspirate. There had been no associated change in heart rate and respiratory rate however and the collapse about an hour later was therefore completely unexpected. There was no evidence of infection or any other cause for the collapse. Taking into account all of these factors including the description by Dr Jayaram of the skin discolouration, he concluded that the collapse was caused by air embolus.

73. Dr Bohin said that Baby M was stable and well before his collapse and that there had been nothing to suggest that a medical problem was imminent. The team had started intravenous antibiotics as a precaution because of the early jaundice but there were no biochemical markers of infection either then or later. She said that she had to find an explanation for the sudden collapse of a previously well baby who had had a very prolonged cardio respiratory arrest from which he almost did not recover and who then, within a short space of time, appeared relatively stable again. She could think of no other condition than air embolus. The description of skin changes by Dr Jayaram was she said compatible with air embolus.

74. She explained to Mr Myers that she had gone through the list of what might have caused the sudden collapse (her differential diagnoses) and then crossed them off as they had been excluded. She had initially considered the possibility of obstruction of the airway because no one knew whether Baby M had a congenital anomaly of his airway. However that had had to be crossed off her list. The factors in support of the diagnosis of air embolus were sudden collapse, a prolonged arrest in a baby who had been well, and the speedy recovery and what the medical staff and the team on the ground saw. She said that babies who have a prolonged cardiac arrest are not usually very well afterwards and that in this case, the recovery was as perplexing as the collapse. She

said that air embolus fitted with such a scenario. She explained that depending on the volume of air that is injected, some babies will die, other babies survive. It was put to her by Mr Myers that she was not bound to reach for an explanation if none were suitable. She said: "You can't make an explanation up. You look for a differential diagnosis of possible causes and then either confirm or exclude them, which is what I did." Dr Bohin said that there was no single diagnostic feature of an air embolus but that this clinical scenario fitted with a diagnosis of air embolus.

Count 5: Baby E

75. Baby E was born on 29 July 2015 at 17.53 at 29 weeks and 5 days' gestation. He was a twin. Baby E died at 01.40 on 4 August 2015. It was the prosecution case that the applicant damaged his gastrointestinal tract leading to severe bleeding and that she caused his death by injecting air into his vessels producing an air embolus. Baby E's brother is Baby F who was poisoned by insulin.

76. At around 21.30 on 3 August, Dr Harkness was called to see Baby E by the applicant, who was his designated nurse. He was shown a sample of bloody aspirate which was mainly stomach contents flecked with blood. While he was there the baby had a sudden and large vomit of fresh blood. He made a further note at 23.00 that there had been a further gastrointestinal blood loss. Baby E's blood pressure however was stable and heart rate good. He was making a good respiratory effort. Dr Z, the on call consultant approved the plan that fluid loss should be replaced and Baby E should be intubated. Baby E then suffered a sudden deterioration at 23.40 when Dr Harkness was in the room and was getting ready to intubate him. This collapse was associated with skin discolouration which Dr Harkness described as: "A strange pattern over the tummy area – over the abdomen – which did not fit with the poor perfusion. In between the chest – upper legs – the rest was still pink but there were these kind of strange purple patches that appeared over the outside of his tummy…there were patches in one area then there were some in the other – some of it was still nice and pink – but it was certainly unusual and not fitting with a baby that had completely shut down or poor perfusion." The patches were of different sizes, in the region of 1 or 2 centimetres, possibly bigger, but just over the abdomen. Dr Harkness said that "it's something that was so unusual that it's hard to give a clear description." He said that he had seen a similar sort of pattern with Baby A but that was the only other time that he had seen it before, and he had not seen such a pattern since. He carried out an emergency intubation.

77. Dr Z arrived at 00:25. She had a discussion with Dr Harkness and they went to review the x- rays and blood results. She said they would have done that either at the nurses' station or at a computer in Nursery 1 which was the other side of the pillar from where Baby E was. During their absence Baby E collapsed for the final time at around 00.36. CPR (cardiopulmonary resuscitation) was started and drugs were administered. Baby E was given a blood transfusion at 00:50. As CPR was being given, a large amount of blood came from Baby E's nose and mouth. Dr Harkness had seen nothing like it before. After 10 minutes a spontaneous heart rate returned, but Baby E did not survive.

78. Dr Evans said that Baby E's condition between his birth on 29 July and the evening of 3 August was stable. He was at increased risk of a condition called necrotising enterocolitis, but his treatment was managed appropriately, and he did not go on to develop this condition. Dr Evans described two major issues in Baby E's case: the

significant haemorrhage from the upper gastrointestinal tract and the discolouration described by Dr Harkness.

79. Dr Evans said that the haemorrhage was not the result of some naturally or innocently occurring phenomenon. Something had been done to Baby E causing the bleed and causing him to lose a lot of blood in a short period of time sufficient to destabilise him generally. Initially he had thought that the bleeding may have been due to the nasogastric tube, but having seen the type of tube which had been used he did not think that it could have been responsible for the trauma. He thought that some other instrument had been used. He referred to something relatively rigid such as a plastic tube used for suction or an introducer which is used to intubate a baby. He pointed to the fact that neonatal units are full of bits of equipment such as suction tubes or introducers which might have been used. Whatever it was, he said, there was no potential innocent explanation for the degree of bleeding seen.

80. Dr Evans referred to the graphic description given by Dr Harkness of flitting patches of discolouration and said that in his view this was clear evidence of air in the circulation.

81. Dr Bohin said that in the period between birth and his collapse Baby E had been "incredibly stable." She agreed with Dr Evans that Baby E had sustained some kind of injury to his gastrointestinal tract causing bleeding which had destabilised him. She agreed that he had also had air injected into the circulation causing an air embolus. She said that "haemorrhage of this magnitude in neonates … [is] … vanishingly rare. Babies do sometimes have gastric erosion and ulceration but it does not result in haemorrhage of this fashion". Dr Bohin rejected the suggestion that in forming the view that Baby E had an air embolus she was simply "following the lead" provided by Dr Evans. She said that the purple patches on his abdomen did not fit with any explanation other than air embolus. It was the combination of a sudden and unexpected collapse of a well baby and the skin discolouration which had led her to make the diagnosis.

Count 12: Baby I

82. Baby I was born at 21.02 on 7 August 2015 at 27 weeks' gestation. She weighed 970 grams. She died at 02.30 on 23 October 2015. It was the prosecution case that on four occasions, namely, 30 September, 13 October, 14 October and 23 October (all occasions upon which the applicant was working in the unit) Baby I suffered sudden and unexplained episodes when she desaturated and required resuscitation. Each event, said the prosecution, was the consequence of Baby I being deliberately injured by the applicant.

83. Although Baby I was small and premature, she did well. By 29/30 September 2015 ongoing concerns had diminished, she did not appear to have breathing problems, she was gaining weight and being bottle fed. On 30 September, the applicant was Baby I's designated nurse. An emergency crash call was issued at 16.30 because Baby I had vomited, her heart rate had dropped and she was struggling to breathe. X-rays taken at 17.39 revealed a massive amount of gas in her stomach and bowels and her lungs appeared squashed. Dr Harkness attended and described her abdomen as distended and hard. The nasogastric tube was aspirated and produced large quantities of air and some milk after which her chest moved easily and the crisis passed. On 13 October at approximately 03.00 Baby I's designated nurse left the nursery temporarily. She

returned to the room at around 03.20. The applicant was present and reported that Baby I looked unwell. An x-ray demonstrated gross gaseous distension throughout the bowel affecting her ability to expand the chest which in turn had caused her oxygen level to fall. The following night (when the applicant was Baby I's designated nurse) a similar collapse occurred. An x-ray again demonstrated widespread gaseous distention sufficient to splint the diaphragm and interfere with Baby I's breathing.

84. Just before midnight on 22 October 2015, Baby I became unsettled. She collapsed and required cardiac compressions. Dr Gibbs, who attended, noted that Baby I's trunk had a mottled blue appearance. An x-ray showed massive dilatation of the bowel which was noted to be like a large stomach bubble. She was resuscitated to the extent that she was noted to be hungry and fighting the ventilator. She collapsed again around an hour later. Dr Gibbs again attended and noted purple and white mottling. On this occasion resuscitation was unsuccessful and Baby I died at 02.10.

85. Dr Evans' view was that the cause of Baby M's death was air embolus. She had been stable for the preceding week or so and had been breathing in air spontaneously when her saturations were 96 per cent. The sudden nature of her collapse, Dr Gibbs' description of the unusual discolouration and the futility of a prolonged resuscitation all demonstrated to him that this was a case of air embolus.

86. Dr Bohin said that Baby I had collapsed on a number of occasions because of air having been instilled into the stomach via the nasogastric tube. This would have caused the bowel to distend and so become fatter thus pushing up the diaphragm which in turn squashes the lungs and interferes with breathing. She explained that necrotising enterocolitis could be discounted as an explanation as Baby I had no other features of the condition either clinically or on x-ray

87. Dr Bohin said that she could not account for the discolouration to Baby I's chest from any pathological process other than air embolus. She concluded that the cause of Baby I's final collapse had been air embolus because the collapse was sudden and unexpected. She also said that Baby I had been crying in a very uncharacteristic way. She said that usually babies can be consoled if they are crying either by containment or sucrose or by a dummy. The crying which was described by the staff however was different. Baby I seemed inconsolable and must have been in pain. She could think of nothing "innocent" that would have caused Baby I to have a pink face but mottled trunk and limbs in association with being very unsettled.

88. Dr Bohin denied, when it was put to her, that her role in the prosecution was to rubber stamp the opinions of Dr Evans. She denied that she was supporting his views or backing him up so far as she was able to do so. She said that she was coming to her own conclusions and that if her views were in alignment with Dr Evans then that was because she agreed with him. She was asked, once again, to identify the clinical features of air embolus. She said she had very limited clinical experience of the condition which was rare. So she was relying upon the literature in which the condition presents as "a full, unexpected collapse and the person dies or it can present with a collapse where, after resuscitation, the person recovers. Most of the studies .. have been done in older children and adults. There may be a drop in blood pressure, there may be a drop in heart rate there may be skin changes. The clinical presentation is wide and varied. So that is my theory on how air embolus presents"

Count 20: Baby O

89. Baby O was an identical triplet boy. The triplets were born on 21 June 2016 at 33 weeks and 2 days' gestation. Baby O was the second born triplet and Baby P (count 21) was the first born. Baby O died at 17.47 on 23 June 2016. His brother died at 16.00 on 24 June 2015. It was the prosecution case that Baby O died as a consequence of the applicant damaging his liver and by injecting air into his veins.

90. Baby O was born in good condition and made good progress. He remained stable up until the afternoon of 23 June 2016 when he suffered a serious collapse. The applicant had been on holiday from 15 June 2016. She was working the day shift on her first day back, 23 June. She was Baby O's designated nurse. At 09.30 Baby O was examined by Dr Cooke who recorded that there were no concerns. Baby O was breathing normally. Dr Cooke undertook an abdominal examination which revealed that the abdomen was full but not distended and was soft and not tender. This examination effectively established that no liver damage was present at the time of this examination.

91. Baby O collapsed shortly after 14.39. A nurse responded to the alarm call and found the applicant alone with him at the time. Dr V attended. Baby O was moved into Nursery 1 (the intensive care unit). He had mild metabolic acidosis caused by, the prosecution alleged, the accumulation of blood in the abdomen secondary to liver injury. During the intubation, Dr Brearey noticed an unusual small rash on Baby O's chest. He said that it looked like something normally associated with meningitis. He was concerned because at the time Baby O appeared to be well perfused. He was successfully resuscitated. At 15.49 Baby O collapsed again. He suffered a further collapse at 16.15 from which he could not be resuscitated.

92. Baby O's father who was present during that afternoon said that Baby O's stomach was swollen "like ET" and "then there was a point where you could see all his veins. They were bright, bright blue, all of them and they were going different colours and his actual body looked like he had really really bad prickly heat and that got worse and then it went down again. It was literally like you could see something oozing through his veins."

93. At post-mortem, free unclotted blood was found in Baby O's abdomen. There was damage in multiple locations on and in the liver which had then bled into the peritoneal cavity.

