

**IN THE HIGH COURT OF JUSTICE
QUEEN'S BENCH DIVISION**

Royal Courts of Justice
Strand, London, WC2A 2LL
26/05/2016

B e f o r e :

MRS JUSTICE CHEEMA-GRUBB DBE

Between:

DS

(by Mother and Litigation Friend FS)

Claimant

- and -

Northern Lincolnshire and Goole NHS Foundation Trust Defendant

Howard Elgot (instructed by Stamp Jackson and Procter) for the Claimant

David Evans QC (instructed by Hempsons) for the Defendant

Hearing dates: 26th – 29th April 2016 and 3rd May 2016

HTML VERSION OF JUDGMENT

Crown Copyright ©

MRS JUSTICE CHEEMA-GRUBB DBE:

Introduction

1. The Claimant and his witnesses have anonymity. DS was born by caesarean section at 1529 hours on 4 June 2005 after an unexpected emergency in which his mother's placenta had partially separated from her uterus during labour. He is now nearly 11 years of age. His mother FS was 19 years old and healthy when she went into labour spontaneously at 40 weeks gestation. There had been no complications during the pregnancy (her first). Labour lasted 13 hours, 20 minutes. Near the time of his birth and immediately afterwards DS suffered a period of acute, damaging hypoxia, which caused brain damage resulting in spastic cerebral palsy. There is common ground that he has certain disabilities and is obviously a much loved, vibrant child with a very good sense of humour.
2. DS acting by his mother and litigation friend seeks damages for the injury and loss said to have been caused by the negligence of Northern Lincolnshire and Goole Hospital Trust's (the Trust) midwifery and medical staff in the management of part of DS's mother's labour at Scunthorpe General Hospital. According to Myles Textbook for Midwives (Edited by D. Fraser and M. Cooper) 14th edition, placental abruption is an accidental occurrence of haemorrhage that occurs in 0.49-1.8% of all pregnancies. Severe separation of the placenta is an acute obstetric emergency.

3. By s.1 Congenital Disabilities (Civil Liability) Act 1976 a duty of care is owed to the unborn child. This trial is concerned with issues of breach of duty and causation.
4. The case brought on DS's behalf alleges that there was negligent delay at the end of his mother's labour in that the midwives failed to realise that his heartbeat had dropped to dangerous depths until 1500 hours; that this was because inadequate monitoring was being carried out: that once they discovered this the labour should have been managed in such a way that medical assistance was called for minutes before it was and that the doctor who then arrived should have made the decision to deliver by emergency caesarean section at least a couple of minutes before she did. But for the negligent delay DS's delivery would have been achieved 6 or 9 minutes before 1529 hours and the saving of time would have been sufficient to reduce the effects of the period of damaging hypoxia to a materially less damaging injury.
5. The Trust defends the claim on both negligence and causation. It denies that its midwives or doctor acted in breach of their duties or that they delayed any appropriate and reasonable step in FS's care. Also medical causation cannot be established because on the balance of probabilities even an interval of ischaemic hypoxia shorter by 6-9 minutes than that which DS sustained would have caused essentially the same injury and the only way to avoid it would have been for DS to have been delivered within 10 minutes of the hypoxia starting.
6. The sources of evidence available on the question of negligence are primary witness evidence: contemporaneous and retrospective medical records; some electronic monitoring records and expert testimony. Expert evidence was also led on causation.

The Law

7. There is no dispute about the applicable law. In order to establish liability and negligence DS must prove that the Trust's staff did an act, or failed to do an act, in a way in which no reasonably competent obstetrician or midwife would have acted or failed to act. The test is prospective not to be corrupted by the benefit of hindsight. DS must then show that any negligence he has proved caused, or made a material contribution to, his injury and damage; in the context of this case what has to be proved is that but for the negligence DS would have been born unharmed or if harmed the level of damage likely to have been sustained would have been materially less.
8. The individual midwife or doctor is to be judged by the standard of a reasonably competent doctor or midwife carrying out the functions expected of her in the delivery suite of a hospital providing maternity services. In *Bolam v Friern Hospital Management Committee (1997) 1 WLR 583* what has become known as "the Bolam test" was described by McNair J as follows (page 587):

"The test is the standard of the ordinary skilled man exercising and professing to have that special skill. A man need not possess the highest expert still: it is well established law that it is sufficient if he exercises the ordinary skill of an ordinary competent man exercising that particular skill.

I myself would prefer to put it this way, that he is not guilty of negligence if he has acted in accordance with the practise accepted as proper by a reasonable body of medical men skilled in that particular art...putting it the other way round, a man is not negligent, if he is acting in accordance with such a practise, merely because there is a body of opinion who would take a contrary view."

9. In *Bolitho v City and Hackney Health Authority (1998) AC 232* it was emphasised that the practise in question in the quotation above had to be accepted as proper by a responsible body of medical professionals. In the leading speech Lord Brown-Wilkinson said (page 241):

"The use of these adjectives – responsible, reasonable and acceptable – all show that the court has to be satisfied that the exponents of the body of opinion relied upon can demonstrate such opinion as a logical basis. In particular in cases involving, as they so often do, the weighing of risks against benefits, the Judge before accepting a body of opinion as being responsible, reasonable or acceptable, will need to be satisfied that, informing their views, the experts have directed their minds to the question of comparative risks and benefits and reached a defensible conclusion on that

latter prose."

He continued (page 243):

"In the vast majority of cases the fact that distinguished experts in the field are of particular opinion will demonstrate the reasonableness of that opinion. In particular, where there are questions of assessment of the relative risks and the benefits of adopting particular medical practise, a reasonable view necessarily pre-supposes that the relative risks and benefits have been weighed by the experts in forming their opinions. But if, in a rare case, it can be demonstrated that the professional opinion is not capable of withstanding logical analysis, the Judge is entitled to hold the body of opinion is not reasonable or responsible. I emphasise that in my view it would very seldom be right for a judge to reach the conclusion that views genuinely held by a competent medical expert are unreasonable.....It is only where a judge can be satisfied that the body of expert opinion cannot be logically supported at all that such opinion will not provide the benchmark by which the Defendant's conduct falls to be assessed."

DS

10. The Claimant's injuries are summarised in the re-amended Particulars of Claim. DS has a severe spastic cerebral palsy which is bilateral though asymmetric in distribution. He is profoundly disabled, his principal problems are that he has significant dystonia, he is unable to sit unsupported and can only occasionally take three or four steps independently. He can crawl upstairs on his knees and come downstairs on his bottom under supervision. DS has learning difficulties of moderate severity. His speech is difficult to understand. He is doubly incontinent and at increased risk of developing epilepsy. He will require care on a round-the-clock basis for the rest of his life and suitable accommodation and assistive aids and technology. He will always require a range of therapies. His life expectancy is to about 74 years but he will be unable to work or drive a car.

The Issues

11. The Claimant's case was first prepared in 2012 for a letter before action. A degree of adjustment to his case has taken place during the progress of litigation. The Claimant's re-amended Particulars of Claim allege that the Defendant was negligent in that it:
 - a. Failed to monitor the foetal heart every five minutes in the second stage of labour. This was contrary to the Defendant's own Guidelines of April 2003 and led to a three minute delay.
 - b. Failed to take the foetal heart rate prior to the (artificial) rupture of the membranes.
 - c. In so far as the Claimant's heart rate was pathologically low at 1457 failed to summon immediate medical assistance at or about 1500 giving rise to seven minutes delay.
 - d. Alternatively in so far as the Claimant's heart rate was not pathologically low at 1457 failed to summon immediate medical assistance at or about 1503 giving rise to four minutes delay.
 - e. Delayed by involving Sister Lilley before summoning medical assistance. The length of delay was short but unknown.
 - f. Doctor Deshmukh failed to initiate a delivery by caesarean section within three minutes of her arrival. Leading to two minutes delay.
 - g. But for breach of duty a time frame of 6-9 minutes would have been saved and the Claimant would have been delivered by 1520 or 1523 rather than the actual time of delivery: 1529.
 - h. In respect of causation the Claimant alleges that had the 6-9 minutes negligent delay been saved he would have sustained a lesser degree of disability.

12. Following joint expert discussions the experts agree that the Claimant suffered a prolonged acute total hypoxic episode of 42 – 47 minutes duration. All breaches of duty are denied and in terms of causation the Defendant asserts that irrespective of any breach of duty found the Claimant's condition would have been unchanged.

Relevant Material from Labour Notes

13. FS's Labour notes are in a conventional format and consist of a table with four columns. The first is headed MDT (Multi-Disciplinary Team) and enables the person entering a note to describe their role, so that MW = Midwife and STMW = Student Midwife. The next column is headed Date and Time. The third column is the largest space for the recording of events and the final column is headed Print and Sign.

FS was admitted at 0512 hours on 4th June 2005. She had been seen at home at 0155 hours and was having contractions. Her membranes were intact.

0818	[The midwives caring for her on admission handed over to Midwife Voulgaris (MWV) and Student Midwife Herron (nee Lusby-Spedding) (SMW)]
0822	Foetal Heart Rate Heard (FHHR) 114-128bpm FS sleeping between contractions. This entry is signed by SMW and countersigned by MWV.
0830	Suggested to FS to adopt left lateral position however feels more comfortable in the semi recumbent position. Signed and counter signed as above.
0845	FHHR 114-128 bpm FS relaxing between contractions contracting 3:10 (three contractions per 10 minutes) lasting 50 seconds, FS coping well and supported by Pip (DS's father) and her mum.
0900	FHHR (as before) maternal pulse 78 bpm FS contracting 3:10 lasting 50 secs strong on palpation FS coping well signed and counter signed.
0915	FHHR 128-131 bpm FS coping well signed and counter signed.
0930	FHHR 128-148 bmp 5-15 beat variability no decelerations auscultated maternal pulse 90 bpm contracting 3:10 lasting 60 secs strong on palpation no PV (per vagina) loss at present FS not feeling any urges to push using Entonox during her contractions with good effect signed and counter signed.
0944	FHHR 118-125 bpm FS coping well signed and counter signed.
0953	Up to toilet signed and counter signed.
0958	Back from toilet FS vomiting + signed and counter signed.
0959	Urine analysis + protein blood +++ otherwise NAD? Membrane rupture explained to FS regarding VE (vaginal examination) to

	assess labour progress signed and counter signed.
1005	FHHR 114 bpm variability 5-10 no decelerations auscultated contracting 3:10 lasting 60 secs strong on palpation FS saying they are hurting more however still coping well with Entonox during these, signed and counter signed.
1010	FHHR 118bpm FS consents to VE. VE performed with consent. External genitalia NAD internal genitalia warm and moist fully effaced 8cm dilated PP cephalic fontanelle felt position undefined due to bulging membranes. At the spines no cord or placenta felt FHHR 128-138 bpm after VE was performed, signed and counter signed.
1040	FHHR 110-120 bpm contracting 3-4:10 lasting 60 secs strong on palpations FS now tearful however well supported by her mum and partner Pip, signed and counter signed.
1100	1100 FHHR 120bpm variability 5-15 accelerations present no decelerations auscultated maternal pulse 88 bpm contracting 4:10 lasting 60 secs strong on palpation FS coping better now Entonox having good effect signed and counter signed.
1110	BP 120/90 rechecked in L lateral 120/80 FHHR 116-125 bpm FS coping well and very well supported signed and counter signed.
1115	FHHR 110-128 bpm
1130	FHHR 117-135 bpm maternal pulse 92 bpm contractions lasting 60 secs 3:10 strong on palpation using Entonox with good effects, signed and counter signed.
1138	FHHR 128 bpm FS coping well with the Entonox during contractions, signed and counter signed.
1145	FHHR 117-125 contracting 4:10 lasting 60 secs nil visible at present although some bearing down with contractions, signed and counter signed.
1150	Rupture of membranes clear liquor draining, signed and counter signed.
1152	FHHR 117-125 bpm FS coping well, signed and counter signed.
1154	FHHR 125-135 bpm maternal pulse 84 bpm contracting 4:10 lasting 60 secs strong on palpation, signed and counter signed.
1205	FHHR 120 bpm nil visible, signed and counter signed.
1210	FHHR 117 bpm, signed and counter signed.