94. Dr Marnerides the reviewing pathologist said that taking the location, extent and distribution of the liver injuries into account, they could not have been caused by CPR. The possibility of CPR being the mechanism of injury was, at its highest, a theoretical possibility. He said that this type of liver injury was only seen in serious accidents (road traffic, bicycling or trampoline accidents) and that he had never seen it in the context of CPR. It was the prosecution case that the applicant was responsible for Baby O's death by inflicting those liver injuries and additionally by instilling air into the venous system causing an air embolus. Dr Marnerides said that in the neonatal unit, the staff are trained how to give CPR. One may see bruising to the liver but it would

be very small areas of bruising distributed over the surface of the liver. The liver is not the anatomical site where CPR is applied. He concluded that the cause of death was best given as inflicted traumatic injury to the liver, profound gastric and intestinal distention following acute excessive injection of air via the nasogastric tube and air embolus due to the administration of air into a venous line.

95. Professor Arthurs referred to radiographs from the post-mortem examination which showed gas in the heart, one of the great vessels. This was an unusual finding which is sometimes seen in cases of necrotising enterocolitis (which he did not have) or after severe trauma or, in older children, after resuscitation. An alternative explanation for the presence of the gas in Baby O's case was air embolus.

96. Dr Evans had been provided with information concerning Baby O piecemeal. On the basis of the whole picture however, he concluded that the cause of his sudden collapse was likely to be the result of air embolus together with bleeding within the liver and into the peritoneal cavity. This conclusion was in part based on the description of a rash by Dr Brearey which had disappeared after a short time.

97. Dr Bohin said that the abdominal distension and x-ray findings were due to excessive air having been administered via the nasogastric tube. She did not accept that it was plausible that CPR had caused the damage to the liver. She agreed that the collapse at 14.40 was due to air embolus. She said that in reaching the conclusion about air embolus she was relying on a constellation of factors. She noted Dr Arthurs' view that there was air in the great vessels. She thought that the rash on the chest was due to air embolus. She accepted that, on its own, the 1 to 2 centimetres rash did not establish air embolus. It was put to her that she had tried to use "any bit of discolouration" to support the case for the presence of an air embolus. She agreed that the rash or discolouration did not establish air embolus on its own but said "I think what's come out across the whole of this trial is the huge variation in the types of skin changes seen by parents, practitioners, nursing practitioners, doctors of these children. And certainly the medical and nursing personnel are very clear that they have not seen changes like this before or since but that the changes appeared quite graphic. And so although there is not one single thing that you can say is definitely pathognomonic of air embolus, that is a bit like saying that all chicken pox rashes are not different. They are but you still have chicken pox regardless of whether you have two spots or 500.. the rash varies."

**Ground 1: the application to exclude the evidence of Dr Evans**

98. We have referred already to the role that Dr Evans played as an expert both in the investigation which gave rise to the applicant's prosecution, and at the trial.

99. The defence made its written application to exclude his evidence on 5 January 2023. The application was heard on 9 January 2023. By that stage, as we have said, Dr Evans had given expert evidence in respect of the incidents giving rise to counts 1 to 9 which related to seven of the babies: materially for present purposes, Babies A, B, C, D, E and F. The defence invited the judge to exclude the evidence Dr Evans had already given, by directing the jury in due course to disregard it, on the ground that it had failed to meet the standard of admissibility for expert evidence. It was submitted that Dr Evans' failure (as it was said to be) to comply with the requirements for expert evidence in Rule 19 of the Criminal Procedure Rules 2020 and Criminal Practice Direction 19A

(now replaced by the similar provisions of para 7 of the Criminal Practice Direction 2023) raised questions of admissibility and not weight.

100. The defence also submitted Dr Evans' evidence had had such an adverse effect upon the fairness of the proceedings that any further evidence from him should be excluded pursuant to section 78 of the Police and Criminal Evidence Act 1998 (PACE). The defence relied on Jackson LJ's decision on the papers (see para 35 above) as supportive of the application to exclude Dr Evans' evidence; but in the alternative, applied for permission to adduce that decision as relevant to the weight to be attached to Dr Evans' evidence and/or his bad character under section 100 of the Criminal Justice Act 2003.

101. In his decision Jackson LJ had said:

> "Finally, and of greatest concern, Dr Evans makes no effort to provide a balanced opinion. He either knows what his professional colleagues have concluded and disregards it, or he has not taken steps to inform himself of their views. Either approach amounts to a breach of proper professional conduct. No attempt has been made to engage with the full-range of medical information or the powerful contradictory indicators. Instead the report has the hallmarks of an exercise 'working out an explanation' that exculpates the applicants. It ends with tendentious and partisan expressions of opinion that are outside Dr Evans' professional competence and have no place in a reputable expert report."

102. The defence said there were many different issues relating to credibility which were fundamental to the character of Dr Evans' evidence. Amongst the matters raised were Dr Evans' involvement in the investigation into events at the hospital, which was said to be to an unusual extent (with the consequence that he had acted as an investigator rather than an independent expert). And various examples were given from his evidence in cross-examination to support the submission both that he had constructed theories to support the allegations on the indictment and had given evidence in a manner that was improperly subjective, emotive, dogmatic and biased.

103. The overarching position of the prosecution was that the various criticisms of Dr Evans' evidence were, with the odd exception, not well-founded; but in any event went to his credibility and to the weight to be attached to that evidence by the jury in due course, rather than admissibility. Further, it was said, were the evidence of Dr Evans to be excluded, the appropriate course would be to discharge the jury, rather than carry on with the trial. The prosecution did not oppose the admission of Jackson LJ's decision, but again, submitted it was material to the weight to be attached to Dr Evans' evidence, not to its admissibility overall.

104. The prosecution made some general points to rebut the allegations of bias and unreliability, including that almost every opinion given by Dr Evans was corroborated by another expert. In addition, it was pointed out that Dr Evans was the person who had identified that two of the babies had been poisoned by insulin (Baby F and Baby L). This was a matter which had eluded the treating medics and went to prove that someone

was committing serious offences against babies in the unit; and it was particularly important independent evidence, bolstering Dr Evans' credibility and reliability. Further, when Dr Evans reached his conclusions, he did so without knowing about other circumstantial evidence relied on by the prosecution in establishing guilt, including the applicant's Facebook searches, the shift pattern evidence, and the "confession" in the note recovered from the applicant's home on 3 July 2018.

105. In relation to the specific examples from Dr Evans' evidence upon which the defence relied, Mr Johnson accepted there had been a particular error into which Dr Evans was led by prosecuting counsel in re-examination: this was through fatigue and inadvertence on the part of counsel and the witness in relation to one issue (relating to Baby B); and he acknowledged that the defence relied on the cumulative effect of the examples given. But he said it was important to look at the substance of each of the specific complaints (rather than the adjectives used by the defence to describe Dr Evans' evidence generally). This the prosecution was able to do and it individually addressed the complaints and answered each of them. As to Dr Evans' involvement in the investigation and prosecution, there was nothing in the material itself that compromised his objectivity or capacity to give an independent view; and given the context, i.e. that he had been asked to consider the cases referred to him by the police, his input into the structure of the investigation and the way in which it should be carried out was appropriate.

*Ground 1: the judge's ruling on Dr Evans' evidence*

106. Having heard argument on the 9 January 2023, the judge gave his ruling in writing on the following day. He fairly set out the respective contentions of the parties, the matters they relied on and the relevant law. He then expressed his conclusions:

> "In relation to the respective submissions, it is, as the prosecution submit, important to contextualise the role of Dr Evans at the various stages of the investigation into the events. At the outset there was a large number of incidents that merited investigation. There needed to be a review and sift in order to identify those cases in which there was no identifiable medical cause or some causative negligent act or omission which, prima facie, were cases in which a baby suffered an event or collapse, in some cases dying, for no apparent reason. The offer of Dr Evans to conduct that initial review for a sifting process was not inappropriate or unreasonable in the circumstances. His initial sift identified incidents relating to a large number of apparently unexplained incidents relating to babies on the unit and his preliminary views as to possible mechanisms responsible for some of the events. I accept the prosecution's submissions in relation to the reasonableness of the approach taken by Dr Evans in this regard and the fact that this did not amount to inappropriate partiality or lack of independence. Thereafter, again, it was not in my judgment unreasonable or inappropriate for Dr Evans to provide some direction and judgment structure as to the way forward in relation to identified cases: he had the necessary knowledge and expertise. His role did not amount to

acting as an investigator or director of the investigation to the extent that it precluded him from being an expert witness in the case. It is to be noted that it was in consequence of the sifting process undertaken Dr Evans identified that in two cases, namely [Baby F]…and [Baby L] …a baby was deliberately poisoned with synthetic insulin which provided compelling evidence of someone in the unit deliberately harming babies. His opinions in relation to the cases were given without knowledge [of] the other material in the case relating to shift patterns and potentially incriminating material relating to the defendant, and there is evidence from other experts supporting some of the conclusions reached by Dr Evans. These matters are not, of themselves, determinative of the question of the appropriateness of Dr Evans as an expert witness but they are matters relevant to the complaints giving rise to the application that he should, in effect, be disqualified as an expert witness in the case due to lack of independence and credibility.

In relation to his evidence generally and particularly under cross-examination and the complaints that he was subjective, emotive, dogmatic and biased, both in terms of the content of his answers and the way in which he behaved, I accept that at times Dr Evans, particularly when asked repeated questions on a topic to which he believed he had given an answer engaged in a form of argument and, on occasions, he appeared to be frustrated by the persistence of the questioning and/or was dismissive of suggestions. He was often prolix and would answer a question by an explanation rather than directly.

However, none of these instances, in the context of robust cross-examination or otherwise, whether taken either individually or collectively, with or without the criticisms made of his alleged role and attitude, provides sufficient evidence meriting the exclusion of the evidence of Dr Evans on the basis that he has failed to act to a standard and in a way required of an expert witness. They are all matters that are capable of being relevant to the assessment by the jury of his evidence: it is for them to determine, as with any witness, his reliability, having regard to all the evidence in the case. Similarly, I decline to exclude the evidence under section 78 of PACE: the admission of this evidence would not have such an adverse effect on the fairness of the proceedings that the court ought not to admit it. The matters raised have been and remain capable of being addressed within the trial process and can be the subject of comment and submissions to the jury on all the evidence placed before them. Accordingly, the primary applications by the defence are refused.

The application to adduce the evidence of the adverse judicial comments of Jackson LJ in the relevant [decision on the papers],

> which is not opposed by the prosecution, is granted. It is relevant material for the consideration of the jury in relation to the assessment of the compliance of Dr Evans with his obligations as an expert witness. It will be necessary to identify the way in which this is to be done. It is to be hoped that this can be achieved by agreement. If not, then I will deal with it as a case management issue."

*Ground 1: the submissions to this court*

107. The applicant's submissions in writing effectively repeat those made to the judge. In his submissions to this court, Mr Myers does not suggest the judge applied the wrong test with respect to admissibility, or that the judge misunderstood the relevant principles of law to be applied. Instead, having initially said that the judge had reached an unreasonable conclusion, Mr Myers simply submits that the judge's decision was wrong. Thus, the judge was wrong he says not to direct the jury to disregard the evidence of Dr Evans; this was because Dr Evans lacked the necessary expertise to give expert evidence in the trial, he took the role of investigator and his evidence did not conform with the standard required of an expert witness. Various passages from Dr Evans' evidence namely those outlined to the judge, were cited in writing, in support of the submission that he conducted himself in a "dogmatic manner" when giving his evidence. Any further evidence of Dr Evans should have therefore been excluded, with the jury directed to disregard the evidence which had been received.

108. Mr Myers accepts Dr Evans had experience of neonatology but maintains his submission that as he was not a neonatologist, it was not a discipline in which he was an expert. Further, he has not been in full time clinical practice since 2009. Rather, his principal activity was working as an expert witness. Dr Evans had, in effect, been an investigator in this case from an early stage. This was a more substantial criticism and raised questions as to his impartiality. Though the evidence of Dr Evans was corroborated by other doctors such as Dr Bohin, it is submitted that Dr Evans set the tone of the investigation, and the evidence of Dr Bohin was based on the evidence of Dr Evans. Moreover, the exercise of assessing the competence of Dr Evans could not be gauged by the consistency of his evidence with that of other expert witnesses.

109. On behalf of the respondent, Mr Johnson describes the applicant's arguments on this (and other related grounds, that is grounds 2 and 3) as reductive. That is, they seek to isolate one narrow issue in the case from all the rest of the evidence, and to make each ground of appeal about one issue to the exclusion of the consideration of all the others. But he submits, "in this extraordinary case, context is everything." The fact that Dr Evans volunteered to assist the police investigation did not render his evidence inadmissible. He dealt with an extraordinary volume of cases. The case of the insulin children (Babies F and L) which he identified, was the 60$^{th}$ review.

110. When addressing the submission that Dr Evans lacked the requisite expertise for giving evidence in a case like this, Mr Johnson poses the rhetorical question - who would be better placed to advise on what may have been happening in a neonatal unit than someone who had been dealing with these facilities for 50 years? Dr Evans did have the requisite expertise. If he did step over the line in relation to one baby (Baby C – in

which he gave his opinion on the cause of the baby's collapse for the first time in his evidence to the jury), that did not invalidate his evidence generally. Dr Evans was in a position to give information outside of the knowledge of the court. He held concurrent registration with the General Medical Council and had the requisite experience. The reason Dr Evans did not classify himself as a neonatologist was because when he developed the speciality in South Wales, neonatology was a sub-speciality - so he didn't train as a neonatologist. Each of these features was addressed by the judge, as was the question of reliability. Reliability can only be measured by reference to another admissible, credible opinion. Looking at each of the requirements of the law, the evidence of Dr Evans was admissible. In the oral submissions of Mr Myers, Mr Johnson said, the shortcomings of the evidence of Dr Evans were not explained. The cases relied upon by the defence in their written submissions were obviously distinguishable from the facts of this case.

*Ground 1: discussion*

111. As we point out below (in relation to grounds 2 and 3) there is a substantial degree of overlap between the grounds of appeal advanced by the applicant (save for ground 5, which raises a discrete jury management issue). This is because the first three grounds of appeal are essentially rooted in two (related) points: the bona fides of the prosecution experts (in particular, Dr Evans); and the quality of their evidence (in particular, about air embolus). No criticism is made of the summing-up in this case. It follows that (subject to the overarching contention by the defence that parts of the prosecution evidence should not have been left to the jury at all) the strengths or weakness of the prosecution evidence, as it is said to be, and more particularly, that of Dr Evans were fairly set out and left to the jury in appropriate terms.

112. With respect to Mr Myers, it is unarguably the case that Dr Evans was suitably qualified - or to put it another way, it is not arguable that he lacked the necessary expertise - to give evidence. That is the case whether one examines his professional qualifications and background, or the evidence he gave about this during the course of the trial.

113. A summary of the evidential position is as follows. Dr Evans qualified as a medical practitioner in 1971. He trained in paediatrics in Swansea, then in Cardiff and Liverpool. Each phase of that training involved specific training in neonatology and working in a neonatal unit. He was appointed a full-time clinical consultant paediatrician in Swansea in 1980, a position he held until 2009. During the 1980s he became involved in the development of the newborn services and intensive care services for babies. He was responsible for setting up, supervising and leading a neonatal intensive care service in Swansea from his appointment, developing intensive care services "from scratch." His experience was, he said, "very much hands-on." In 1990, in Swansea, the health board built a new children's department, which included a new neonatal unit which he helped to design. His operational and managerial roles involved serving as clinical director of paediatrics and neonatology in Swansa between 1992 and 1997, and between 2004 to 2008. In his evidence he said that Swansea was one of the bigger units in South Wales and it covered the area of the whole of the south west of Wales over time. He had training in neonatology. When he arrived, there was no specialist neonatology services at that hospital, and it was just a question of getting on with it. His team had to deal with all the babies in the catchment area. The only babies who were sent elsewhere, were those requiring surgery, who went to Cardiff, or those requiring cardiac care, who went to Bristol. So all of the "tiny babies who required

intensive care were under my care and the care of my colleagues in Swansea from 1980 onwards."

114. In cross-examination, as in his submissions to us, Mr Myers did not dispute that Dr Evans had extensive experience. But Mr Myers put to Dr Evans that his expertise or experience in the field of neonatology was less than that of a consultant neonatologist. Dr Evans did not accept this. He said in the 1980s, when he started out, neonatology was a relatively new discipline, and there were relatively few neonatologists; as a paediatrician in Swansea, he served a large population and was one of only a few consultants, hence, his hands-on experience was extensive, and "full on" and he had greater contact with a greater number of babies. His generation was responsible for the development and evolution of neonatal care in the United Kingdom and the local health board deferred to him in developing the service, and in appointing and training the relevant staff. He had retired from practice in 2009, having been a consultant paediatrician therefore for 30 years. Since then he had worked as an expert witness, having attended a number of courses to equip to perform that role, and dealt with a large number of cases where there were allegations of clinical negligence involving small babies. He said he saw his role as providing assistance to the court in sorting out some extremely challenging issues. He did not call himself an expert, but an independent medical witness whose opinion was based, not on being an expert, but on being a doctor.

115. Though the defence draws particular attention to the fact that Dr Evans is not a consultant neonatologist, one of the principal experts instructed by the defence, albeit he did not give evidence at trial, is a paediatric consultant not a neonatologist. Returning to Dr Evans' position however, he was a highly experienced paediatric consultant with decades of clinical hands-on experience with neonates. He certainly had sufficient knowledge to render his opinion of value; he had expertise that was capable of assisting the jury and was unarguably able to provide evidence with regard to neonates on matters within his expertise, but outwith the experience of the jury.

116. As to his impartiality, the focus here is on Dr Evans' role in the investigation. It is important to put this into context however, a matter emphasised both by the judge and the single judge. As the single judge said, there was a vast quantity of technical medical material which could not possibly be understood or evaluated without the assistance and appropriate direction of a properly qualified expert with forensic and clinical experience of such cases. Within the space of a month in 2017, Dr Evans provided initial "sift" reports on some 30 babies who had died or suffered life threatening events at the hospital. He then provided follow up reports in respect of babies where there appeared to be no natural explanation for the death or adverse event. He added to or if necessary, revised his reports in the light of further information which became available. He produced some 114 witness statements plus a joint expert report dated 4 September 2022. He identified air embolus as a potential cause of death or collapse in several of the "sift" report statements. The single judge said, and we agree, that the judge was fully entitled to conclude that the approach of Dr Evans to his task was reasonable and did not amount to partiality or lack of independence, nor was it unreasonable for Dr Evans thereafter to provide some direction and structure in relation to identified cases. To the extent that he was acting as an investigator or director of the investigation, he was not doing so in a way that precluded him from being an expert witness in the case.

117. It is obvious that wherever possible, objections to admissibility, particularly to expert evidence, should be dealt with before the evidence is given, rather than afterwards. The risk otherwise is that the trial process will be derailed. The procedural rules contained in what is now para 7 of the Criminal Practice Direction 2023 are indeed designed to streamline the process for the admission of expert evidence, and to minimise the areas of contention at the trial itself. It is to be noted in this case however that the application to exclude Dr Evans' evidence on the grounds it was inadmissible was not made until part way through the trial. This tends to suggest that the real bone of contention was not Dr Evans' qualifications or competence *per se* (matters that otherwise could and should been addressed pre-trial) but concerned the way in which he gave his evidence.

118. In general terms, the quality of a witness's evidence in that respect is quintessentially a matter for the jury to assess. The judge referred in his ruling both to the nature of the cross-examination, and Dr Evans' response to it ("I accept that at times Dr Evans, particularly when asked repeated questions on a topic to which he believed he had given an answer engaged in a form of argument and, on occasions, he appeared to be frustrated by the persistence of the questioning and/or was dismissive of suggestions. He was often prolix and would answer a question by an explanation rather than directly"). The particular trial dynamic which arose between counsel and the witness was also apparent to us from the transcripts of Dr Evans' cross-examination. The judge's interventions as to the questions asked or the responses to them, were rare. Wisely, in our judgement, he let these matters play out in front of the jury. As it was, by the time of the judge's ruling, Dr Evans had given evidence on seven separate days in respect of seven of the babies. The judge was therefore particularly well-placed, as the single judge put it, to make a carefully considered assessment of Dr Evans' qualifications and competence to give the expert evidence in question.

119. Further, when considering whether Dr Evans' evidence was sufficiently reliable to be admitted (one of the criteria for admissibility identified in what is now para 7.1.1 of the Criminal Procedure Rules 2023) it was material, as the judge pointed out, that Dr Evans' expert opinion was given in ignorance of other potentially incriminating material relied on at the trial. It was also material that there was other expert evidence which supported Dr Evans' conclusions (indeed as the prosecution asserted, almost all of Dr Evans' opinions were corroborated by another expert). We should add that the suggestion made in this context that Dr Bohin was simply basing her opinions on those of Dr Evans, rather than reaching her own conclusions, is not supported by evidence. And it would be wrong to imply that her bona fides, or that of the other prosecution experts for that matter, should be doubted simply because she or they agreed with Dr Evans' conclusions in certain respects.

120. Though none were highlighted in submissions to us, we have carefully considered the particular examples of Dr Evans' conduct relied on in the Perfected Grounds of Appeal, and the prosecution's answer to them. We have done so by reference to the extracts from the transcripts to which we were specifically directed, but in the context of the vast volume of other material (including the transcripts of the evidence) we have read for the purposes of this application more generally. In the event, we have no doubt that all of the criticisms of Dr Evans, including those made by reference to the observations of Jackson LJ in a different case, were capable of being dealt with within the trial process, or that the judge was fully entitled to conclude that ultimately, as with any other witness, it was for the jury to assess Dr Evans' reliability having regard to all the

evidence in the case, with the assistance of comment and submissions from counsel on each side. By the same token, there is no arguable basis for interfering with the judge's exercise of his discretion not to exclude the evidence of Dr Evans under section 78 of PACE.

121. It follows that we do not consider this ground of appeal to be arguable.

122. We should note finally, that after the judge's ruling of 10 January 2023, Dr Evans was asked about the observations of Jackson LJ in cross-examination. The effect of Dr Evans's evidence, and we summarise, was that the criticisms made in the decision were based on a false premise. The report was not an expert report prepared for the court or a witness statement; rather, it was a letter to the solicitors in the care case, and had been used by the solicitors (for the purposes of the application for permission to appeal) without his knowledge or consent. Further, he had not known of the decision before it was brought to his attention by the prosecution. Everyone in this trial (i.e. that of the applicant) had seen the decision before he did.

**Ground 2: the submission of no case to answer**

123. There is a degree of overlap between ground 2 (challenging the judge's rejection of the submission of no case to answer) and ground 3 (challenging the judge's direction that the jury did not have to be sure as to the precise harmful act(s) committed by the applicant against a particular baby). It is nevertheless convenient to consider them separately.

124. The submission of no case to answer was aimed at counts 1, 2, 4 and 16 (cases in which the prosecution alleged that air embolus was the sole cause of the death or collapse of the child concerned) and counts 3, 5, 12, 17 and 20 (cases in which the prosecution alleged that air embolus was a cause (in addition to other causes) of the death or collapse). The applicant relied upon *R v Galbraith* (1981) 73 Cr. App. R. 124, and in particular upon the second limb of the test stated by Lord Lane CJ in in the familiar passage at p127:

> "(1) If there is no evidence that the crime alleged has been committed by the defendant there is no difficulty – the judge will stop the case. (2) The difficulty arises where there is some evidence but it is of a tenuous character, for example, because of inherent weakness or vagueness or because it is inconsistent with other evidence. (a) Where the judge concludes that the prosecution evidence, taken at its highest, is such that a jury properly directed could not properly convict on it, it is his duty, on a submission being made, to stop the case. (b) Where however the prosecution evidence is such that its strength or weakness depends on the view to be taken of a witness' reliability, or other matters which are generally speaking within the province of the jury and where on one possible view of the facts there is evidence on which the jury could properly come to the conclusion that the defendant is guilty, then the judge should allow the matter to be tried by the jury."

125. The starting point for Mr Myers' submission to the judge was that expert medical evidence was fundamental to each of the allegations in those counts. It was then argued that the expert evidence relied on by the prosecution in relation to air embolus was insufficient, for the following three reasons.

126. First, it was submitted that the scientific basis for air embolus is so weak that it fails to provide the level of reliability required to support those allegations. Mr Myers argued that the underlying consistency, coherence and reliability of the scientific knowledge supporting the theory and diagnosis of air embolus did not provide a sufficiently clear and reliable basis on which to make a finding of air embolus in any given instance.

127. Secondly, it was submitted that the available research relevant to air embolus was extremely limited: it did not meet the requirements of para 19A.5 of the Criminal Practice Direction (now replaced, as we have said, by the similar provisions of para 7 of the Criminal Practice Direction 2023) and was insufficient to permit any expert evidence to be given. In this regard, it was submitted that what was needed was evidence establishing a sufficiently reliable basis for the diagnosis of air embolus: it was not enough for the prosecution merely to show that they had produced the best evidence which was available on a topic which has not been the subject of much research.