1218	FHHR 135bpm variability 5-15 accelerations present no decelerations auscultated at present time, signed and counter signed.
1225	FHHR 118-130 bpm, signed and counter signed.
1230	FHHR 130bpm variability 5-10 bpm maternal pulse 86 bpm contracting 3:10 lasting 50-60 secs feeling unable to cope with the pain supporting FS through her contractions also her mum and Pip, signed and counter signed.
1235	FHHR 128-132 bpm, signed and counter signed.
1247	Up to toilet, signed and counter signed.
1250	Back from toilet, FHHR 130-135 bpm, signed and counter signed.
1300	FHHR 125bpm variability 5-15 bpm no decelerations auscultated at present time. FS contracting 3:10 lasting 50-60 seconds coping much better now, signed and counter signed.
1320	Refreshments given to FS's mum and partner Pip, signed and counter signed.
1321	FHHR 125-118 bpm, signed and counter signed.
1335	FHHR 125 bpm variability 5-10 bpm no deceleration auscultated at present FS contracting 3:10 lasting 50 secs, she is coping much better now with fan to keep her cool. Temp 36 ° C
1345	FHHR 135 bpm FS contracting 3:10 using Entonox during these with good effect, signed and counter signed.
1353	FHHR 120 -140 bpm, signed and counter signed.
1406	FHHR 125 bpm variability 5-10 bpm no decelerations auscultated at present contracting 3:10 lasting 50-60 secs maternal pulse (illegible) bp (blood pressure) 120/85 FS bearing down with her contractions small pushes given. Nil visible at present, signed and counter signed.
1410	FHHR 135-142 bpm, signed and counter signed.
1414	FHHR 119-130 bpm, signed and counter signed.

1421	FHHR 135- 140 bpm, signed and counter signed.
1429	FHHR 125-135 bpm, FS coping much better now contracting 2:10 lasting 50 secs nil visible at present, signed and counter signed.
1434	FHHR 125-130 bpm, maternal pulse 86 bpm, signed and counter signed.
1445	FHHR 119-125 bpm, signed and counter signed.
1452	FHHR 120-127 bpm, signed and counter signed.
1500	Bag of waters at vulva. SROM (spontaneous rupture of membranes) FHHR 60, no signature or counter signature.
1504	FHHR 60 with Pinnard, signed and counter signed.
1506	FSE (Foetal Scalp Electrode) in situ FHHR 70 bpm, signed and counter signed.
1630	<p>[This is the first MW entry under 'MDT' rather than Student Midwife which has appeared in every relevant entry previously. The entry is written in retrospect at 1630 due to 'events occurring emergency situation'. The entry is signed by Midwife Voulgaris.]</p> <p>At 1500 came back into room bulging bag of membranes noted asked to review by Student Midwife Lusby – Spedding. Bag of membranes clear liquor small show noted. FH auscultated 60 beats minute checked by Pinnard 56-60 beats a minute. Buzzer pulled SR Lilley entered room position changed to more sitting up and VE to be performed.</p>
	1505 VE to assess with verbal consent constant verbal reassurance given throughout. FS appears very frightened. VE to assess progress. Vagina warm and moist cervix fully dilated ... cephalic at level of spines position ROP FSE (Foetal Scalp Electrode) applied with FS's verbal consent SR Lilley present throughout pulse 80, signed by Midwife Voulgaris (diagram included of position of foetus' head).
	1507 Doctor Deshmukh bleeped and asked to review FH by SR Lilley, signed by Midwife Voulgaris.
	1508 Doctor Deshmukh present in room VE to assess progress FH 64 beats per minute, signed by Midwife Voulgaris.
	1508-1509 sudden blood loss noted per vagina. Verbal re-assurance given throughout. Difficult auscultation due to VE being performed abdominal FH 69 beats per minute, signed Midwife Voulgaris.
	1513 crash LSCS call put out FHR 72 prior to leaving COS, signed by Midwife Voulgaris.
	1515 left COS to theatre with assistance constant verbal reassurance, signed Midwife Voulgaris.
	1517 in theatre FH auscultated via sonic aid 40 beats per minute unable to obtain consent due to situation. Maternal pulse 78 beats per minute, FS appears frightened to have (illegible) has much verbal support given but difficult due to situation that is emergency situation, signed Midwife Voulgaris.
	Still within these notes written up after the events Midwife Voulgaris includes the following: "The notes written by Student Midwife Lusby –Spedding are correct, I supervised the care throughout the labour, the FH was auscultated before, during and after contraction for a minimum of one minute throughout the labour."

1730	[Doctor Deshmukh wrote within the labour notes.] Bleeped at 1507 hours to review FS. Was in room to review FS at 1508 hours. History of SROM at 1500 hours and difficulty in locating FH and hence FSE placed at 1506 hours.
	Examined FS to exclude?cord prolapse at 1509 hours. PA (per abdomen) uterus contracting? tender Ceph 1/5th CTG (cardiotograph) bradycardia 70-80 bpm. VE cervix fully dilated station O at spines position ROP deflexed ant fontanelle easily felt no cord prolapse felt blood stained liquor seen further fresh blood seen coming from vagina. Impression ? abruption
	Plan crash LSCS decision made at 1513 hours. Mr Odukoya consultant on call informed of the plan agreed Explained to FS that we need to take her to theatre for LSCS quickly obtained verbal consent from FS for LSCS there was no time for a written consent. Signed and printed D Deshmukh. [The notes continue.....] FS had more bleeding PV in theatre before LSCS. FH was heard in theatre with sonic aid Bradycardia was getting worse
1805	Saw FS and her mother post operatively. Apologised for not having informed in details before LSCS due to time constraints. Explained placenta abruption after membrane rupture explained the reason for immediate LSCS explained that placenta had separated and there were clots inside the uterus and nitro placental clots. FS is drowsy and therefore I will speak to FS later.
5/6/05 2145	[Dr Deshmukh made a further entry.] Explained to FS today the situation which led to crash LSCS. Answered the questions asked by FS tried to explain as much as possible explained that rarely placenta abruption can occur after membrane rupture...

CTG

14. A print out from the CTG (Cardiotograph) trace obtained from the foetal scalp electrode applied to DS's scalp at about 1506 bore apparent artefacts. The trace of the FHR between 1506 and approximately 1508 appears to be between 60 and 80 beats per minute thereafter in hand writing appears VE and the words "by D Deshmukh". A CTG trace appears interrupted from 1508 and although there are some signs of a trace between 1511 and 1513 these are much higher than the FHR is likely to have been and appear to be irrelevant.

Partogram

15. A partogram chart had been maintained. The FHR was marked on it by hand up until 1400. The FHR of 60 beats per minute is marked at 1500 and counter signed by Midwife Voulgaris. There is a further entry that clear liquor is seen at 1500 hours. On the partogram the degree of intensity of contractions was marked during the period of care by Student Midwife and Midwife Voulgaris. The other entry of note is that at 1000 hours the results of the vaginal examination are marked as fully effaced at spines and the position of the foetus is marked as cephalic on a diagram

Claimant's Factual Witnesses

16. FS and ES, (DS's grandmother) gave evidence, much of which was contradicted by the Trust's staff. As ever, careful scrutiny must be applied to the evidence where allegations of negligence are made and an objective appraisal has to be achieved. This is not to detract from the understanding and sympathy which any such witness will naturally be entitled to expect from the court. The burden was on the Claimant to persuade me that where contradictions occur, especially important ones, the evidence of FS and her mother was more likely to be correct. Generally, I was not so persuaded. This is predominantly because the evidence of the Trust's witnesses was substantially supported by the records which I am sure were written at the times shown on their face (rather than made up afterwards) and because where the evidence of the Trust's witnesses conflicted with the Claimant's mother and grandmother, their evidence was sometimes inherently improbable. The best aid to resolving

differences of recollection and factual contests in witness testimony is contemporaneous or near-contemporaneous records. I am certain that FS and her mother ES have both tried their best to help the court but inevitably, their recollection will have been affected by the trauma of the occasion and by having to think back over the years to what happened. This observation does not carry any criticism of them whatsoever. FS went through highly disturbing events for a young woman just 19 years of age undergoing her first labour and childbirth and I am certain that the shock of the manner of DS's birth and the ordeal of his early days has had an impact. It is right to observe that anyone caught up in a distressing emergency situation which led to surgery and the birth of a child who has disabilities may have difficulty recalling events clearly and accurately. I make it clear that I reject entirely the suggestion that either of the two factual witnesses called for the Claimant was dishonest in their evidence to me.

17. FS made a statement in this claim on 12 February 2015 giving her age of birth of 16 April 1986. DS was her first child. He now has a brother who was born on 12 November 2008 by elective caesarean section and is developing normally. Upon admission FS was having contractions and a vaginal examination showed that her cervix was dilated to 5 cms. A controversial aspect of her evidence was her recollection that although two midwives took over her care at 0818 hours only one of those was with FS and her mother ES most of the time. This was the Student Midwife Herron (nee Lusby-Spedding) (SMW). According to FS the Supervising Midwife Voulgaris (MWV)

"...entered the room no more than 3 or 4 times in all, for no more than a minute each. Midwife Voulgaris stood at the door and spoke to us; she did not check or sign any of my notes and made no observations. The only time she entered the room was to bring refreshments for my mother and partner. All of the notes were written by Student Midwife Lusby-Spedding".

18. Both midwives rejected this account and the medical notes demonstrate that where observations are recorded they are signed by SMW and, on almost every occasion, countersigned by MWV. Although in her initial statement MWV said she had been in the labour room throughout except for short breaks, she corrected this in her second statement having seen the Claimant's evidence. On balance I am satisfied MWV's final account is correct. In her evidence MWV said she wasn't present in the room the entire time and may have been absent for as long as half an hour at a time but that she was present most of the time between 0818 and 1500 hours caring for FS and supervising the student midwife. She accepted that she was not necessarily present when each observation was recorded in the medical notes by SMW and that she may have countersigned some entries "in blocks".
19. FS gave evidence confirming that when a vaginal examination was carried out at 1010 hours with her consent the labour notes properly record the findings: her cervix was dilated to 8 cms, the vertex was at the level of the ischial spines and the membranes were bulging through the cervix. MWV gave evidence that she was present during the vaginal examination and that this would be normal procedure because she was supervising SMW.
20. FS stated that she had never become aware during labour that her waters had broken while the notes record that at 1150 hours rupture of the membranes with clear liquor draining had taken place. The midwives' evidence was that they had seen this occur spontaneously and had assumed that it was rupture of the main amniotic sac. That turned out to be incorrect but I have no doubt that what is recorded at 1150 in the notes was a contemporaneous recording and reflected the midwives' understanding at that time.
21. A significant and controversial recollection in FS's statement was,
- "During this time I was in excruciating pain and my tummy was rock hard. The student midwife commented on this a few times but it does not appear in the notes. I do not know what caused this or whether it is relevant to DS's condition. I just know that it happened and it wasn't right. I am concerned whether this was an indication that the baby needed delivering at this time but they didn't act upon it but I know the experts in the case and the Court will consider this."
22. FS is correct in that there is no record of her being in excruciating pain and her abdomen being "rock hard". The evidence of the midwives was that there were times when FS was unable to cope with the pain that she was

having with contractions which continued throughout the morning and into the afternoon but that she was taking in Entonox and there are records in the notes of periods when she is "coping much better" and that when she took the Entonox during contractions the pain relief had "good effect". Again on this topic I prefer the evidence of the mid-wives who were clear that FS was never in excruciating pain and although her abdomen was palpated on a number of occasions during labour there was no occasion when it was very hard. In particular a passage in FS's statement in which the student midwife Herron is alleged to have said on a number of occasions "*That's strange, your belly is rock hard*" was specifically denied and I reject that evidence. It is clear from the evidence of the expert mid-wives that a hard, painful abdomen is an important sign which would not be ignored. I am satisfied that SMW was palpating FS's abdomen and that the FHR was being monitored as the notes show and it is not probable that this sign was missed or ignored or that SMW noticed it, commented upon it but did not inform her supervisor or that MWV was informed and failed to act.

23. Inevitably the most important evidence from FS concerned events at 1500 hours. In her statement she had said the following,

"Not once during my whole labour had I had the urge to push or had I been pushing. I was under a sheet from when I was examined up until 15.00 when the student midwife asked me to push. At first I said no but she kept trying to persuade me to but then I gave in and pushed as hard as I possibly could. This was when the "balloon" was delivered. My mother told me it was like a white balloon filled with black ink. I did not actually see this. The student midwife asked Pip [DS's father] to press the buzzer, she looked panicked and confused, as did my mother. On entry to the room, the trained midwife said "What's that?" The student replied "I don't know." Then the trained midwife said "Has her waters broke" to which the student midwife replied "I don't know". I clearly heard this said.

I was told by my mother that a dark sac of bulging membranes was visible at the vulva. I can remember this clearly. I understand midwife Voulgaris broke the sac with a hooked instrument of some sort and there was red blood everywhere, although I never actually saw the sack. It was clear from the mid-wives' reactions that something wasn't right.

Neither the student midwife, nor the trained midwife, tried to measure the baby's heart rate before they broke the sack. After they broke it they didn't try to measure the heart rate but when they saw all the blood everywhere they asked Pip to press the emergency buzzer. A third midwife came into the room and tried to measure the foetal heart rate, but after putting gel on and trying a few times she was not able to obtain the foetal heart rate and she put more gel on. The emergency buzzer was pressed again.

There was then a series of activity. There was an air of panic. The doctor arrived and carried out a vaginal examination. When she did this more blood came out and then she called the crash emergency caesarean, there were buzzers going off."

24. The contemporaneous medical notes do not bear out this account in that at 1406 hours it is recorded that FS was bearing down with her contractions and giving small pushes although nothing was visible at the entrance to the cervix at this time. Contractions are noted on several occasions between 1330 and 1500. The FHR which had been measured at frequent although not entirely regular intervals, to which topic I will have to return, was measured and noted at 15.00 hours as 60 beats per minute. In a same entry the spontaneous rupture of the membranes is recorded. At 15.04 the FHR which had been measured with a Pinnard was recorded as still 60 beats per minute and two minutes later at 15.06 a foetal scalp electrode having been attached to DS's head, the FHR was being measured at 70 beats per minute. This appears to be the last contemporaneous record prior to the unfolding emergency situation recorded retrospectively at 16.30 hours.
25. Returning to FS's statement she describes screaming in pain when she arrived in theatre for the emergency caesarean section. She was then given a general anaesthetic. She describes seeing an obstetrician, Mr Roberts, on Monday 6 June and being told that she had suffered a placental abruption and that DS may not survive and if he did he would have lifelong medical problems. Six weeks after DS was born she saw Mr Daniels, another

obstetrician, who did not have time to answer all her questions and so arranged a further appointment. But at this appointment she did not see Mr Daniels but his registrar, who did not answer FS's questions.

26. At the start of her evidence in Court she stated that her memory was not affected by the passage of time. She maintained that MWV did not enter the labour room over the 6 ½ hours FS spent there except to bring refreshments and to say that FS was doing really well. She denied that she had ever seen MWV enter her signature on the medical notes. In cross-examination she was taken to a letter dictated on 1 August 2005 by Dr M Mohammed, Specialist Registrar in Obstetrics and Gynaecology. This letter was written to FS's GP following the appointment FS had been given and during which she and her mother had the opportunity to ask questions about her labour and the delivery of DS, the Registrar having in front of her all the medical notes concerned. The letter is 2 ½ pages long and appears to be a detailed description of a post-natal appointment. Dr Mohammed records a number of questions she was asked by FS and her mother:

i. "What happened during the intra-partem period from her admittance to delivery?"

ii. What time the abruption occurred?

iii. What happened in theatre i.e. pre-op and enter operative period?

iv. How was the baby resuscitated and what were the measures taken?"

27. Dr Mohammed records that she went through the notes page by page and reviewed them line by line. FS denied that anything like this happened. The witness said the doctor did not answer the questions she and her mother had although this had been the whole point of the appointment. She said that Dr Mohammed had just "flicked through the notes". The letter Dr Mohammed had written made no sense to FS. It was not a correct account of the meeting. It was put to her that the letter was detailed and clear, but she denied that it was a true reflection of the appointment. Her attention was taken to a particular passage.

"FS herself remembers that at one point her contractions were getting stronger and that she was told the abdomen was rigid. She then asked if the abruption happened at that stage. On reviewing the notes at that stage the foetal heart rate was about 118 beats per minute and FS on direct questioning said she had no pain in between the contractions. These two points would make a diagnosis of abruption at that stage very unlikely."

28. Although there is no particular time noted for this in that paragraph, the next time that Dr Mohammed included was 10.10 hours and working back in the notes a FHR of 188 beats per minute was last recorded at 09.44 hours. There is no indication of a rigid abdomen at that stage. The witness said that this part of the letter must be an error by Dr Mohammed because she did not say that to her.

29. Similarly, FS was asked about another passage in the letter

"With regards to her question of when the abruption happened. Firstly I told FS and her mother that abruption is not something that is predictable. There are no measures or investigation which can tell us when an abruption could happen. On reviewing the notes I have assumed that abruption had happened at the time when the foetal heart was running low and according to FS at the same time she also experienced increasing abdominal pain which was at around 15.00 hours."

30. FS agreed that she had said that she'd experienced increasing pain at around 15.00 hours but she denied that she and her mother had any explanations from Dr Mohammed or that they had indicated to Dr Mohammed that they were satisfied with all the explanations and answers they had been given. FS also denied that towards the end of this meeting Mr Daniels had entered the room and apologised for not being able to facilitate the meeting personally. FS maintained that they didn't see Mr Daniels at all that day and they were not happy with the meeting they had had.

31. Although the meeting itself is not of primary relevance to the issues in this case I found FS's evidence about the

meeting with Dr Mohammed unsatisfactory. The letter was dictated on the same day as the meeting. It was typed a couple of days later and it is detailed enough for me to be satisfied that it represents a full record of detailed discussions that FS and her mother had with a knowledgeable, experienced doctor intent on assisting them to understand the crisis that had occurred towards the end of FS's labour. FS agreed that she had not mentioned to Dr Mohammed that the supervising midwife was not in the room for substantial periods or at all during the period of labour between 0818 and 1500 hours. She denied that she and her mother had asked specific questions of Dr Mohammed which Dr Mohammed had recorded, for example, ES had asked why FS was not given any Venflon. FS denied Dr Mohammed had explained that the placenta had partially separated by the time of the caesarean. FS and her mother had not given Dr Mohammed the impression that they understood the baby's heart beat had been lost pre-operatively and Dr Mohammed did not explain that the foetal heart was running at a low rate until auscultation was stopped just before the caesarean section.

32. Finally it was put to FS that if her evidence was correct then the midwives failed to note any of the things which would have indicated very strongly that she had suffered a placental abruption well before 1500 such as her "rock hard" abdomen, her complete failure to push etc. In particular it was put to her that the Claimant's case had changed from the way it was originally formulated because the medical evidence did not support a placental abruption much before 1500 but that she nonetheless maintained an inherently improbable account that the midwives caring for her had been ignoring signs of potential danger to her baby. She denied that she had made up this evidence to suit her case that the midwifery staff were incompetent and heedless.
33. ES, DS's grandmother also gave evidence. She has had three children all of whom were born without surgical intervention, healthy and well. She confirmed that when FS saw a midwife at home in the early hours of 4 June 2005, FS and she were told that the birth was classed as low risk and FS could stay at home or go to hospital if she wished to. FS went to hospital and arrived early in the morning. ES confirmed her daughter's evidence that SMW cared for FS and MWV merely stood at the door occasionally to ask if FS was alright and only entered the room to deliver refreshments. In her statement dated 12 February 2015 she stated that the supervising midwife's conduct was a matter of concern to her and observed that FS had indicated that she did not want to be cared for by a student midwife in advance of going into labour but had been reassured by the midwives caring for her before 0818 hours that SMW was close to the end of her training and relatively experienced.
34. ES stated that she began to get concerned about her daughter at about 1330 because her contractions seemed to be fading and she was becoming agitated. She was also in great pain and sought a caesarean section, because of the pain. ES confirmed FS's evidence that SMW felt FS's stomach and said "*That's strange, your belly is rock hard*". SMW seemed to be puzzled by this. ES denied that she had subsequently become aware that such a sign may indicate placental abruption.
35. ES also confirmed that FS was asked to push by SMW (at about 1500) and when she did, after much persuasion, she delivered "*a balloon*". At that point SMW looked anxious and asked DS's father to press the buzzer. ES stated that it was the midwives who mechanically ruptured FS's membranes using an instrument "*that looked like a crochet hook*". When the membranes were ruptured there was a substantial quantity of blood and the buzzer was pressed again and another midwife appeared. She tried to measure the baby's heart rate, it not having been measured before or since rupture of the membranes. She had difficulty measuring the heart beat and the buzzer was then pressed again at which the doctor appeared, thereafter the crash team was called.
36. In evidence ES adopted her statement. She had heard her daughter's evidence and agreed with FS that the midwives had "*made up their notes*". ES said that she had expected the baby to have arrived by two o'clock although she didn't mention her concerns to anyone else. She denied that MWV was in the room supervising the student for most of the time and denied that SMW's notes were counter-signed by MWV, who must have added her counter signature to the notes later.
37. She also agreed with her daughter about the content and nature of the meeting they had had with Doctor Mohammed. They were disappointed that the doctor had not answered the questions they had wanted to be answered. She said

"We had wanted to know what had happened minute by minute; they flicked through the note nonchalantly. FS had wanted to draw a line in the sand, wanted to know what had happened so that they could come to terms with it."