128. Thirdly, it was submitted that none of the expert witnesses who had given evidence as to the general theory or diagnosis of air embolus had sufficient clinical expertise to enable them to give expert evidence as to those matters. In summary, it was argued:

    i) Dr Evans had no clinical experience of diagnosing air embolus; he relied primarily on the Lee and Tanswell paper; and he gave inconsistent evidence as to the characteristics of air embolus;

    ii) Dr Bohin had seen only one case of air embolus; she accepted that there was "very, very little" literature relating to air embolus in children; and she too gave inconsistent evidence (including as to skin discolouration) in relation to individual children;

    iii) Professor Kinsey accepted that air embolus was not part of her expertise; and it was submitted that she was not able "to call upon a reliable body of scientific knowledge to establish how air embolus in neonates presents by way of cutaneous features."

    iv) Professor Arthurs' opinion, that a post-mortem finding of gas in a great vessel may (after excluding other possible explanations) be attributed to air embolus, was not based on any clinical experience, and relied upon his own, insufficient, review of cases; and

    v) Dr Marnerides could not or would not explain the mechanism by which air embolus causes death in a neonate.

129. It was therefore submitted that, even taken at its highest, the prosecution evidence that babies had died because of an air embolus was not such that a jury properly directed could properly convict upon it. Counts 1, 2, 4 and 16 should therefore be withdrawn from the jury; and in relation to counts 3, 5, 12, 17 and 20, the jury should be directed

to disregard the evidence of air embolus as a cause of the death or collapse of those babies.

130. The prosecution opposed the submission of no case to answer, arguing that the expert evidence as to air embolus was properly admissible: it was not evidence "from the fringes of science" and did not have to be given by someone who may be described as an expert in air embolus (a status which, it was suggested, it would be difficult if not impossible to attain, given that the stringent precautions taken by doctors and nurses mean that incidents of air embolus are very rare). It was further submitted that the concept of air embolus is widely recognised in medicine, that a number of witnesses had given evidence that great care was invariably taken in clinical practice to avoid air passing into a patient's circulation, and that the applicant herself had recently taken a course of training on that topic. It was therefore submitted that the arguments on behalf of the applicant went to the weight of the evidence rather than its admissibility. The respondent emphasised the importance of the jury considering the totality of the evidence about a particular baby, including the expert evidence that the baby's death or collapse could not be explained by natural causes or any other non-criminal cause.

*Ground 2: the judge's ruling on the submission of no case to answer*

131. In his ruling of 2 May 2023 rejecting the submission of no case to answer, the judge referred to the passage in *R v Galbraith* which we have quoted above, and to the competing arguments of the parties. He expressed his conclusions and his decision as follows in para 13 of his ruling:

> "I am satisfied that there is a sufficient body of accepted expert medical opinion that the exogenous administration of air into the venous system can cause air embolus leading to collapse and potentially the death of a baby. Because of the rarity of cases in which air embolus is identified in a fatal collapse there is limited medical literature and research and the level of clinical expertise is also necessarily limited. Professor Arthurs and Dr Marnerides were conspicuously careful not to go further than their specialist expertise would permit them and emphasised any conclusions to be drawn were for those with clinical expertise. The fact that their evidence was not, of itself, diagnostic of air embolus is not determinative as to whether the evidence of clinical neonatologists is admissible. Such criticisms as are made by the defence of Drs Evans and Bohin and the bases for their conclusions are not sufficient to render their evidence inadmissible; the assessment of the validity of the criticisms and the weight to be attached to their opinions is for the jury. In the context of other circumstantial evidence, including the fact that, in the cases of two other babies not the subject of these applications someone in the NNU deliberately sought to harm them by adding insulin to their nutrition and the circumstances and coincidence of the defendant's presence in the unit on each of the occasions of the sudden collapse of a baby, in some cases at the cot or incubator side, and her admissions, I am satisfied that the evidence sought to be excluded is admissible expert evidence for the jury to consider. I am also satisfied that, in

> respect of Counts 1, 2, 4 and 16, there is a body of evidence on which the jury, depending on their findings of fact and the inferences they draw, could properly come to the conclusion that the defendant is guilty. I refuse the application for those counts to be withdrawn from being determined by the jury. Similarly, I refuse the application that the evidence of air embolus should be withdrawn from the jury on Counts 3, 5, 12, 17 and 20."

*Ground 2: the submissions to this court*

132. In the present application, Mr Myers submits that, for the reasons which he argued unsuccessfully before the judge, the submission of no case to answer should have been allowed. He accordingly submits that the judge fell into error in his ruling; that as a result of that error, the convictions on the counts at which the submission was aimed are unsafe; and that all the convictions on other counts (i.e., counts 6, 7, 8, 15 and 21) are also unsafe, having regard to the judge's directions to the jury on cross-admissibility.

133. Mr Myers points out that it was never in dispute that air embolus can be a cause of collapse or death: the issue, he contends, relates to whether the evidence showed a sufficiently reliable basis to permit a diagnosis of air embolus in neonates. He emphasises that his submission is not concerned with the evidence relating to the allegations of air embolus in specific counts: rather, it is a challenge to the reliability of the scientific knowledge supporting the theory and diagnosis of air embolus. He invites the court's attention to passages in *R v Holdsworth* [2008] EWCA Crim 971 at para 57 and *R v Dlugosz* [2013] EWCA Crim 2 at para 11, to the effect that the court must be satisfied that there is a sufficiently reliable scientific basis for expert evidence to be admitted. He also relies on what is now para 7.1.3 of the Criminal Practice Direction 2023, which states:

> "In addition, in considering reliability, and especially the reliability of expert scientific opinion, the court must be astute to identify potential flaws in such opinion which detract from its reliability, for example:
>
> a. being based on a hypothesis which has not been subjected to sufficient scrutiny (including, where appropriate, experimental or other testing), or which has failed to stand up to scrutiny;
>
> b. being based on an unjustifiable assumption;
>
> c. being based on flawed data;
>
> d. relying on an examination, technique, method or process which was not properly carried out or applied, or was not appropriate for use in the particular case; or
>
> e. relying on an inference or conclusion which has not been properly reached."

134. Mr Myers submits that the level of scientific knowledge did not provide a reliable basis on which to make a finding of air embolus in any individual case. In particular, although witnesses described very unusual skin discolouration on the babies concerned, those descriptions did not provide a reliable basis for diagnosis of air embolus. In this regard, he argues, the reliability of the expert evidence was not a matter for the jury: rather, it was a condition precedent to the admission of that evidence. The expert evidence on which the prosecution relied to prove the allegations of air embolus should therefore have been ruled inadmissible.

135. It may be noted that in the written grounds of appeal it was argued that the Lee and Tanswell paper should not have been relied upon as it was by prosecution witnesses. The paper was said to be of little application to the trial of the applicant: it was not designed to explore the link between air embolus and skin discolouration, with discolouration being noted in only five or six of more than 50 cases of air embolus collapse reviewed, only one of which was "bright pink vessels against a generally cyanosed cutaneous background". Moreover, the subjects of the Lee and Tanswell paper were not comparable, in age, medical condition or clinical circumstances, with the infants concerned in this case. It was submitted that the paper therefore could not support the evidence of prosecution witnesses to the effect that skin discolouration is a feature of air embolus.

136. In his oral submissions Mr Myers now however argues that the specific skin discolouration mentioned in the Lee and Tanswell paper ("bright pink vessels against a generally cyanosed cutaneous background") can properly be treated as diagnostic of air embolus, but that no other type of discolouration can be regarded as diagnostic or pathognomonic of air embolus. Mr Myers submits that the prosecution expert evidence provided neither a research basis nor clinical experience sufficient to enable reliable identification of any specific cutaneous discolouration which would be diagnostic of air embolus. The witnesses, he argues, unjustifiably treated a wide variety of cutaneous discolouration as diagnostic.

137. The respondent submits that the judge's decision refusing the submission of no case to answer is unassailable. Mr Johnson argues, as he did before the judge, that in relation to each of the babies concerned, evidence relating to air embolus was only one part of the overall circumstances relied on as proving the prosecution case. He points to the evidence showing that each of the babies concerned collapsed or died for no apparent reason, that they exhibited skin discolouration of a highly unusual kind (often described by very experienced doctors and nurses as being unlike anything they had ever seen before), and that natural causes could not provide a credible explanation. He adds that when the prosecution expert witnesses were preparing their initial reports, they did so without reference to other features of the circumstantial case against the applicant.

138. Mr Johnson further submits that Dr Jayaram's evidence as to the discolouration which he observed on the skin of Baby A ( as noted at para 51 above) could properly be accepted by the jury as fitting the description in the Lee and Tanswell paper. Dr Jayaram had not initially mentioned seeing the discolouration he later described, and only did so after he had read the Lee and Tanswell paper. It was suggested to him in cross-examination that he had not in fact seen what he described: that suggestion was refuted by Dr Jayaram, and Mr Johnson submits that the jury were plainly entitled to

accept the doctor's evidence that it was only when he read the Lee and Tanswell paper that he realised the full significance of the striking discolouration he had observed.

139. Save that the description of skin discolouration did not feature in Dr Jayaram's clinical notes, we observe in passing that there appears to have been little evidential basis for the allegation implicitly made on behalf of the applicant, that Dr Jayaram had made up this part of his evidence. We also note that no similar allegation appears to have been made against the father of Baby O who, as set at para 93 above, described his child's veins as being "bright, bright blue".

*Ground 2: discussion*

140. We do not accept that the level of scientific knowledge concerning air embolism is so limited that no reliable expert evidence at all can be given about it. Air embolus as a cause of collapse or death in a neonate is not a "bogus" medical theory. The fact that air embolus can occur in neonates is not in dispute. Research is necessarily limited, and the number of observed cases is fortunately small; and there are therefore limits to the extent of scientific knowledge of the topic. But it does not follow that there can be no expert evidence as to whether an air embolus did or did not occur in a particular case. Indeed, it does not appear to have been disputed that the more than 50 cases reviewed in the Lee and Tanswell paper were indeed all cases of air embolus in a neonate. The fact that air embolus can occur, and the imperative need to guard against it, are well known, including to the applicant. We agree with Mr Johnson's submission that it is no doubt because appropriate precautions are taken that air embolus in neonates is a rare occurrence. Nonetheless, the nature of air embolus, its possible causes (including the exogenous administration of air), its consequences and the biological mechanism by which it can cause death are within the knowledge and general expertise of experienced neonatologists (and indeed, many doctors and nurses involved in clinical practice). So too are the signs and symptoms which will or may be found. Expert evidence can be given as to those topics, and such evidence may assist the jury to determine whether an air embolus occurred in a particular case. Although their direct clinical experience of air embolus in neonates was inevitably very limited, each of the prosecution's expert witness was well qualified in their respective fields to give the evidence which they gave.

141. We therefore reject the applicant's attempt to exclude a substantial part of the prosecution expert evidence on the ground that the state of scientific knowledge about air embolus in neonates is so limited that no expert evidence can be adduced about it.

142. The real issue at trial was as to what signs and symptoms were sufficient to enable a reliable diagnosis of air embolus. We again observe that, in the submissions to this court, it was at least tacitly accepted that cases noted in the Lee and Tanswell paper which showed a type of skin discolouration other than "bright pink vessels against a generally cyanosed cutaneous background" were indeed cases of air embolus. It follows that the differing types of skin discolouration observed in neonates in those cases were at least consistent with air embolus.

143. We see the force of the argument that the limits of scientific knowledge would not permit a reliable diagnosis of air embolus to be made solely on the basis of a particular type of discolouration, other than the very specific type recorded in the Lee and

Tanswell paper. We are not however able to accept the submission that that is what the prosecution expert witnesses did.

144. Paras 49 to 97 above summarise the evidence as to skin discolouration observed in the case of the babies who are the subjects of counts 1, 2, 4 and 16, and counts 3, 5, 12, 17 and 20, and the expert evidence concerning those babies. As is apparent, there are recurring features: for example, the sudden and unexpected collapse of a baby who was otherwise reasonably healthy; the failure of techniques of resuscitation which could be expected to be successful if the cause were something other than air embolus; the dramatic and highly unusual changes in skin colouration; and the coincidence of other babies also suffering sudden collapses, most strikingly in the cases of twin siblings. As is also apparent, neither Dr Evans nor Dr Bohin diagnosed air embolus in any case on the sole basis of skin discolouration. On the contrary, each expressly disclaimed any ability to do so in any of the cases they were considering: see, for example, the summaries of these witnesses' evidence in paras 52 to 54, 58, 59, 65 to 67, 72, 73, 78 to 81, 85 to 88, and 96 and 97; and in particular Dr Bohin's explicit acceptance in the last of those paragraphs that a wide variety of skin discolouration had been observed and that "there is not one single thing that you can say is definitely pathognomonic of air embolus". Their evidence that a particular baby had suffered an air embolus was in each case based on a combination of considerations. The careful submissions of Mr Myers did not identify any part of the evidence in which one of those expert witnesses asserted a diagnosis based solely on discolouration.