38. In cross examination she maintained that FS was in "*excruciating pain*" from before 1330 and that SMW had been panicked at 1500 hours when a bag of waters was delivered. Neither of the midwives seemed to know what the "balloon" was. This reaction was not accepted by the midwives and the account is unlikely to be accurate: MWV was very experienced and, in my judgment, could not have failed to appreciate what the bag of membranes was. ES maintained that the membranes did not rupture spontaneously but were deliberately and mechanically broken. She said that the note made ostensibly at 1500 hours was wrong. She denied that she was making this evidence up and also denied that she was mistaken about it. It was put to her that it was possible she could have mistaken the foetal scalp electrode that was inserted after the rupture of the membranes for the crochet hook that she had described and the witness was shown a photograph of a foetal scalp electrode. The witness admitted that she did not mention the fixing of a foetal scalp electrode at all in her statement but was adamant she had not made a mistake.
39. She also maintained that a quantity of blood soaked the bed when the membranes were ruptured. She described it as "*a guest-towel full*" of blood approximately 18 inches by 12 inches. She said seeing all the blood was frightening for her and she certainly had not confused what is later recorded in the notes, retrospectively, as "a small show". She too denied that she was making up her evidence to demonstrate that the placental abruption happened well before 1500 and was obvious but not recognised by the midwives.

The Midwifery Evidence

40. Midwife Andrea Louise Herron (SMW) started her midwifery training at Hull University in 2002; she qualified as a Registered Midwife in August 2005, two months after the birth of DS. During the last 18 months of her training she worked on a placement at Scunthorpe General Hospital obtaining practical experience including performing vaginal examinations, providing perinatal care and assisting with normal deliveries. She has remained employed there as midwife aside from two periods of maternity leave.
41. In her statement dated 8th February 2015 (she made a supplementary statement on 8th May 2015) SMW records that although she has a reasonable recollection of the relevant events this is supplemented by a review of the contemporaneous medical notes and consideration of her usual clinical practice. In her statement she described taking over the care of FS at 0818 on 4th June 2005. MWV was present supervising while SMW managed FS's delivery and monitored and recorded her labour. FS was SMW's only patient that day. FS was accompanied by her mother and boyfriend. FS was primigravida and was categorised as low risk. As a result she was not on a regime of continuous CTG monitoring.
42. At 0818 hours FS was in the first stage of labour. The Trust's policy was for auscultation of the foetal heart every 15 minutes during the first stage. SMW stated that she would have initially used a Pinnard and then a Toco from the CTG machine to auscultate the foetal heart. She recorded her findings in the clinical notes and also on the partogram that was being maintained.
43. In respect of the vaginal examination at 1010 hours SMW stated that she would have performed an abdominal palpation before the examination to enable her to check that the vaginal examination corresponded with what she could feel on the abdominal examination. The cervix was fully effaced and 8cms dilated. The presenting part of the foetus was cephalic and she could feel the fontanelle. She recorded the position as undefined due to bulging membranes. The foetal head was at the spines she did not feel the cord or placenta. The FHR at the end of the vaginal examination was 128-138 beats per minute, within the normal range.
44. Whilst continuing to monitor FS's labour which remained normal, at 1145 hours she recorded that FS was bearing down with her contractions. She explained this in her statement as meaning that FS was starting to feel the urge to bear down. With hindsight it is accepted by both sides that it is likely that the OP position of her baby will have been the cause of FS feeling the urge to bear down despite not being fully dilated. At 1150 the rupture

of membranes she had recorded was described in her statement in retrospect as rupture of the hind waters or possibly urine, however the liquid was clear, without any meconium or blood in it. SMW considered that FS was entering a transition stage before the second stage of labour and she began to increase the recording of the foetal heart. She states "*At this time I was actually recording the foetal heart more frequently than was required*".

45. FS's contractions then reduced in frequency but were still strong on palpation and the witness considered this to be normal; a further sign that FS was entering a latent or transitional stage of labour otherwise known as the "rest and be thankful stage". She was palpating the contractions by hand and also holding the Toco in place on FS's abdomen to listen to the foetal heart. She was listening before, during and after contractions. At this time each contractions was lasting approximately 50-60 seconds and the uterus was relaxing in between contractions.
46. FS had been due to have a routine vaginal examination at 1415, this being about 4 hours since the previous vaginal examination, but the examination was delayed because FS appeared to be approaching the second stage of labour. SMW increased the frequency of the foetal heart monitoring to every five minutes or so in accordance with the Trust's policy for the second stage which they were anticipating. At this point FS was in discomfort and quite distressed however SMW was clear that FS's abdomen was never "*rock hard*". If she had noticed such a sign she would have noted it in the record and acted upon it.
47. At 1500 hours she saw the bag of waters but initially thought it was the baby's head. The bag came out at the height of a contraction and the pressure of the contraction caused the bag to rupture and the waters flooded. At that point MWV was not in the room but she was called back in as SMW thought that the baby was about to be delivered. She records in her statement that she had gone to the door to call the supervising midwife back into the room and she arrived immediately. There was a minimal show present at the time of the rupture of the membranes but there was no thick red blood.
48. Once MWV returned to the room she took over management of FS and thereafter SMW assisted by writing down what was happening on a piece of paper with a view to the notes being written up later.
49. The foetal heart was recorded as the records show. At 1500 hours and 1504 the listening was done by MWV initially with a Toco and then with a Pinnard. Her initial view was that the deceleration in the FHR was due to a cord prolapse. The labour ward co-ordinator Midwife Lilley responded to the buzzer. SMW explained that although it would have been possible to call a doctor into the room rather than the Labour Ward co-ordinator the clinical situation was that the FHR had only just dropped and that was why the co-ordinating midwife's presence was initially sought.
50. The midwives attempted to get FS into a better position in order to conduct a vaginal examination to assess the situation. This was at 1505 hours. It was necessary to check that there was no cord prolapse, what the position of the baby was and whether FS was fully dilated. It was during this examination that the foetal scalp electrode was attached in order to obtain a continuous reading of the FHR and to check that the maternal heart rate was not being picked up instead. The doctor was then called by a midwife leaving the room to a central bank of phones. The call was made at 1507 hours and the Registrar Doctor Deshmukh attended at 1508 hours. She performed her own vaginal examination. Between 1508 and 1509 sudden blood loss was noted vaginally. SMW said this was the first time there had been any blood loss during the labour and at 1513 hours the Registrar called for an emergency caesarean section.
51. By the time of her second statement in May 2015 SMW had read the evidence of the statements of FS and ES, and she responded to some of the content.
52. In evidence she said that when she wrote in a time onto the medical records the time she recorded was that of the event concerned not the time she was making the note. In cross examination she explained that she had been present at very many but less than 40 deliveries during the final 18 months of her training by the time of the DS's birth. She had seen bulging bags of fluid before but could not say how many times. She said it was standard practice to carry out abdominal palpations to feel and measure contractions and where possible to determine the position of the baby and she agreed that she should have (always) noted if she had done then. She did not remember if MWV pointed out that she had failed to make such a note. She agreed that if there is fault in her not

- recording the abdominal palpations that she had done then that would be a fault shared by her supervisor.
53. Plainly each palpation should have been recorded although it is right to note that the records of the midwives who were responsible for FS care prior to 0818 hours had not recorded any such information in the records and SMW has recorded some palpations although her attention was not drawn to these in evidence: at 0900, 0930, 1005, 1040, 1100, 1130 and 1154.
 54. MWV came in frequently, she was not there all the time, although SMW could not recall what proportion of time MWV was in the room or what the gaps in her attendance were. Half an hour could have passed without her coming in but not three quarters of an hour. MWV's supervision consisted of discussing care, discussing what was normal, looking at documentation. The details of the supervision were not documented on the medical notes but SMW denied that she had been left effectively unsupervised.
 55. SMW agreed that some of the counter signatures on the notes may have been made after the relevant entry had been made. In a normal low risk pregnancy, as this was considered to be, the FHR was monitored at least every 15 minutes. In some of the notes where a range for FHR is entered that's because a FHR is variable when measured with a sonic instrument. When a Pinnard was used to listen a range would not be recorded. The vaginal examination at 1010 was carried out with the consent of the supervising midwife and she would have been present. The witness would have expected the FHR to rise a little after a vaginal examination and she had noted it at 128 – 136.
 56. She agreed that she had increased monitoring of the FHR from every 15 minutes but significantly she denied that she had at any stage believed FS to be in the second stage of labour at which time the Trust's guidelines would require FHR monitoring at least every five minutes. She had in fact increased the rate of foetal heart monitoring of her own volition and she said that this was because she was a student and eager. She was listening before, during and after contractions not just afterwards as the Trust's guideline requires.
 57. Of her notes at 1406 hours she said that reassuring features were recorded at that time. A wish to bear down meant that FS was coming into the second stage. Other signs were anal dilatation, pouting of the labia but these were external signs. Vaginal examination would be required to be certain of full dilatation or viewing the baby's head.
 58. FS's labour was going well and progressing so it was decided by MWV that there was no need to do a vaginal examination. Both midwives believed that FS was showing signs of coming into the second signs of labour. SMW agreed that she stopped making notes on the partogram at about 1400 hours. She could not explain why she stopped then but MWV carried it on after 1500 hours.
 59. It was put to her that women with babies in an OP position would often be in pain from pressure on their backs and she agreed with this but she denied that FS was in continued pain between contractions.
 60. It is plain from the contemporaneous records that SMW increased the frequency of FHR monitoring from around 1400 hours and that this increase was not consistently maintained. It is important to note that the Trust guidelines are clear that FHR monitoring in a normal low risk labour need not be more frequent than every five minutes when the mother is in the second stage of labour. Prior to this there is no requirement for foetal monitoring at five minute intervals. The firm evidence of both midwives was that until 1500 hours they did not consider FS to be firmly in the second stage of labour. It could be argued sensibly that when a vaginal examination is being delayed because the woman is believed to be close to the 2nd stage of labour a reasonable supplementary step would be to increase the frequency of foetal heart monitoring to every 5 minutes at least. This would be at worst an unnecessary caution but at best it could provide an alert to potential hazards such as deceleration in the foetal heartbeat. However, it is plain that the Trust's Guidelines do not require such increased monitoring until the 2nd stage was reached.
 61. Dealing with events at 1500 hours she said that she saw the bag of bulging waters although she didn't remember now whether that was during a contraction or not. The father was asked to press the buzzer. There are two

buzzers, one to alert members of staff on the ward another which is the emergency one. It was the one to let members of staff that she asked be pushed. It took MWV a few seconds to enter the room and she was present when the membranes ruptured spontaneously. It was pointed out to her that in her statement the order of events is different in that she states the bag ruptured and then she called for MWV however she maintained that there was no red blood of the size described by ES in evidence. Red blood was only obvious later after the doctor had done her examination.

62. Asked about her note she said that at 1500 hours the bag of waters had already ruptured and she had taken a Toco reading of the heart for a minute. She denied that she had intended to do a FHR monitoring at 2:57 hours but didn't do so because of seeing the bag of waters which MWV then ruptured. She agreed that nobody could have known if the FHR had been at 60 beats per minute for 8 minutes or so or less at 1500. She did have sufficient experience to know how dangerous such a low heart beat was but she did not agree that it was necessarily an abnormality because a FHR can drop after the breaking of waters and there was a need to rule out the various potential causes. She agreed that after 3 consistent minutes of such a low heart rate where it was not recovering a decision would be taken to get medical assistance.
63. Caroline Voulgaris (MWV) made a statement dated 12 February 2015 in which MWV described her occupation as Registered Health Visitor, she had qualified as a General Nurse in 1986 and as a Registered Midwife in 1989 working at Scunthorpe General Hospital. At the time of DS's birth, she had about 16 years' experience as a midwife. About a year afterwards she re-trained as a Health Visitor. She stated that she had a good recollection of the events and like SMW her statement was based on recollection, review of contemporaneous medical records and a statement she prepared on 3 August 2005. In that statement she set out the following account:

"Description of my involvement in the incident:

0818: care was taken over by myself and Student Midwife A Lusby-Spedding, no problems identified, foetal heart osculated (*sic.*) 114-128 beats per minute. I was given by Student Midwife Lusby-Spedding with supervision.

1010: vaginal examination 8 cms foetal heart 138 bpm contractions 3-4 in 10 minutes lasting 60 seconds.

Foetal heart was osculated (*sic.*) before, during and after a contraction for a minimum of one minute and at no stage any decelerations were noted.

1406: Involuntary urges to push noted, foetal heart 125 beats per minute, contractions 3 in 10 minutes intensity 50-60 seconds.

1500: Came back into room bulging bag of membranes, clear liquor, small show noted. Foetal heart 60 beats per minute, checked by Pinnard 56-60 beats per minute, buzzer pulled. Sister Lilley entered room, position changed to more upright and vaginal examination to establish progress.

1505: Vaginal examination with verbal consent, fully dilated, position ROP, foetal scalp electrode applied with verbal consent, Sister Lilley present throughout.

1507: Dr Deshmukh (Registrar) bleeped and asked to review.

1508: Dr Deshmukh present in room, vaginal examination by doctor, foetal heart 64 beats per minute.

1508-1509: Sudden blood loss noted per vagina, difficulty with osculation (*sic.*) due to vaginal examination, abdominal osculation (*sic.*), foetal heart 69 beats per minute.

1513: Crash LSCS called, foetal heart 72 beats per minute prior to leaving CDS.

1515: Left CDS.

1517: In theatre, foetal heart 40 beats per minute, constant verbal support given.

1518: Foetal heart 40 beats per minute.

1519: Foetal heart 46 beats per minute.

1523: Foetal heart 29 beats per minute.

1525: Foetal heart 50 beats per minute, asked to leave the table.

1534: Asked to assist Dr Deshmukh vaginally help assist delivery of head with my fingers.

1535: Male infant born Apgar 0/1, 1/5, 2/10.

1630: FS's partner, mum and partner's mum informed verbally of the baby's condition."

64. In her February 2015 statement she described herself as supervising the student midwife and present in the room throughout (save for short breaks). She countersigned all the entries within the medical records to confirm that they were accurate. At the time that FS was in labour she and the student midwife were providing 1 to 1 care on the labour ward which means that FS was the only labouring mother for whom the witness was responsible. FS was considered to be low risk and so she was not placed on continuous CPG monitoring. No problems were identified when the foetal heart beat was listened to; the heartbeat was within normal limits. Throughout the labour the witness encouraged the student midwife SMW to place her hands on FS's uterus to feel the length of contractions at no time did she notice that FS's abdomen was "rock hard". At 1150 she noticed some water and presumed that the membranes in the amniotic sac had ruptured but with hindsight she stated that this was likely to be a rupture of the hind waters with the fore waters remaining intact. By around 1230 FS's contractions changed in character, they became a little less frequent however they were still "expulsive contractions" lasting 50-60 seconds. FS was struggling to cope with the pain and was being supported but she was not in constant pain. At 1406 FS was starting to bear down with her contractions and give small involuntary pushes. This suggested that she was making good progress and getting close to full dilatation.
65. At this time a routine vaginal examination was due as it had been 4 hours since the previous one. As FS was demonstrating some external signs of full dilatation: vulval pouting and anal dilatation and she was starting to bear down with her contractions, MWV anticipated that she would progress to a normal vaginal delivery. She discussed the situation with the Labour Ward co-ordinator, Sister Lilley and decided not to perform a vaginal examination at that time. The plan was to wait an hour and then assess the situation if delivery had not occurred by then. Of course it was at almost an hour after this time that the crisis occurred. At 1429 FS was still in "the latent stage of labour; she was not in the second stage and was not actively pushing". The FHR was within the normal range at 1434, 1445 and 1452.
66. When the emergency occurred at 1500 MWV actively took over the management of FS. She wrote her notes retrospectively but stated she was certain the times recorded in those notes are accurate because she would have called out the times and events as they occurred using the digital clock on the labour ward. These details would have been written down in the delivery room and she would have had access to those records when she came to write her notes. She described the emergency at 1500 in the following way:

"I returned to the room, presumably after a short break because I was present at 1452 as I countersigned Andrea's entry in the notes. Andrea would have been in the room with FS during the period from 1452 to 1500. I noted there was a bulging bag of membranes evident at the vulva. The bag of fore waters spontaneously ruptured. I note it is alleged that the membranes were artificially ruptured with a "hooked" instrument. This instrument described is presumably an amnio hook which we use for rupturing membranes. Andrea has recorded "SRM" in the notes indicating that this was a spontaneous rupture....I also recorded that the liquor was clear confirming there was no blood in

the liquor nor was there any meconium. There was a small mucousy show which may have contained some blood stain. I auscultated (*sic.*) the foetal heart with a sonic aid and noted it had dropped to 60 bpm. I then rechecked the findings using a Pinnard and noted the foetal heart was 56-60 bpm. I pulled the emergency buzzer requesting assistance from the Labour Ward co-ordinator Sister Carol Lilley came into the room. In between contractions we changed FS's position to a more sitting up position (as she had slipped down the bed) so that I could perform a vaginal examination and to see if the foetal heartbeat improved with a change in maternal position. During this period I was trying to verbally reassure FS who was very frightened. At 1505 I performed a vaginal examination to ascertain what was happening. It was possible that the bradycardia had been caused by cord prolapse or cord compression and I wanted to exclude this or to intervene if that had been the cause. I confirmed that FS was fully dilated and that the baby was in the ROP position. There was no vaginal blood loss at this point. I applied a foetal scalp electrode in order to obtain more accurate monitoring of the foetal heart. I also double checked the maternal pulse to make sure that we were picking up the foetal heart not the mother's pulse. At 1507 Dr Deshmukh the Obstetric Registrar was bleeped probably by Carol. Dr Deshmukh must have been close by as she was in the room within 1 minute at 1508. I provided a history and she performed her own vaginal examination to assess progress and determine the best mode of delivery. During the vaginal examination between 1508 and 1509 there was a sudden blood loss vaginally. This was the first time that there had been any vaginal blood loss during the labour. During this period I was attempting to auscultate (*sic.*) the foetal heart but it was difficult while the vaginal examination was being conducted. However the foetal heart remained low at 69 bpm".

67. In her second statement dated 19 May 2015 prepared after she had seen the Claimant's factual evidence she set out matters with which she took dispute. Firstly she disputed FS and ES's account of her limited involvement in caring for FS.

"I would have been in and out of the room but this would have been frequent. I was supervising Andrea Herron who was still a student midwife at the time. This meant that Andrea was practising on my registration so it would have been very important to me that I checked what Andrea was doing. If I had been out of the room when I came back in I would have checked the entries Andrea made in the records and I have countersigned the records to confirm that Andrea's entries were checked. In addition, I would definitely have been in the room when Andrea carried out the vaginal examination."

68. Secondly she disagreed with FS's account that she was in excruciating pain and her stomach was "*rock hard*". MWV said that if this had been reported to her or she had seen it she would have acted.
69. Thirdly, she disagrees with FS's recollection of no contractions after 1330 and relies on the medical notes. Similarly FS's assertion that she felt "*hot and sick*" MWV points out that this would have been recorded if true and on the partogram FS's temperature was recorded as 36.6 degrees centigrade at 1335 which is a normal reading. Fourthly, MWV disagrees that FS did not ever have the urge to push during her labour and relies on the record at 1406. Fifthly, she again disputes the allegation that she broke the sac of membranes mechanically and suggests that the Claimant's witnesses may have confused the foetal scalp electrode with an instrument and become disordered about the sequence of events.
70. In her evidence she again dealt with her degree of involvement with FS's labour "my recollection was that I was present, I did go out of the room but I cannot confirm exact times that I was in and out of the room". She agreed that half an hour's absence at a time was possible, she couldn't remember what she was doing when she wasn't in the room with FS and from time to time when she returned to the room there would be a block of entries for her to consider and countersign but she denied that she countersigned the whole document in retrospect. She was asked about the vaginal examination at 1010, she answered that she didn't do the examination herself but she would not have expected SMW to have done that on her own. She looked at SMW's notes sometime after the vaginal examination ended and was there when SMW's findings were explained to FS. She agreed on reflection

that she should have drawn the absence of notes about abdominal palpation to SMW's attention. It was common practise to do an abdominal palpation before a vaginal examination but she could not remember now if SMW did do one.