145. Thus it was not asserted that each, or any, of the varieties of skin discolouration seen on the babies concerned was diagnostic, or pathognomonic, of air embolus: rather, the expert evidence was to the effect that skin discolouration in each of the cases concerned was consistent with air embolus. The jury had to consider that evidence in conjunction with all the other evidence, including features which were wholly independent of the expert evidence, such as the fact that the applicant alone was present on the unit at the time of all of the deteriorations and deaths , her keeping of handover sheets as what were said to be trophies, and her writing of notes said by the prosecution to include a confession to murder.

146. The premise of the submission of no case to answer is therefore, in our judgement, flawed. In our view, the applicant's argument confuses evidence capable of providing a free-standing diagnostic test and evidence consistent with air embolus which forms part of the circumstantial case.

147. Nor are we able to accept the submissions on behalf of the applicant to the effect that the expert witnesses wrongly based a diagnosis of air embolus solely on an exclusion of other possible causes. That argument would carry more weight if any witness had given evidence to the effect that he or she could not identify any other possible cause of a baby's collapse and therefore assumed, on that basis alone, that the baby's collapse must have been due to an air embolus. Evidence to that effect might well be criticised as mere conjecture. But the submissions on behalf of the applicant did not persuade us that there was any instance in which either Dr Evans or Dr Bohin gave such evidence. They considered, where appropriate, whether the collapse may have been due to natural causes, but concluded, for reasons which they explained, that it was not. They similarly considered, but excluded, other possible causes – concluding, for example, that there could be "no innocent explanation" for their findings. The defence were not able to point, in cross-examination, to any possible alternative cause which the witnesses found

realistic. The witnesses then identified findings which were consistent with, though not in themselves individually diagnostic of, air embolus. Dr Bohin largely reached the same findings as did Dr Evans (and it was plainly open to the jury to be sure that her evidence was an independent assessment, and not mere uncritical endorsement of anything Dr Evans had said); and in some of the cases the evidence of other expert witnesses, in particular Professor Arthurs and Dr Marnerides, provided an additional and separate basis for a diagnosis of air embolus.

148. In such circumstances, we are wholly unpersuaded that it could not properly be left to the jury to decide whether they were sure, on the basis of all the evidence, that the expert witnesses had rightly excluded other possible causes, had rightly relied upon a number of signs and symptoms (including, but not limited to, skin discolouration) which were consistent with air embolus and collectively inconsistent with anything else, and had correctly concluded that the baby concerned had suffered an air embolus.

149. Mr Myers further submits that ground 6 (relying on the proposed fresh evidence of Dr Lee) is also relevant to this court's consideration of ground 2. We will return to ground 6 later in this judgment; but we should say at this stage that the applicant's argument on ground 2 cannot derive any support from the proposed fresh evidence. That is for the simple reason that ground 2 challenges the judge's ruling as to the sufficiency of the prosecution evidence which was before the court at the conclusion of the prosecution case. Any further evidence which might be received by this court cannot alter the evidential position which the judge had to consider. His ruling that the evidence gave rise to a case to answer cannot be challenged on the basis of evidence which was not before the jury and which has only been obtained after the trial.

150. For those reasons, ground 2 is not arguable.

151. Although it is not relevant to ground 2, we would add that the applicant herself, when giving evidence, raised the possibility of alternative explanations for the collapse or death of individual babies, but did not give affirmative evidence of an alternative cause. As we have already said, she called no expert evidence to contradict or qualify the opinions of the prosecution experts. Thus the evidence as to medical causation of each baby's collapse or death was the same at the conclusion of the trial as it was when the submission of no case to answer was made.

**Ground 3: the judge's direction on harmful acts**

152. Ground 3 argues that the judge was wrong to direct the jury that they did not have to be sure of the precise harmful act or acts before they could convict on a particular count.

153. As is usual, the judge discussed his proposed directions of law with counsel. On behalf of the applicant, Mr Myers submitted that the jury should be directed that they could not convict the applicant of any count unless they were sure of how the baby concerned had been harmed. He argued that the counts on the indictment were specific to time and place; they were for the most part based on one or more alleged mechanisms of injury which had been the subject of detailed evidence; the case had been opened and the evidence adduced on the basis of those allegations as to the mechanism of injury; and the jury had to be sure of the requisite intention, and of causation, each of which required them to identify what had happened and when. He further argued that a direction which permitted the jury to convict without being sure of the specific harmful

act or acts risked the jury wrongly convicting on the basis of the applicant's presence alone, a risk which would be exacerbated by the anticipated direction as to cross-admissibility.

154. The judge did not accept those submissions, although he did amend his initial draft of his proposed direction.

*Ground 3: the judge's direction to the jury*

155. The judge directed the jury as follows:

> "If you are sure that someone on the unit was deliberately harming a baby or babies you do not have to be sure of the precise harmful act or acts; in some instances there may have been more than one. To find the defendant guilty, however, you must be sure that she deliberately did some harmful act to the baby the subject of the count on the indictment and the act or acts were accompanied by the intent and, in the case of murder, was causative of death, as set out in the section below 'Directions of law relating to the offences'."

156. Although that is the only passage which is challenged by ground 3, it may be noted that in a later direction the judge explained the legal ingredients of the offences of murder and attempted murder, saying in relation to the former:

> "In the case of each child, without necessarily having to determine the precise cause or causes of their death, and for which no natural or known cause was said to be apparent at the time, you must be sure that the act of acts of the defendant, whatever they were, caused the child's death, in that it was more than a minimal cause. The defendant says that she did nothing inappropriate, let alone harmful to any child. Her case is that the sudden collapses and deaths were or may have been from natural causes or from some unascertained reason or from some failure to provide appropriate care and were not attributable to any deliberate harmful act by her."

*Ground 3: the submissions to this court*

157. In support of this ground of appeal, Mr Myers repeats his argument that in the circumstances of this case, in which the prosecution relied on witnesses who put forward specific causes of harm and rejected other explanations suggested by the defence, the jury should have been directed to decide whether they were sure that the prosecution had proved the specific mechanism of harm which had been alleged in relation to each individual child. He further reiterates that it was necessary for the jury to be sure of the precise mechanism by which harm was caused before they could be sure of the alleged intention, and before they could safely eliminate other possible

explanations for a baby's collapse or death, such as natural causes or sub-optimal care. In relation to the need to exclude natural causes as a possible cause of collapse or death in an individual case, he refers to *R v Cannings* [2004] EWCA Crim 1 in which this court observed that the exclusion of currently known natural causes of infant death does not of itself establish that a death or deaths resulted from the deliberate infliction of harm, and said at para 22 that "what may be unexplained today may be perfectly well understood tomorrow"; and to *R v Holdsworth* [2008] EWCA Crim 971, in which the court said at para 57:

> "But particular caution is needed where the scientific knowledge of the process or processes involved is or may be incomplete. As knowledge increases, today's orthodoxy may become tomorrow's outdated learning."

158. In count 17, concerning Baby N, Dr Evans said, in evidence to the jury, that he was unable to exclude air embolus as the cause of the baby's collapse, whereas Dr Bohin felt that the baby had suffered the infliction of a "painful stimulus" although there was no visible injury. Mr Myers relies on that as an indication that jurors may have reached their verdict by differing routes. He submits that the direction given by the judge gave rise to risks that the jury may wrongly treat the applicant's presence on the unit at a particular time as sufficient in itself to establish her guilt, and/or that the jury might convict in circumstances where there was "no sufficient agreement" as to the basis on which they reached that verdict. He makes the further point that, in the light of the judge's direction as to cross-admissibility, the jury, having reached a guilty verdict by differing factual routes, would then have been permitted to use that verdict as support for the prosecution case on other counts.

159. The respondent submits that the judge's direction was correct. Mr Johnson accepts that the prosecution were required to prove each of the legal ingredients of the charges of murder or attempted murder, but submits that they did not have to prove the precise – or any – mechanism by which death was caused or attempted. He refers to cases in which the prosecution have been able to prove murder even though the body of the deceased had never been found and the cause of death was therefore unknown: see, as an early example, *R v Onufrejczyk* [1955] 1 QB 388. He refers to the decision in *R v Brown (Kevin)* (1984) 79 Cr. App. R. 115 and to the recent decision in *R v Ames* [2023] EWCA Crim 1463. In the former, it was held that a jury must agree on every ingredient of the offence charged before they could convict, and the jury must be directed accordingly. In the latter, it was held, at para 40, that subsequent case law has established:

> "… a clear distinction to be drawn between a matter which is (i) an ingredient of the offence; and (ii) a merely evidential – or ancillary – issue. It is common ground that on the latter there is no need for jury unanimity (or a *Brown* direction)."

*Ground 3: discussion*

160. The distinction referred to in *R v Ames* is well established. Provided the jury (or the requisite majority) are sure that all of the legal ingredients of the offence charged have been proved, it is not necessary for them all to reach their decision by precisely the same route. To take a simple example, if on a charge of assault occasioning actual bodily harm the jury were sure on the evidence that the defendant unlawfully punched and/or kicked his victim, thereby causing him actual bodily harm, it is not necessary for the jury all to be sure of the nature of the blow or blows which caused the injury.

161. When issues of this kind arise, it is important to remember that in *R v Brown (Kevin)* the case put forward by the prosecution gave rise to a very specific problem. The defendant was charged on indictment with offences of fraudulently inducing investment of money. The particulars of each count alleged that he had induced his victim to enter into an agreement by knowingly making a number of false statements. The judge directed the jury that as long as they were all agreed that a dishonest inducement had been made, it would not matter if some jurors were sure that the first false statement was made, some were sure that the second false statements was made, etc. In the circumstances of that case, however, disagreement between jurors as to whether a particular false statement was made meant there was necessarily also disagreement as to whether the essential ingredient of a fraudulent inducement was proved.

162. The circumstances in which a *Brown* direction is required therefore arise only comparatively rarely: see *R v Chilvers* [2021] EWCA Crim 1311, in which the court stated at para 63 that the need for a *Brown* direction:

> "… is confined to those cases when, first, there is an appreciable danger that, when the jury is deciding whether they are agreed on the matter that constitutes the relevant ingredient of the offence, some may convict having found a particular matter proved as constituting the ingredient whilst others may find a wholly different matter or different matters proved as constituting the ingredient. Therefore, when the factual bases of the crime charged (e.g. as set out in the particulars) are, in reality, individually coterminous with an essential element or ingredient of the offence , then it appears it is necessary for a *Brown* direction to be given … This, it is to be emphasised, does not require each juror to follow the same route through the evidence to reach the decision that a particular ingredient is made out. Secondly, a *Brown* direction should be given when two distinct events or incidents are alleged, either of which constitutes the ingredient of the offence charged … . Third, a *Brown* direction should be given when two different means of committing the offence may give rise to different defences …"

163. An example of the third category mentioned in that passage is provided by *R v Carr (Leslie Joseph)* [2000] 2 Cr. App. R. 149, where there was an issue as to whether the

fatal blow was a kick (to which the defendant's defence was identification) or a punch (to which his defence was self-defence). It was held that in the circumstances of that case, the jury needed to be directed that they must agree on the basis of conviction.

164. In the present case, the prosecution was required to prove that the applicant had killed or attempted to kill a baby by a deliberate and unlawful act or acts. Expert evidence was given as to the nature of the harm, or combinations of harm, which the applicant was alleged deliberately to have inflicted or attempted to inflict in each case: for example, the causing of an air embolus, or the damaging of a baby's liver, or the administration of insulin. The prosecution relied also on other relevant facts and circumstances, such as the applicant's writing of a note which appeared to be a confession, her retention of "trophies" and confidential documents, her presence at the time and place when most of the sudden collapses occurred, the fact that a number of the babies concerned suffered a catastrophic collapse only a very short time after their designated nurse had briefly left the room, and the fact that siblings suffered harm at or about the same time as each other. The defence to each charge was a denial that the applicant had deliberately committed any unlawful act which caused, or attempted to cause, fatal harm. The defence raised (but adduced no affirmative evidence of) other possible explanations for the collapse or death. The jury were directed as to the need to exclude those other possibilities before they could convict.

165. Mr Myers' submissions do not persuade us that it was necessary, before the jury could exclude those other possibilities, that they must all agree on the precise act or acts which the applicant committed. The issue for them was whether the evidence as a whole drove them to the conclusion that the applicant, by a deliberate and unlawful act or acts, had inflicted harm which caused or contributed to the baby's collapse or death.

166. In the circumstances of this case, the judge was accordingly correct to direct the jury that they must be sure, on the evidence as a whole, that the applicant had deliberately done something to harm a baby, with the requisite intent for murder or attempted murder, and in the case of those babies who died, that her act or acts had caused or contributed to the death. It was not necessary for the prosecution to prove the precise manner in which she had acted. To impose such a burden on the prosecution would be wrong in law: as the single judge said, it would confuse proof of the relevant fact, that harm had been deliberately caused, with the evidential route (encompassing all of the circumstantial evidence, not merely the medical evidence) by which that fact could be proved. That may be illustrated by the reflection that, taken to its logical extreme, the defence submission would appear to mean that the jury would not have been entitled to convict if – in addition to the evidence adduced by the prosecution – the applicant had given evidence admitting that she had intentionally and unlawfully killed a baby, but declined to say how precisely she had done so.

167. For those reasons, ground 3 is not arguable.

**Proposed ground 6: fresh evidence**

168. It is convenient to deal with this ground of appeal next. The applicant applies pursuant to rule 36.14(5) of the Criminal Procedure Rules and para 10.4.5 of the Criminal Practice Direction, for leave to vary her grounds of appeal by adding ground 6, which contends that the effect of evidence of Dr Lee, in conjunction with the weakness of the scientific evidence relied upon by the prosecution at trial to prove air embolus, is such

as to render the convictions on counts 1,2, 3, 4, 5, 12, 16, 17 and 20 unsafe, and thereby also to undermine the safety of convictions on counts 6, 7, 8, 15 and 21.

169. The applicant seeks to adduce, as fresh evidence pursuant to section 23 of the Criminal Appeal Act 1968 (section 23), a report by Dr Lee dated 10 March 2024, together with the three annexes thereto, and a further report dated 26 March 2024, together with one of the several annexes thereto. It is submitted that this evidence provides support for the applicant's contention that Dr Evans and Dr Bohin wrongly used skin discolouration as a means of diagnosing air embolus.

170. At page 6 of his first report Dr Lee explained why an infant suffering an air embolus becomes pale and then cyanosed (blue) as the skin and organs in the body are deprived of blood supply and oxygen. He continued:

> "Since the air bubbles are quickly absorbed and disappear, the effect is transient, often lasting only seconds or minutes. Consequently, the pale or white skin discolorations are often described as migrating, as patches appear and disappear. However, pale or white patchiness of the skin are non-specific, and can also be due to transient blood vessel dilation and contraction in the skin caused by other conditions (eg hypothermia, sepsis, allergy, virus, immune reaction). It is very difficult, if not impossible, to distinguish pale or white skin discoloration due to air embolus from other causes. The only skin discoloration that is specific to air embolus is "bright pink vessels against a generally cyanosed cutaneous background"(ref: Lee and Tanswell, 1989). Air embolus can occur without any skin discoloration."

171. It is submitted on behalf of the applicant that the proposed fresh evidence would be relevant both to ground 2 and to ground 6. The core point raised by this evidence, it is submitted, is that prosecution witnesses wrongly diagnosed air embolus on the basis of a variety of skin discolouration, whereas Dr Lee's evidence establishes that only "bright pink vessels against a generally cyanosed cutaneous background" is truly diagnostic of air embolus. Mr Myers accepts that other types of discolouration may be evident in cases of air embolus, but submits that on their own they cannot enable that diagnosis to be made, because it would be necessary first to exclude other possible causes of a respiratory problem or a deficiency in oxygen.

*The proposed fresh evidence*

172. The court having indicated that the proposed fresh evidence would be considered *de bene esse*, Dr Lee gave oral evidence by videolink from Canada.

173. Dr Lee is a neonatologist and health economist at the University of Toronto, and one of the authors of the Lee and Tanswell paper. He has long experience of paediatric and neonatal medicine. He is, as the respondent readily accepted, eminent in his field. He explained how reduced oxygen, and reduced perfusion of the skin, may lead to a baby's skin displaying pallor, cyanosis or mottling. Air embolus is one of the many causes of

a reduction in the flow of blood in the area of the skin: it causes circulatory collapse, which in turn results in discolouration of the skin. Because they may have many causes, pallor, cyanosis and mottling of the skin are not in themselves diagnostic of air embolus, and should not be used alone to make that diagnosis. He stated that the only cutaneous sign which is itself sufficient to make the diagnosis in a baby is the bright pink blood vessels superimposed on blue skin which was observed in one of the cases which he reported in the Lee and Tanswell paper. He notes that similar skin discolouration was also observed in one case in Korea reported by Dr Myo Jing Kim and others in a 2009 paper, "A case of pulmonary vascular air embolism in a very-low-birth-weight infant with massive hydrops" (published in vol 52, no 12 of the Korean Journal of Paediatrics), though Dr Lee doubted if this observation was exactly the same as the case which he saw. Dr Lee explained that this discolouration occurs because the baby is deprived of oxygen; the baby's skin therefore turns blue; when air escapes from the heart it causes blood vessels to turn pink against that blue background. The discolouration does not last long because within a few minutes the oxygen diffuses into the body.

174. In his second report, Dr Lee considered 64 cases of air embolus in neonates which had been reported since he wrote his 1989 paper. As with his review of cases in 1989, he again found skin discolouration in about 10 per cent of cases. He reiterated his view that only one type of skin discolouration can be diagnostic of air embolus.

175. In his oral evidence, Dr Lee stated that air embolus is a very rare and specific condition and should not be diagnosed by excluding other causes of death or collapse and concluding that it must be a case of air embolus because nothing else could be found.

176. Mr Myers submits that the criteria in section 23 are satisfied. He argues that the proposed fresh evidence is clearly capable of belief; it supports ground 2 and so provides a basis for allowing the appeal; and it would have been admissible at trial. As to why it was not adduced at trial, he contends that it was only as the trial progressed that the prosecution experts began to rely upon a wide variety of skin discolouration as a basis for diagnosing air embolus, thereby departing from their initial apparent acceptance that the only skin discolouration which could properly be regarded as diagnostic was the "bright pink vessels against a generally cyanosed cutaneous background" noted in one case described in the Lee and Tanswell paper. For that reason, the evidence was not available to be deployed at the time when it would have been required, and it was only after the trial that thought was given to seeking evidence from Dr Lee.

177. The respondent submits that the proposed fresh evidence, being defence evidence, cannot be relevant to ground 2. Nor, it is submitted, is it capable of giving rise to a ground for allowing the appeal, because it isolates the subjective observations of the various witnesses as to the skin discolouration which they saw in individual cases and takes no account of all the other evidence relied upon by the prosecution – including the evidence repeatedly given by doctors and nurses as to the extraordinary nature of the sudden collapses and deaths of the babies concerned. In doing so, it is argued, the applicant treats as a paradigm what was no more than a single case noted in the Lee and Tanswell paper, which itself was no more than an observational study (and was criticised for that reason in the defence cross-examination of Professor Arthurs). Mr Johnson emphasises that the prosecution expert witnesses did not treat skin discolouration as in itself diagnostic of air embolus, but instead took it into account as consistent with air embolus and adding to the other clinical circumstances which

excluded other possible causes and pointed to that diagnosis. He argues that the prosecution case did not change in this regard, and submits that the applicant could and should have called Dr Lee at trial if she wished to rely on evidence from him.

*Proposed ground 6: discussion*

178. So far as is material for present purposes, section 23 provides:

"**23. Evidence**

(1) For the purposes of an appeal, or an application for leave to appeal, under this Part of this Act the Court of Appeal may, if they think it necessary or expedient in the interests of justice –

…

(c) receive any evidence which was not adduce dint he proceedings from which the appeal lies.

…

(2) The Court of Appeal shall, in considering whether to receive any evidence, have regard in particular to –

(a) whether the evidence appears to the Court to be capable of belief;

(b) whether it appears to the Court that the evidence may afford any ground for allowing the appeal;

(c) whether the evidence would have been admissible in the proceedings from which the appeal lies on an issue which is the subject of the appeal; and

(d) whether there is a reasonable explanation for the failure to adduce the evidence in those proceedings.

…"

179. In *R v Erskine and Williams* [2009] EWCA Crim 1425 Lord Judge CJ, at p39D, said that the considerations listed in subsection (2)(a) to (d) are neither exhaustive nor conclusive, but require specific consideration. He continued:

> "… it is well understood that, save exceptionally, if the defendant is allowed to advance on appeal a defence and/or evidence which could and should have been put before the jury, our trial process would be subverted. Therefore if they were not deployed when they were available to be deployed, or the issues could have been but were not raised at trial, it is clear from the statutory structure, as explained in the authorities, that unless a reasonable and persuasive explanation for one or other of those omissions is offered, it is highly unlikely that the 'interests of justice ' test will be satisfied."

180. With specific reference to applications to adduce expert evidence under section 23, in *R v Jones (Steven)* [1997] 1 Cr. App. R. 86, Lord Bingham CJ observed at p93 that expert opinion "is unlikely to be thought incapable of belief in any ordinary sense". He continued:

> "The giving of a reasonable explanation for failure to adduce the evidence before the jury again applies more aptly to factual evidence of which a party was unaware, or could not adduce, than to expert evidence, since if one expert is unavailable to testify at a trial the party would ordinarily be expected to call another unless circumstances prevented this. Expert witnesses, although inevitably varying in standing and experience, are interchangeable in a way in which factual witnesses are not. It would clearly subvert the trial process if a defendant, convicted at trial, were to be generally free to mount an expert case which, if sound, could and should have been advanced before the jury."

181. It is a striking feature of this application that the Lee and Tanswell paper did not in itself say anything about the diagnostic status of an observation of "bright pink vessels against a generally cyanosed cutaneous background." Rather, it referred to a variety of cutaneous discolouration; attributed the striking discolouration noted in one case to "direct oxygenation of erythrocytes adjacent to free air in the vascular system, while the tissues continued to be poorly perfused and oxygenated"; and said that the "most distinctive sign" of pulmonary vascular embolism, present in half of the cases, was the finding of free air when blood was withdrawn from the umbilical arterial catheter. It is only in the proposed fresh evidence that Dr Lee explicitly makes the point which is relied upon.

182. It is not clear to us why a discolouration which was previously treated as consistent with air embolus is now said to be specifically diagnostic of air embolus. Given that many of the rare cases of air embolus in neonates are likely to occur in neonatal units, and given that the two studies referred to by Dr Lee collectively refer to well over 100 cases of acknowledged air embolus, it is to the layman surprising that in the last 35 years only one, or perhaps two, cases have been reported of the specific bright pink vessels against a generally cyanosed skin. For present purposes only, however, we shall assume that Dr Lee's opinion as to that particular discolouration is correct.

183. We are not persuaded by Mr Myers' submission that the applicant could not reasonably have been expected to seek evidence from Dr Lee before or during the trial. There are two principal reasons for this.

184. First, the argument that it was initially thought that the diagnostic status of the specific skin discolouration described by Lee and Tanswell was "a given," is unsustainable when the paper did not assert that such discolouration was, uniquely, diagnostic.

185. Secondly, and in any event, the suggested widening of the prosecution experts' evidence as to the significance of other forms of discolouration was not something

which only occurred at or near the end of the prosecution case: on the contrary, most of the evidence which is criticised in this regard had been given by the time the trial was adjourned over Christmas, and all save the evidence relating to one baby had been given by early February 2023, almost three months before the applicant began giving her evidence. We note that the defence were continuing to obtain and serve evidence from another expert witness whilst the applicant was giving evidence. If the defence were aggrieved by the suggested widening of the prosecution case, it was plainly open to them to ask that expert witness to address the issue, or to seek evidence from Dr Lee.

186. We accept Mr Johnson's submission that, save in the case of Baby C, neither Dr Evans nor Dr Bohin, departed from their written reports when giving their evidence to the jury. But if there was a point which needed to be addressed by defence expert evidence, there was ample time to obtain it during the trial (even if not before), and no good reason has been shown why the applicant should now be allowed to adduce evidence which could have been obtained and adduced at the appropriate time. The interests of justice require a defendant's whole case to be put forward at trial unless there is good reason why that could not be done.