71. She agreed that DS was in fact in the ROP position and that this particular position may give rise to pain for the labouring mother but MWV was adamant that FS did not describe serious pain as there is no serious pain noted in the medical notes. She was asked about the assertion in her 2015 statement that the foetal heart was checked before, during and after each contraction. It was put that contrary to her statement the foetal heart was not checked at those three stages in respect of each contraction. The witness agreed, she said she wished to change the sentence in her statement to say that it was not on every single contraction that these three checks were made and she agreed that there was no way of knowing from the medical notes whether the foetal heartbeat was checked before, during or after a particular contraction where it is noted.
72. The witness disagreed that FS was in the second stage of labour at around 1400 and thereafter. She said that if she had believed FS to be in the second stage of labour she would have documented it as such. The 1410 FHR was taken soon after the previous one and MWV explained the frequency with which FHR was measured by the student being very keen "and this additional practise gained for her in confidence". She was asked if there were any signs consistent with the second stage of labour and the witness agreed that there may have been some vaginal pouting and anal dilatation but they had decided to give FS time to progress rather than do a vaginal examination at 1415 when it was next due. It was put to her that the real reason the vaginal examination did not take place was because the midwives assumed FS was in the second stage of labour. The witness said she did not assume FS was in the second stage.
73. There was no point at which a decision was made by the midwives to increase the foetal heart monitoring to every 5 minutes. It was put to her that she should either have confirmed that FS was in the second stage by vaginal examination or used the 5 minute FHR measure as a safe way of proceeding in the absence of vaginal examination. She replied that it was not in breach of the Trust guidelines for her to have neither done a vaginal examination nor asked for FHR monitoring to be more frequently undertaken. She said she had to consider all the features when she was making a decision, the state that FS was in at that time was classed by her as 'prior to the second stage'. When pressed about the decision not to have a vaginal examination at 1415 MWV said

"There was no indication of any risk in this labour. I expected her to progress to the second stage and a normal vaginal delivery. I would have expected this four hours after she was 8cms dilated. I decided not to do a vaginal examination because there were all the normal signs of a normal labour and no contra indications suggesting a need to do a vaginal examination. There are always reasons not to do a vaginal examination for example the risk of sepsis, risk of infection to mother and baby and the distress caused to the mother. It was common to defer the vaginal examination at that time in my practice."
74. She was asked what she meant in her statement when she referred to "expulsive contractions" and she agreed that the word expulsive was not in the notes. She said what she meant by 'expulsive' was an urge to push, bearing down and this was not evidence of her assessment that FS was in the 2nd stage of labour. This part of the evidence from the supervising midwife was not clear but I am not persuaded that the lack of clarity arose from an intention to hide her actual assessment of the stage FS had reached in her labour.
75. She could not remember where she was when she was summoned at 1500. It was put to her that there was a contradiction between SMW's statement that the bag had ruptured before MWV was called and MWV's evidence that she responded to a buzzer at 1500 hours and saw the bag of membranes. There was also a contradiction within SMW's evidence as to whether she had called MWV from the door of the labour room or pressed a buzzer. MWV could not resolve this latter conflict but she maintained her recollection that she was present whilst the bag of membranes was still intact. She entered the room, got an update from SMW and assessed the situation. There was a small show and then spontaneous rupture of the membranes with "absolutely no blood". She said she was in the room for seconds before the membranes ruptured.

76. MWV denied that she and SMW hadn't known what the bulging bag of membranes seen at 1500 hours was. "We both knew what it was although we had thought membranes had already broken. We made FS comfortable, SMW listened to foetal heart beat with a sonic aid". She agreed that that part of her statement in which she refers to doing this FHR check was wrong. She said that she had re-checked foetal heart by listening to it using a Pinnard.
77. There are further contradictions in the midwives' evidence as to which of them did which monitoring at 1500 and 1504. However I am satisfied that the FHR was monitored at those times, or thereabouts. She agreed that she had no way of knowing how long the FHR had been at 60 and she knew that 60 was half of normal and it was very low indeed. It was put to her once a heart rate that low had been recorded for a minute it was necessary to keep recording constantly to see how it progressed and she agreed. She was asked why it was not continuously monitored thereafter. Her answer was unsatisfactory,
- "...we had a distressed lady, had to change her position. I called for assistance immediately after I had listened to the FHR for one minute. I called the co-ordinator to report."
78. This was taking place between 1500 and 1504. It was put to her that three minutes of a pathologically low heart rate was the signal to call a doctor. She agreed that that was the Trust's guidance but they were dealing with a dropped heart rate and she had called for Sister Lilley within a minute of re-checking the rate and when she was sure it was not the maternal pulse being heard. She didn't think any longer that this was a low risk labour but it was normal procedure to inform the Labour Ward Co-ordinator and have an extra pair of hands to escalate matters. The question arising is whether these circumstances called for obstetric input alongside any other midwifery steps.
79. At 1505 they started doing a vaginal examination having obtained verbal consent from FS. She agreed that the midwives could have started it as soon as the FHR was a steady 60 beats per minute but they had a distressed lady and they would have been preparing to do the vaginal examination as Sister Lilley arrived. She insisted that they did not delay and they did appreciate how serious the situation was. The normal practice would have been to try and turn FS into an alternative position. "From memory we did try to change her to a left lateral position, she may already have been in it". She agreed that in her retrospectively written note the vaginal examination it timed at 1505. She said that that was the time she completed the examination. When asked why in those circumstances Doctor Deshmukh had not been bleeped until 1507 MWV said they had to establish what had occurred but when pressed she changed her mind and said that the time recording at 1505 was when they were performing the vaginal examination not when it was completed and that the vaginal examination took 1-2 minutes.
80. When Doctor Deshmukh arrived they had told her the situation. FS would have been unknown to doctor Deshmukh because she was expected to have a low risk labour. Giving her a history would have taken 30 seconds or so. Doctor Deshmukh would have been told that a vaginal examination had taken place in the last couple of minutes that they believed there was no cord compression and that FS was fully dilated. The doctor examined FS, palpated her uterus, observed the CTG from the scalp electrode, decided on the mode of delivery and advised the next steps. This process would have been interrupted if a contraction occurred during it. To MWV Doctor Deshmukh's vaginal examination did not appear to be taking a long time, it was about the same time as the midwives had taken.
81. In general, deceleration to 60 beats per minute when the mother is entering the second stage of labour is quite common. She said she had encountered it 2 or 3 times a week when working full time as a midwife. It would be followed by spontaneous recovery of the foetal heartbeat. DS's case was the only time she had experienced an adverse outcome following a FHR deceleration in her practice of 16 years. She was asked to explain again what she had done before calling for Doctor Deshmukh

"I had to make the lady comfortable, with clear liquor had to change the sheet, listen to the foetal heart rate, to make a risk assessment, we were trying to exclude cord prolapse which would escalate to immediate emergency, explain to those present what was going on, reassure FS and inform Sister

Lilley. I established that this was an emergency situation rather than one of the typical decelerations, when I re-checked with the Pinnard."

82. Before the vaginal examination the midwives would need FS's verbal consent, they would prepare the pack wash their hands, glove up, explain to the mother what they were doing and help her to cope with contractions (the tightening of the vagina) by waiting until the contraction had passed. She maintained that 1505 was the time when they started the vaginal examination and this was her final answer. She couldn't remember how long each part of what they were doing from 1500 – 1507 took but the vaginal examination would have taken two minutes to actually do. This was her normal practice. The concern arising out of MWV's evidence was whether she delayed seeking obstetric help because she hoped and expected that the FHR deceleration could be managed within the midwifery team at a time when all signs were that it needed to be escalated. I did not find her evidence on this topic persuasive. It was suggested to her that what she had done before calling the doctor, even if it could not be objected to as unnecessary, had all simply taken too long during the course of an emergency situation. She replied

"There was no period when we were doing nothing between 1500-1507, or doing inessential things or not doing tasks we needed to do."

83. The labour ward co-ordinator Midwife Carol Lilley became a Registered Midwife in 1988 and the labour ward co-ordinator at Scunthorpe General Hospital in 1998. She retired in August 2013. She had no recollection of events surrounding DS's birth and the contents of her statement dated 12th February 2015 were based upon a review of the contemporaneous medical records and her usual clinical practice. She confirmed that MWV discussed FS's progress with her at 1415 and she had agreed with MWV proposal to defer a vaginal examination because MWV, a very experienced midwife expected FS to start entering the second stage of labour. The deferral was for an hour and it was anticipated that FS would be reassessed for a vaginal examination after about 1515.
84. She was unable to say at what time the buzzer was pulled causing her to go to the labour room. Once there, as standard practice she would have introduced herself to FS and the other midwives would have provided her with a history and information about the current situation. It follows that they would have told her that there had been a spontaneous rupture of the membranes, the waters were clear and the FHR deceleration. As there had only just been a spontaneous rupture of the membranes and it had been five hours since the previous vaginal examination when FS had been 8cms dilated it was necessary to check there was no cord prolapse and that full dilatation had taken place as well as the position of the baby and to ensure that the FHR was being picked up rather than the maternal heart rate. She confirmed that the vaginal examination that the midwives carried out was for all of these reasons and a foetal scalp electrode was also applied to DS's scalp to ensure direct contact and enable continuous recording of the FHR.
85. As soon as she had established the constant FHR she contacted the Obstetric Registrar. In order to call Doctor Deshmukh she had to go out of the room to the desk. She would use a phone which had a direct dial to bleep the doctors who usually respond very quickly and Doctor Deshmukh was in the room within a minute. Once the doctor arrived Midwife Lilley would not have stayed in the room. There was a strong likelihood that Doctor Deshmukh would decide to perform a caesarean or instrumental delivery so she would have gone out to start making preparations and she may have called the theatre staff to give them some pre warning that the theatre may be required. When Doctor Deshmukh called the crash section she would have come out of the labour room and told Midwife Lilley this was required. Midwife Lilley would then have called a number that is specific for crash caesarean sections. This alerts theatre staff anaesthetists and the paediatricians. It is a voice over bleep. Once the doctor had called the crash sections FS would have been told what was happening and the midwives would have started to move her to theatre immediately. The theatre room was always set up for the labour ward so all that was required was to move the mother and resuscitaire.
86. In evidence she stated that she had not been asked for a statement immediately after the emergency and first addressed her mind to the events in 2015. She agreed that deferring the vaginal examination that was due at 1415 was decision that the midwives could have made without discussing it with her but she would expect them to

involve her. It was put to her the only reason to delay a vaginal examination would be if it was assumed that birth was imminent but she disagreed and said that if labour was progressing well and there was no reason to indicate the need for a vaginal examination the hospital policy was 4-6 hourly vaginal examinations and she would have known that FS had been last vaginally examined four hours earlier because there is a board in the labour ward recording this.

87. She agreed that if the FHR were 60 beats per minute and had not recovered within three minutes it was classified as pathological according to Trust policy. She said that they didn't have a CTG to confirm that the FHR had not recovered. She agreed that the expert midwives who had provided reports for this case said that there should have been continuous monitoring once FHR was at 60 but she said that what was necessary was for the scalp electrode to be attached and this needed a vaginal examination which would also be used to ensure that there was no cord in the vagina and FS was fully dilated. It was put to her that once she knew that the FHR had been at 60 for potentially three minutes already she should have called for emergency medical attention irrespective of the CTG but she disagreed because if it had been caused by a cord prolapse she could have cleared the cord out of the way.
88. She agreed that a doctor could have been called at the same time as the midwives carried out a vaginal examination but maintained that they had done everything as quickly as possible. She needed to find out what was happening. This was not really an answer to the point. She maintained that it would have been a very different call if she had found a cord prolapse. It was put to her that the problem she was faced with was that there was a deceleration in the heart rate, no constant record was kept following that drop to check how long it persisted for and so the only safe course would have been to ensure that the doctor was called within three minutes. She disagreed, but failed to explain why.
89. Once the scalp electrode was attached she would have suggested that they changed FS's position to see if it thereafter recovered. She said that many babies do experience deceleration at full dilatation when the membranes rupture. It was put to her that in the circumstances the midwives should have put FS into a left lateral position immediately. The witness replied that FS may have been in that position already at the time she entered the room. She was pressed with the assertion that in retrospect the only safe thing to do when there was no way of knowing how long or short a period the FHR had been at 60 for, was to call the doctor. She replied that once they had identified there was a drop in the FHR for three minutes they called the doctor. Of course this is to ignore the period from 1500 to 1504. She was asked what stopped her making a crash call herself without involving a doctor. She said that it would divert a lot of doctors and nurses. She could have made one but at that time in her judgement there was no indication requiring a crash call. If there had been blood issuing from the vagina she would have made the crash call herself but there was no blood until Doctor Deshmukh did her vaginal examination.
90. In her experience the FHR will drop after the breaking of the membranes in every shift, possibly 5 or 6 times per shift. Most will recover; a change of position will often lead to a recovery, but if the heartbeat does not spontaneously recover the midwives involve the medical staff. In her experience decelerations of more than three minutes do spontaneously recover. This witness had also never had an adverse outcome like DS's. She had delivered 900 babies herself and been present at more than double this number and it was her only such case. The Trust's guidance of course is clear. A persistent deceleration of 3 minutes must be treated as a pathological one and delivery expedited.
91. She confirmed again at the end of her evidence that if the midwives had found blood she would have made an immediate crash call without a vaginal examination being carried out. She said she would not have tolerated any delay. The clear impression left at the end of her cross examination was that she understood her job well and would have been a calming influence in a time of serious emergency as occurred from 1500 hours in FS's labour. However, her response to the repeated question as to why the priority wasn't a continuous monitoring of the heart rate, which was that a number of other things were done after her arrival before 1507 when the doctor was called, was not impressive.
92. Expert midwives were called for both sides. Heather Greenway is a state certified midwife (1979) with extensive

clinical, managerial, risk management, and midwifery supervision experience as a senior midwife, clinical risk manager, and Supervisor of Midwives. She has worked in consultant based hospitals, midwifery and GP led units and in the community and retired from clinical practice in 2012. She has an impressive CV describing skills in all areas of high and low obstetrics in labour wards, and other settings. As a Supervisor of Midwives she was involved in setting and reviewing guidelines and midwifery standards and practice as well as carrying out internal and external investigations of adverse outcomes. She has been a panel member of a regional CESDI (confidential enquiries into still births and neo natal deaths) team and has worked as a midwifery expert witness for over 20 years for both claimants and defendants in over 1,300 cases. She has also co-written a medico legal handbook on obstetrics.

93. She provided a report for DS in July 2015. Most helpfully to the court she participated in a joint meeting with Suzanne Cunningham, the expert midwife instructed on behalf of the Trust. Suzanne Louise Cunningham is a consultant midwife at University Hospital Southampton Foundation Trust, she has been a registered midwife for 28 years working in a variety of acute settings: acute hospitals, the community and education. She has a clinical leadership role in practice and in service development, education, audit and consultancy. She is also a Supervisor of Midwives. This summary of the experts' qualifications and experience is not intended to diminish their achievements in any way and a similar approach will be adopted in this judgment for all expert witnesses.
94. The experts' meeting was ordered a part of the preparations for trial and it took place on 25 February 2016. A helpful agenda had been prepared beforehand. The relevant matters addressed during the meeting included a discussion of the material disputes in the case factually, background explanations and definitions of some of the terms used in the evidence, a discussion about relevant guidelines, the interpretation of entries in the medical records, and the proper rate of foetal heart monitoring in the present case, and also whether the work of the midwives satisfied the Bolam test.
95. It was accepted that there are material disputes in the case as to (1) whether the Claimant's mother was in the second stage of labour in the minutes before 15:00, (2) the regularity of FHR monitoring that should have been undertaken before 15:00, (3) whether the membranes were artificially ruptured and (4) how long following discovery of the low FHR should medical assistance have been summoned. The two experts agreed that there are three main stages of labour; the first stage is from the onset of regular painful contractions and progressive cervical dilatation until the cervix is fully dilated, there may be a stage late in the first stage which has been called the "rest and be thankful phase" but this does not occur in every labour and when it does it usually lasts no longer than 20 minutes. It was accepted that this stage does not require commencement of increased FHR monitoring.
96. The second stage of labour is from the full dilatation of the cervix until the birth of the baby. The length and successful progression of the second stage cannot be predicted or assumed and without being able to observe visible progress when there is maternal pushing Heather Greenway (HG) added that it is necessary to check the cervix is fully dilated if there is involuntary maternal pushing for a period of time, no more than 30 minutes but no sign of the presenting part. Suzanne Cunningham (SC) added that there is a stage often described by midwives as "transition" when the cervix is almost fully dilated, the contractions become very painful and women often feel panicky and unable to cope any longer with the contractions. This is often followed by a quiet phase when the contractions then reduce in frequency almost as if to allow the woman to gather her resolve for the second stage which requires her to become physically and consciously active in birthing the baby. The third stage of labour is from the time of delivery of the baby to the time of delivery of the placenta and membranes, both experts agreed that it is not possible to accurately confirm the onset of first and second stages. They also agree that in FS's case there were some symptoms of second stage described before the membranes were seen bulging at the introitus at 15:00 and full dilatation at second stage was confirmed at 15:05. HG added that the second stage was likely to have been achieved some time before 15:00 because the cervix is usually fully dilated if a bag of membranes is visible at the introitus. SC however expressed a view that there is no evidence that the active second stage had started prior to the 15:00 bag of membranes becoming visible. She continued

"there are a number of findings and symptoms of the second stage and the most common is an urge to push... other presumptive signs include expulsive contractions, and a blood stained mucus show

both of which were not present... in essence Ms FS was beginning to show signs of transition from 14:00 and continuing midwifery support and observation of Ms FS was appropriate until the membranes were visible at the introitus at 15:00 the decision to await further presumptive signs or sight of the vertex was a conscious and reasonable plan".

97. The midwives agreed that in respect of monitoring the relevant RCOG/NICE Guidelines (2001) directed midwives to monitor the FHR by checking it for a minute immediately after a contraction, every 15 minutes during the first stage and every five minutes during the second stage SC stated that the rationale of the more frequent monitoring during the active second stage is because of the presence of the expulsive contractions which last longer and are accompanied by a compulsive urge to push and she expressed the view that these longer contractions can mean less efficient foetal oxygenation during the expulsive contractions from cord or head compression or reduced perfusion at the placental site. HG on the contrary drew attention to the evidence of the midwives. It is right to note that SMW stated that she had increased foetal monitoring to five minute intervals in accordance with Trust guidance. The assumption made by HG is that at that point SMW had decided that SS was in second stage of labour.
98. The experts agreed that they are unable to explain the irregularity of intervals in SMW's recording. HG was of the view that a student midwife would be taught to carry out and record observations in accordance with recommended practice at the time. She relied on the action of discontinuing the partogram record of the FHR from 14:06 and drew an inference from that as to the assumption within the midwifery staff that FS was in active second stage of labour. Further support came from the request made by midwifery staff for FS to push. SC however drew attention to the change in practice caused by the NICE guidance in 2001, in that intermittent auscultation for low risk women in labour was introduced and continuous monitoring was no longer applied in cases such as FS's. She would not be critical of monitoring more frequent than every 15 minutes, which the records demonstrate occurred from around 11:00 not simply from 14:06.
99. Both experts agreed that there is no evidence in the clinical records that FS's membranes were artificially ruptured and the only support for this claim is the evidence of FS and ES. The experts agree that if I conclude that FS was in active second stage of labour at any time up to 14:52 then a FHR should have been checked by 1457 and HG points out that if SMW was actually auscultating every 5 minutes "in accordance with Trust policy" she would have begun to check the FHR at 14:57. By contrast SC remains of the view that there was no basis for concluding that FS was in the active second stage of labour at any stage up to just before 15:00 and an auscultation at 1457 was not mandatory. Once the abnormally low FHR of 60 beats per minute was established at or around 1500 the commencement of continuous CTG should have immediately resulted.
100. Both experts agree that a confirmed diagnosis of second stage of labour can only be made by vaginal examination or when there is a visible presenting part. HG expressed the view that it would have been reasonable to assume a diagnosis of second stage labour from the signs and symptoms that MWV described. As long as MWV had checked and confirmed full dilatation had been achieved after a period of pushing. SC however stated that in a low risk spontaneous labour there is "no requirement to rush into diagnosing the second stage of labour". The practice of the day in 2005 was consistent with presumptive signs noted by MWV that the second stage was approaching to enable her to delay a vaginal examination due at 1415. A conscious decision not to perform a vaginal examination and to allow an hour for further presumptive signs of the second stage is a practice that SC says began to emerge at the beginning of this century and is now very much part of normal practice and is used as a method of supporting women in normal labour providing observations of signs that the second stage are recorded as they appear.
101. The experts agreed that it was reasonable for midwifery staff to check the accuracy and ongoing rate of the FHR by directly comparing the auscultation findings with the maternal pulse before seeking medical attention. They also agreed that the actions taken by midwifery staff were reasonable although they did not agree as to when the obstetrician should have been called and the timings of the other actions carried out. SC's opinion is that

"the deceleration of the foetal heart at the point of SROM does not warrant immediate medical aid as the presence of a deceleration of the foetal heart rate as the membrane rupture once the second

stage has commenced is not unusual. Therefore, to call for aid at this point was cautious. It was mandatory to perform a vaginal examination to confirm the full dilatation and absence of a cord prolapse. They also needed to establish that what they were hearing was the foetal heart rate not so applying an FSE to establish that the foetal heart rate was foetal and not maternal was reasonable".

HG on the other hand whilst accepting that such actions as maternal repositioning and a vaginal examination to exclude cord prolapse as a cause were reasonable, stated categorically,

"when there has been a persistent bradycardic FHR for over three minutes this is an obstetric emergency situation which should result in the use of emergency call bell and a responder requesting emergency medical obstetric attendance and a CTG machine, if not already available in the room".