187. But even if the applicant could persuade us that there was a reasonable explanation for the failure to adduce Dr Lee's evidence at trial, she faces a further – and in our view, insuperable – obstacle. Even accepting for present purposes that Dr Lee is correct in his opinion that only one form of discolouration is sufficient in itself to diagnose air embolus in a neonate, the proposed fresh evidence cannot assist the applicant because it is aimed at a mistaken target. The core of the proposed evidence is that, save for that one very specific form of discolouration, it would be wrong to diagnose air embolus on the basis of skin discolouration alone. But as we have said when considering ground 2, there was no prosecution expert evidence diagnosing air embolus solely on the basis of skin discolouration. Dr Evans and Dr Bohin relied on the differing forms of skin discolouration observed in individual babies as consistent with air embolus. Their evidence in that regard was in our view entirely consistent with the observational study in the Lee and Tanswell paper, and with Dr Lee's review of 64 cases since that paper was written. Indeed, Mr Myers realistically accepts that skin discolouration – other than the one type which Dr Lee states is pathognomonic of air embolus – is indicative of circulatory collapse which may be associated with air embolus, and that air embolus may be associated with a variety of skin discolouration. In short, the prosecution witnesses did not fall into the error which the proposed fresh evidence seeks to assert they made. The proposed evidence is therefore irrelevant and inadmissible.

188. For that reason, we think it unnecessary to say anything about the issue between the parties as to the extent to which Dr Lee was or was not informed of the evidence about each baby which did not relate to skin discolouration.

189. Similarly, Dr Lee's evidence would provide a basis for challenging a witness who diagnosed air embolus on the basis of excluding other causes and then asserting that it must be a case of air embolus because no other explanation could be identified. But again, that was not the basis on which the prosecution witnesses reached their opinions: they made findings which were consistent with air embolus and which collectively could not be explained by natural causes or any other possible alternative explanation. Still less was it the basis on which the jury had to reach their verdicts, which required them to consider all the evidence, both clinical and non-clinical.

190. For that reason, we see considerable force in Mr Johnson's submission that the evidence relating to Baby A illustrates why the applicant's approach is misguided. The evidence showed that in life, Baby A had air bubbles in his brain and lungs; and immediately after his death, a lot of air was found in his great vessels. All those findings were consistent with, though not diagnostic of, air embolus. Baby A collapsed and died in circumstances very similar to those of his twin sister the following night. The applicant was present on both occasions. There was ample evidence on which the jury were entitled to find that she had poisoned two other babies with insulin. In short, the circumstantial evidence and medical evidence has to be considered in its totality, not reduced to a single issue as to skin discolouration as a basis for diagnosis.

191. It follows that the section 23 criteria are not met: the proposed fresh evidence does not provide a ground for allowing the appeal, and there is no reasonable explanation why it was not called at trial. We therefore decline formally to receive it.

192. Ground 6, which is dependent upon the proposed fresh evidence, is accordingly not arguable.

***Ground 5: the potential jury irregularity***

193. Ground 5 raises a truly discrete issue. Leave to appeal against conviction is sought on the ground that judge did not take the correct course in investigating a potential jury irregularity arising out of a complaint first made to the court on 2 August 2023.

194. Mr Myers did not put this ground at the forefront of his submissions, and rightly so in our judgement. In short, the decisions made by the judge in this connection were case management decisions, which he was quite entitled to determine in the way that he did, and we do not consider the contrary to be arguable.

195. The judge gave two rulings which are material: the first (the first ruling) on 3 August 2023; and the second (the second ruling) on the 10 August 2023.

196. The jury had retired to consider their verdicts on 10 July 2023. On 2 August at 15.09, the court received an email from someone (a name was given and who we shall refer to as KR). The jury had by then been in retirement for 13 days. The events thereafter and the judge's reasons for the course he decided upon are succinctly summarised in the judge's first ruling as follows:

> "This trial is now in its closing stages. The jury was sworn on 10th October 2022 and is considering its verdicts on 7 charges of murder and 15 charges of attempted murder of neonates in the Countess of Chester Hospital, Chester allegedly committed by the defendant in the course of her duties as a neonatal nurse at the hospital between June 2015 and June 2016. This is a very high profile case which has been reported by many mainstream media organisations over its duration and has been the subject of a very large volume of communications over social media platforms. As is not uncommon in such cases, there have been a large number of unsolicited communications with the court and those representing both the prosecution and the defence from members of the public containing 'information' about the case.

The jury retired to consider its verdicts at 13:00 hours on Monday 10th July. Their deliberations were interrupted between 17th and 21st July and were resumed on 24th July. The jury did not deliberate on 31st July. At shortly after 15:00 hours yesterday, 2nd August, during the 13th day of their deliberations, following up a phone call to the court office, an e-mail was received from a member of the public to the effect that she has a café and a customer who "came in a few time" (sic), who she identified by their first name and a description, and who was a juror in this case, had been talking about the case on a few occasions, describing some of the evidence and events that had occurred during the trial, and that the jury "have already made up their minds about her case from the start", which was a reference to the defendant's case. She hoped this information would be passed on to "the defence attorney." On its face, the contents of the email, if true, amounted to evidence of the commission of an offence by a juror and of a significant jury irregularity, namely failing to follow the direction to try the case on all the evidence. On its receipt, in accordance with CPD (VI) (Trial) 26M, counsel were informed and, following discussions with leading counsel for the prosecution and defence, I directed that the court should respond to the sender of the e-mail requesting that they identify themselves by providing their full name, the name and address of the café and a contact telephone number. The purpose of this was to obtain more detail of the information in order and seek to obtain details and verify its authenticity, so that appropriate further enquires could then be commenced in order to ascertain the basic facts. An e-mail in those terms was sent by the Court Clerk to the email address of the sender at 15:57 hours yesterday. The jury was sent home at 16:00 hours and given the usual reminder as to their responsibilities as jurors and not to talk to or communicate in any way with anyone about anything to do with this trial until they were all back together in their deliberating room after they had been sent back out to resume their deliberations. "

The sender of the e-mail did not respond. This morning, in the courtroom sitting in chambers in the presence of the defendant, having heard representations from counsel on both sides, I directed that a further e-mail be sent to the author of the e-mail emphasising the urgency of the situation and the need for a response of some kind, and that the court must hear from her by 1 pm today so that it could conduct investigations into such concerns that may be deemed appropriate, and that if no response was received it may be concluded that her information may not be reliable. That e-mail was sent at 11:09 hours and was delivered. The jury resumed their deliberations at shortly after 10:30 hours this morning. I also directed, with the approval of counsel on both sides, that an officer from the Greater Manchester Police ('GMP'), totally unconnected to the Cheshire

Police who are the investigating force in the trial, should endeavour to identify the sender of the e-mail. Enquiries revealed there is no registered company linked to the name of the author of the e-mail. The e-mail address has been researched by a Digital Media Investigator who could not find any accounts with the usual popular services where this account has been used, which "potentially suggests it is possibly a relatively new e-mail address, a throwaway address or the person literally lives in a box and has little contact with the outside world". The e-mail address appears to have been updated on 10.07.23 "which suggests it's either new or personal details on the address have been changed on that date". Research on the internal GMP system and other associated systems identified one person with a similar name, who works at Tesco and has reported a number of crimes to GMP. She was spoken to by the senior GMP officer and claimed to have no knowledge of anything relevant. There is no reason to doubt her truthfulness. There had been no response to the e-mails sent to the author of the original e-mail as at 15:30 hours today.

Following my disclosure of the product of the enquiries of and relating to the author of the email, the defence have urged me to pursue the enquiry by asking questions of the juror believed to be the subject of the e-mail to ascertain whether there may be any truth in the contents of the e-mail. Whilst such enquiry could be made in court sitting in chambers with only limited counsel present, it would necessarily involve the juror inferring that someone was alleging that he has repeatedly flouted the directions given at the commencement of the trial, and that he, for some reason, had been singled out. The defence submitted that reassurances could be given to the juror that such events do occur and to pay no attention to it. The prosecution opposed enquiry of the juror, arguing that the information had all the hallmarks of being an attempt to derail the trial and, notwithstanding any reassurances, such enquiry could have a very unsettling effect on the juror and, potentially, on other jurors in this very high profile and demanding trial at a very delicate stage. Moreover, they pointed to the fact that the jury had been deliberating for 14 days, which contradicted the alleged comment that the jury had "made up their minds from the start". It is also to be noted that there had been a not dissimilar attempt to 'derail' the trial by making false accusations against other jurors at a much earlier stage in the trial.

Before the end of the court day, I indicated that, for reasons I would give in writing, I was not going to question the juror. These are my reasons.

I have had the benefit of observing all the jurors over nine months. The juror in question has been assiduous in his

attendance and has clearly paid very close attention at all times to the evidence and to counsel's addresses and my summing-up. There is no material other than the contents of the email to doubt that he has done anything other than faithfully followed my initial directions, as set out in the standard document given to every juror as to their responsibilities as jurors including not to talk to or communicate in any way with anyone or anything about the case other than fellow jurors when they are all together and in private. The jury have been reminded on an almost daily basis throughout the trial of their responsibilities. They were also directed from the outset to keep an open mind and try the case on the evidence and now have clear written directions that they must reach decisions on all the evidence and not on emotion or speculation.

I have considered with great care the terms of CPD (VI) (Trial) 26M [now Crim PD 8.7] and whether it would be an appropriate precautionary step to make the proposed enquiry of the juror in order to establish the basic facts (see e.g. the judgment of Holroyde LJ in *R. v. Lajevarti* [2023] EWCA Crim 615, particularly at paragraph 26. I have had regard to (1) the source of the information, which is, in effect, anonymous and completely incapable of verification, and which, despite repeated requests, has not been pursued, (2) the nature of the information itself, which is relatively unspecific and generic, (3) the inability to test its reliability and (4) its timing. towards the very end of the trial. In itself, it bears the hallmarks of being entirely unreliable and an attempt to de-rail the trial. I also take into account my assessment of the behaviour of the specific juror and the jury as a whole, which has been of diligence, care and apparent open-mindedness. I have no reason to suspect that any juror has not adhered to any of my directions or will not adhere to them. In *Lajevarti* (ante) the identified failure was not to enquire of another juror (Juror 2) whether he could remain faithful to his oath as a result of what another juror (Juror 1) had said to him. The situation in this case is very different: the source and reliability of an alleged irregularity is very questionable. Material of this nature has to be carefully scrutinised before it is relied upon as a basis for making enquiries of jurors, particularly in 'high-profile' cases, to avoid trials being potentially de-railed by anonymous allegations of jury irregularities resulting in adding unnecessary and unnerving additional pressures on a juror or jurors performing a vital public service in very difficult and stressful circumstances. I do not consider there is any sufficient and reliable basis in the context of all the circumstances to which I have referred to justify any enquiry of the juror by asking questions in vague terms about whether he has committed any offence by speaking to others about the case.

> Accordingly, I have concluded that it is appropriate to take no further action and continue with the trial.

197. After this first ruling, the court did not sit, for reasons unconnected to this jury issue, until 7 August. At about that time, there was a response to court's email, with the provision of telephone number and an address. The address was in an area outside the catchment area for jurors for jury service of Manchester Crown Square, so the matter was taken no further that day.

198. On 8 August 2023, the jury unanimously convicted the applicant on counts 6 and 15 (attempted murder of Baby F and Baby L by administration of insulin). The jury were given a majority direction and retired to consider their verdicts on the remaining twenty counts. Later that day, the applicant's solicitor rang the number given in the first email and spoke to KR. The court was informed the following day. The judge said he had no reason to direct the prosecution to make further inquiries via the police, as there was no sufficient basis to link the person described with a juror in the case. Junior counsel for the applicant then contacted KR again and asked her to provide an image of the juror concerned, which she did. The WhatsApp image sent was of a juror in the case (who we shall refer to as BC).

199. The matter was raised by the defence in chambers again at the end of the court day on 9 August. The defence asked, and the judge agreed, that a statement should be taken from KR. Such a statement was obtained by the police at the court's direction overnight and provided to the court and the parties on 10 August.

200. On 10 August, the court sat in chambers again. The judge directed that BC should be isolated from other members of the jury. BC was then questioned by the judge sitting in chambers, in the presence of the parties and the applicant, in accordance with a questionnaire. The questions on the questionnaire had been agreed on all sides in advance.

201. BC agreed he was the person in the photograph sent by KR. He said he did not live at the address given for him by KR, but his girlfriend did. He had never visited the café in question. His girlfriend had however, but stopped because they did not treat her well. In particular, there was an incident (about a month ago) where the owner of the café had headbutted and assaulted her, and she had reported this to the police. Following a short adjournment, the remaining questions were put.

202. A crime report was obtained which showed the incident as described by BC had taken place, and that it had taken place on the morning of the 2 August 2023 (just prior to the first contact with the court, which had taken place later that day). According to the crime report, the girlfriend had sold her mobile phone to the owner, but he had failed to pay for it. She went round to the café, to ask for payment and was assaulted, whereupon she called the police. The owner acknowledged to the officers who attended that he had been in the wrong in reacting as he had, and the matter was resolved with words of advice to the owner.

203. Having considered the submissions of counsel in the absence of the jury, including by the defence that KR should attend for cross-examination, the judge decided there was

no requirement to take any further action. The juror concerned returned to court, the judge established with the juror his readiness to act in accordance with his oath and confirmed that he would not discuss the content of the morning's hearings with his fellow jurors. The jury then resumed their deliberations.

204. In his second ruling, dated 10 August 2023, the judge said this:

> "This further ruling relates to the potential jury irregularity upon which I initially ruled on 3rd August. The reasons for my ruling at that time are set out in writing in a document of the same date. I do not repeat the background to the issue up to that point.
>
> The situation at 3rd August is set out in Paragraph 6 of my original ruling. It has now moved on. The caller to the court has been identified as [KR]. She was spoken to by the defendant's solicitor on Tuesday 8th August following an eventual response to the e-mail referred to in paragraph 2 of my original ruling requiring identification and contact details. She informed him that she worked in a café [which was named] and referred to matters that had been contained in the original e-mail; the customer was called [BC], she gave a description of him, said he lived next door to her at [an address was given] and she had not seen him for a number of weeks but he had been a regular customer in the café during the trial. She sent a photograph of [BC]. At the request of the defence, I directed that further enquiries be made by the GMP [Greater Manchester Police] as to whether there was any link between the address and any jurors in the case and that a witness statement be taken from [KR] covering the points she raised with the defence solicitor and there should be research into her and [that café] and other potential links.
>
> This morning, having received the results of the ensuing enquiries conducted by DI Michelle Buchannan of the GMP, including a witness statement from [KR] dated 9th August 2023, I separated the juror believed to be [BC] from the other jurors and, after hearing submissions from counsel on both sides, sitting in Chambers in the courtroom with counsel and with the defendant present, I asked a series of agreed questions of the juror. He confirmed he was the person in the photograph; it was an old photograph and was his WhatsApp image….the address [was that] of his girlfriend, [CD]. His home was at another address that he gave; he was in employment and has been for many years. He has 3 children, 2 of whom are twin daughters, he had never visited [that] café …though he did know about it; [CD] had worked there until recently when she was assaulted by the owner, an incident to which the police were called. He said he had never disclosed his role as a juror in this case to anyone at the café, he had definitely not told anyone associated with the café about features of the evidence in the case, never suggested the defendant had attempted to deflect blame onto other nurses

and never suggested to anyone at any stage that the jury had already made its mind up. He had no difficulty with adhering to his oath/affirmation of trying the case on, and only on the evidence.

In the light of the identified juror being [BC] and the terms of the various pieces of information imparted at different times by [KR] , the defence urged me to require her to give evidence so that I could determine whether her accounts were credible and reliable and that the juror, contrary to the answers he gave to me, had said the things he is alleged to have said. In this way, it is said, I can determine what took place and whether there has been an irregularity in that the juror disobeyed the clear instructions not to speak about the case, keep an open mind and to decide the case on all the evidence applying the directions of law given when the case is summed-up. I indicated that I proposed to take no further action and would give my reasons in writing. These are my reasons.

GMP records show that at around 10:00 hours on 2nd August there was an incident in [the café] …in which [CD] was assaulted by the owner, in a dispute over a phone. He admitted to the police at about 12:30 that day that he had squared up to her. It is not in issue that [the owner] is the partner of [KR] and the neighbour of [CD]. The court sat a full day; the jury was deliberating. The phone call to the court that day was made about half an hour before the e-mail sent at 15:09 hours to which I referred in paragraph 1 of my ruling of 3rd August. The narrative in that e-mail began "I have a café and has a customer who came in a few time and was discussing information about the case and about the jury"…". In the phone call to the defendant's solicitor on 8th August [KR] said that '[BC] did not have a job'. In her witness statement made on 9th August she said she witnessed an incident "about a month ago": [BC] was with his girlfriend and she heard him say "I've been called onto jury service about a case" followed by details of what she heard. He also mentioned the person on trial was Lucy Letby and that "they had already decided she was guilty but the trial was going on too long for stuff they couldn't control". He also "mentioned other things which [she] can't remember including deaths of family members of the jury" and she left him "talking about it with other customers in the café". She said she didn't know what case he was talking about but she then 'Googled' Lucy Letby and realised there was a big murder trial taking place about a nurse who was killing children. She wasn't sure what to do so she phoned the Court.

However, as is apparent, there was clearly animosity between [the owner], the partner of [KR], and [CD], the girlfriend of the juror, [BC]. The first e-mail sent on 2nd August bears the

hallmarks of having been written by [EF] (reference "I have a café"); it refers the customer …"who came in a few time and was discussing information about the case" and him upsetting "a few of my customers". The timing of that first contact with the court a week ago, within a few hours of [the owner] being seen by the police when 'the incident' (or incidents) had occurred about a month (or more) earlier was unlikely to be a mere coincidence; it was far more likely to be in reaction to what had happened that day. The first e-mail referred to a customer "who came in a few time (sic) and discussing the case". The statement of [KR] made on 9th August is confined to "an incident" that she "witnessed about a month ago". If true, that would have been around Saturday 8th July. The jury had been given directions of law relating to the offences on 15th June and I completed my summing-up on Monday 10th July.

I have had the benefit of observing all the jurors over nine months and the questioning of the juror concerned today. He answered questions clearly and in a straightforward manner, not seeking to hide his relationship with [CD] and her having worked at the café until recently. Neither his demeanour nor his answers gave any indication of his being untruthful. To the contrary, he was entirely unaware of what he was going to be asked and reacted in an open and apparently genuine way, emphasising he had never discussed the case in the café. There are significant and material discrepancies in the accounts purportedly given by (or on behalf of) [KR] and the terms of the e-mail, which, together with the latter's timing and indication that the author was [the owner], leads me to the conclusion that the motivation was in reaction to what had occurred earlier that day. There is no reliable material to doubt that the juror has done anything other than faithfully followed my initial directions. Further, the alleged conversation about a month ago was immediately prior to the jury commencing its deliberations. The jury has now been deliberating for over 15 days. They have returned only two verdicts; the length of their deliberations contradicts the premise that, at an earlier stage. "they had already decided that she was guilty".

Having regard to the source of the information, its timing, the variations/inconsistencies, and the responses of the juror to the questions arising out of the allegations, I do not consider it necessary or appropriate to conduct any further enquiries in relation to the basic facts of the alleged irregularity. I am quite satisfied that the allegation is unreliable, and that the juror has not breached his responsibilities as a juror. He confirmed that he was and would remain loyal to his oath/affirmation of trying the case on the evidence and there is no basis to doubt this. For these reasons, I [have] taken no further action in relation to this

> matter and the trial can proceed with the jury continuing with their deliberations."

*Ground 5: the submissions to this court*

205. Mr Myers does not dispute that the court (and indeed all parties) sought to follow the process to be followed in cases of suspected jury irregularity as now laid down in para 8.7 of the Criminal Practice Direction 2023. His complaint is confined to the judge's decision not to hear from KR in person in relation to a serious issue (the juror's potential propensity to disregard judicial direction and behave with bias towards the applicant). He submits that the extent to which that juror influenced other jurors cannot be known, and it cannot be said therefore that any of their verdicts of guilty returned after 10 August 2023 are safe.

206. It is said that the judge did not take all reasonable and necessary steps to investigate the alleged jury impropriety, and that the judge was wrong to dismiss the impropriety as he did. In particular it is submitted, that it was "proper and necessary" to hear from KR (who was ready and willing to give evidence), and that the judge failed to investigate the alleged irregularity "…in a manner that would consider all relevant and reasonably available evidence". It is submitted that had the judge heard evidence from KR and had the jury irregularity been thereby established, the juror would inevitably have had to be discharged. By then he had already participated in the unanimous verdicts of guilty on counts 6 and 15 (the insulin counts), and having regard to cross-admissibility this impacted on all the other guilty verdicts; it is submitted, therefore, that all the convictions must be regarded as unsafe

207. Mr Johnson submits however, that there is no rational basis for an appellate court to substitute its own view for that of the trial judge, who was best placed to make this decision. The view the judge took was that there was insufficiently reliable evidence of a jury irregularity, and there were sound reasons, as he identified, for him reaching that conclusion. The court correctly followed the procedure in para 8.7 of the Criminal Practice Direction 2023. The extent and nature of the investigation was a matter for the judge who exercised that discretion reasonably. He did not err in principle but undertook all reasonable and necessary investigatory steps. There was sufficient material upon which the judge could assess and evaluate the accuracy and truthfulness of the allegation of irregularity and the judge was uniquely placed to do so.

*Ground 5: discussion*

208. We agree with the reasons given by the single judge for concluding that it is not arguable that the judge's decision not to hear evidence from KR was wrong or outside his discretion, or that his decision to take no further action in relation to the alleged jury irregularity was wrong or outside his discretion. It is sufficient to set those reasons out:

> "First and foremost, it was a matter solely for the assessment and discretion of the judge how to discharge his duty of investigating the alleged irregularity, following the Steps in Section 8 of the Criminal Practice Direction 2023. There was no obligation to conduct what would have amounted to a "mini-trial" of the juror's alleged misconduct, with KR called and (presumably) cross-examined, and potentially with the need for further

questioning of the juror, when the judge was satisfied on the material already before him that he could deal with the matter fairly and appropriately. The facts relied upon by the judge in reaching his conclusion spoke for themselves.

Second, the judge was fully entitled to attach particular weight to his own assessment of the juror's integrity and credibility in answering the agreed questions put to him by the judge, answers which disproved the allegation of misconduct. In a trial of this length and seriousness the judge inevitably becomes acutely aware of the conduct of each juror day by day; an experienced trial judge observes their reactions to the evidence and submissions as the case progresses. I note that during submissions in the chambers proceedings on 3 August, prior to his first ruling, the judge described the conduct of the juror in question in the following way (at CB 9722): "[The] conduct of the potentially identifiable juror as a juror … I will say now has been, as far as I can tell, exemplary. He has all the hallmarks of someone who has paid meticulous attention to the case. He has been entirely reliable, even, if you recall, at a time when he was medically not well and in pain. He still assiduously attended to his duties as a juror and came here and has obviously been paying very close attention to everything that has been said." This assessment was echoed in the passages of the judge's two rulings quoted at paras 127 and 142 above. 147.

Third, the judge's reasoning in concluding that the allegation against the juror was unreliable cannot be faulted. It was a conclusion he was plainly entitled to reach. There were fundamental inconsistencies in the accounts which had been given by or on behalf of KR and her partner EF, as the judge identified. It was too much of a coincidence that the initial phone call to the court on 2 August, and the initial email to the court half an hour later (apparently authored by EF), came only some two hours after EF had been spoken to by the police about his behaviour in assaulting the juror's partner. The judge was entitled to infer that this was the motivation for the complaint about the juror concerning events said to have happened a month earlier. All this had to be viewed alongside the judge's favourable assessment of the juror's credibility and integrity.

Fourth, the judge was well aware of the history of the lack of response from KR to the formal request from the court (on behalf of the judge) for further information (with a deadline) following the initial complaint, a delay between the morning of Thursday 3 August and sometime on Monday 7 August (at the earliest). This apparent reluctance to respond was apparently not explained.

Fifth, save in relation to the question of whether KR should give evidence, all the steps taken by the judge to investigate the

> alleged irregularity were agreed by all counsel. The whole process was conducted completely in compliance with Section 8 of the Practice Direction.
>
> Sixth, it is inappropriate and impermissible to speculate about what the verdicts might have been had it been established that the juror had misbehaved and ought to have been discharged.
>
> Seventh, the fundamental complaint that the juror had said in the café that the jury had already made up their mind that the applicant was guilty, does not square with their very long and careful deliberations in retirement. The mixed verdicts they returned, or were unable to reach, demonstrate that they applied themselves diligently and impartially
>
> For all these reasons it is not arguable that the judge failed in any way to take the correct course in investigating the alleged jury irregularity.

*Outcome*

209. The renewed application for leave to appeal is refused as are all associated applications.