102. Both experts agreed that it was reasonable to involve a senior coordinating midwife, although HG makes that concession on the basis that this action did not result in any delay in making an emergency request for an obstetrician to attend. The midwives should have been aware of the urgent need to exclude cord prolapse and assess cervical dilatation by vaginal examination without the need to wait for or be prompted by senior midwifery assistance. SC states that the involvement of the senior coordinating midwife was reasonable and reflects the current practice as well as that of 2005.
103. The experts agree that medical attendance was sought seven minutes after the noted time of a bradycardic foetal heart rate. HG does not agree that the time taken was reasonable in this case, SC considers that it was. SC expresses her opinion in this way,

"I believe the timings were reasonable and as an example of what might be happening:

15:00-15:03 SORN and SHR drop noted moved Ms FS into a different position, recheck foetal heart rate, called for assistance and continued to try and listen to the SHR which would be difficult given that the foetal head was low in the pelvis.

15:03-15:06 Ms FS into a position to a vaginal examination, do vaginal examination, attach SSE and establish that SH was remained at 70bpm by 15:06.

SR Lily leaves room and calls doctor at 15:07.

15:08 doctor attended.

In my experience this was a reasonable time interval in light of the fact that at the start of the bradycardia the events could have been within the normal range of a normal labour. Only as time progressed it was established that the foetal heart rate was remaining below 100bpm did it become clear that there was no obvious reason for a bradycardia (such as a cord prolapse) and once established the FHR had shown no recovery".

HG however made the following observations at the joint meeting,

"The notes do not include detailed information as when and how an FHR at 60bpm was first determined by student midwife Spedding before midwife Voulgaris attended at 1500, why she recorded a rate and not a rate range... there are therefore several differing timings of when emergency senior medical obstetric attendance should have been sought. One, by 15:03 at the latest if a foetal bradycardia at three minutes was first identified at 15:00 (and if no FHR had been checked since 14:52 as a foetal bradycardia from then on could not be excluded as a possibility, and was therefore even more acute situation). Two, 15:00 if a foetal bradycardia 60bpm was first checked at 14:57 (as a result of a regular five minute osculation (sic.) Check which student midwives Spedding states she was carrying out from 14:06). Three, 15:02 (if the FHR of 60bpm noted at 15:00 was as the result of counting the FHR for a minute as recommended practice starting

from 14:59)".

104. In evidence HG stated that it was never possible to assume that a woman will have a normal vaginal delivery. Once the midwives decided not to do a vaginal examination because FS was 'approaching 2nd stage' which was a reasonable decision, more frequent monitoring of the foetal heart beat should have begun. The explanation for a reduced contraction rate before 1500 was not clear and there are many possible reasons for it. In her view it was not unreasonable for 'bearing down with contractions' to be written once and if it continued to occur for it not to be specifically noted again. This supported her view that FS was in 2nd stage and should have been treated as such in respect of monitoring. Bearing down is expulsive and she would expect FS had been continually bearing down with contractions once it had been noted at 1406. Of course this is entirely contrary to FS' recollection of her contractions.
105. She would not expect 'nil visible' to be recorded i.e. SMW looking at the vulva during contractions unless SMW thought FS was in 2nd stage and pushing. She agreed that unnecessary vaginal examinations should be avoided but she insisted that midwives need to perform them regularly for reassurance that the labour remains normal, assess the state of the membranes, level of descent of the head and the position of baby.
106. Full dilatation was probably before 1500 because the membranes usually appear at full dilatation but it is not possible to say when full dilatation was achieved. She agreed that if the court accepted the evidence of the midwives that they were not treating FS as in the 2nd stage of labour then there was no need to monitor more frequently than every 15 minutes.
107. At 1500 it would have been appropriate and essential to continually monitor FHR using a sonic aid to ensure FHR was audible and measure it as a key part of management once a slow rate is heard is to establish what is going to happen next. Even if the midwives thought that affixing a FSE was necessary they still needed to continuously monitor the heart rate while they were preparing for or putting the FSE on. By 1503 at latest they should have called the doctor because by then there had been 3 minutes of a bradycardic rate which had not recovered. HG stated that to do so would have been in line with the Trust's Guidance and the relevant algorithm to which the court was referred.
108. The witness agreed that it is not uncommon for a deceleration to occur during 2nd stage and usually it resolves itself over a few minutes. She said,

"Prospectively you cannot know if it is going to recover or whether this is a baby who is not recovering and so you have to assess change in heart rate very carefully to decide whether this is a baby who is going to have difficulty. Midwives work at different rates but everything described can be achieved by a competent midwife in 3 mins and I would expect any competent midwife to react to a foetal bradycardia as I have discussed within a 3 min period and if FHR remains low after 3 mins it is not a situation she can prospectively assume will resolve and she needs obstetric assistance."

Plainly, the reaction time she suggested required the midwives to be wary and assume that, although/because they hadn't listened to the FHR consistently for 3 minutes, it was a continuous period of deceleration and act upon the algorithm to expedite delivery by calling a doctor.
109. HG was also asked about some much less relevant matters. It was put to her that she had not mentioned in her report or evidence FS' evidence that she was in great pain, had lost her contractions and that when SMW palpated her abdomen she commented, on more than one occasion that it was 'rock hard' and 'strange'. HG agreed it would have been a gross breach of midwifery care if these signs had been ignored but she responded that the use of Entonox often leads to short term memory loss and when she had examined the notes and midwives' statements she had assessed that FS's pain was more likely linked to an OP position baby. She agreed that she should have made it clear that she did not find those parts of FS's evidence to be accurate.
110. She denied that she had ignored inconvenient factual evidence in writing her report and her evidence to the court

because it did not fit the amended pleadings in the claim. She maintained that her view had remained the same throughout although she could have dealt with these points in her report.

111. During her cross examination SC agreed that intermittent auscultation is a screening process and if a continuous abnormal heart rate is detected then CTG monitoring should be started. This was an important concession. When membranes rupture and the baby's head pushes down a very common vagal response is for the heart beat to fall. On hearing 60bpm she would expect a midwife to react at that time by turning the woman onto her left lateral position. There is nothing in the notes to confirm they did that but they may have not put everything down in the notes. It would have been good practice to do so but in any event, given this turned out to be a case of placenta abruption, putting FS into a left lateral position would have made no difference.
112. It was put to her that the midwives should have kept auscultating after the first minute of 60bpm but rather than doing that they listened to the FHR only intermittently until the FSE was attached. She replied that she could not say what they did, in what order. This was not a satisfactory answer. It was put that even when they were trying to attach a FSE the midwives should have carried out continuous monitoring but she disagreed that that would be normal practice and described the process of attached a FSE:

"You have to detach one of the monitors and put the FSE into the CTG..... The midwife will keep her fingers in the vagina while someone else attaches the end of the FSE to the monitor, so they can fiddle around with it to get good contact."

Of course at the time the FSE was being attached there were three midwives present in the room.

113. She was asked about the entry in the notes at 1406 'bearing down with small pushes given, nil....' And she said,
- "To me this means the midwife asked FS to give small pushes in order to see if she can see the baby's head." Later she confirmed, "This is not an instruction for an active 2nd stage. If expulsive pushes had started then I would expect to see '2nd stage, pushing commenced' or similar note 'we are in 2nd stage'...it is common practice to write in the point at which 2nd stage started. A typical note might say 'pushing well...head seen...'"

She repeated her view that it was not necessary to assume FS was in the 2nd stage and so to increase monitoring of the foetal heart, if a vaginal examination was going to be delayed until 1515 in anticipation of the 2nd stage.

114. She did agree that although health professionals in general are very poor at writing in abdominal palpations before carrying out a vaginal examination, as occurred at 1010 in the notes, she would expect them to be done. She would also expect supervising midwife to draw the failure to record abdominal palpations to attention of the SMW.
115. She did not move from her opinion that the midwives caring for FS had acted appropriately,

"A baby's heartbeat going down is a very, very normal thing to happen and it is very rare for it not to recover so the midwives were reasonably expecting it to recover."

Findings as to Midwifery

116. I make the following findings:
- a. FS had an unexceptional pregnancy and labour until 1500 on 4th June 2005.
 - b. From 0818 she was cared for by SMW who was supervised by MWV. MWV was not present in the labour room throughout but was there most of the time and was actively engaged in FS's care although SMW was being given the opportunity to take the lead, which was reasonable and consistent with her nearly qualified status.

- c. MWV was present during the vaginal examination at 1010 although it was carried out by SMW. I am satisfied that this supervising midwife would not have let a trainee carry out such an important step alone.
- d. MWV counter-signed the entries in the labour notes either at the time they were made by SMW or in blocks when she returned to the labour room after an absence of up to ½ hour.
- e. FS was not in constant severe pain at any stage, she was generally coping well with the contractions and using Entonox anaesthetic when necessary. Although rupture of the membranes had been assumed from liquid draining from the vagina at 1150hrs the baby's head was not seen at the entrance to the vulva. At that stage the position of the foetus was not known and a vaginal examination was expected, according to the recommended 4 hourly interval practice. I am satisfied that no vaginal examination was done at 1410, or at all before 1500, because it was reasonably assumed by the mid-wives that FS was close to entering the 2nd stage of labour and her child would soon be born. A decision to defer the vaginal examination for an hour, in consultation with the Labour Ward Co-ordinator, was reasonable in all the circumstances and not a breach of duty.
- f. There was no occasion (before 1500) on which FS's abdomen was very hard or when SMW expressed concern about it. This has probably been mis-remembered by FS and ES.
- g. FHR monitoring was increased from 1138hrs although the rate of monitoring was not constantly maintained. This being classified as a low risk labour continual monitoring was not indicated. I am not satisfied that the reduction in intervals was instituted at any time because the mid-wives believed that FS had entered either part of the 2nd stage of labour. I have regard to a Mid Cheshire Hospitals NHS Foundation Trust's document defining the different stages of labour.

"The First Stage

The first stage is where the cervix opens from 4cm to 10cm with regular contractions. These become stronger, longer and more frequent....The length of the first stage of labour varies between each woman. On average, labour will last about 8 hours for women who are having their first baby and is unlikely to last over 18 hours.....

The Transitional Stage of Labour

The transitional stage is described as the most painful part of labour, as your body is changing from the cervix opening to the body getting ready for the pushing stage. Women often experience the transitional stage around 7-10cm dilated.

The Second Stage of Labour

The second stage begins when the cervix is fully dilated and ends with the birth of the baby. The second stage usually takes place within three hours for women having their first babies and within two hours if you have had a baby before. The second stage can be divided into two parts:

Passive stage: fully dilated but no urges to push

Active second stage: when one or more of the following exist:

Expulsive contractions (making you want to push) with the finding of full dilatation of the cervix

Active maternal effort, following confirmation of full dilatation of the cervix in the absence of expulsive contractions

External signs of full dilatation."

h. If FS had reached the 2nd stage of labour shorter intervals between monitoring the FHR were required as described in the Trust's 'Foetal Heart Monitoring in Labour Guideline' issued in April 2003. In that Guideline a clinical algorithm demonstrates how frequently intermittent auscultation is to be used:

".. where intermittent auscultation is used this should occur after a contraction, for a minimum of 60 seconds, and at least:

Every 15 minutes in the first stage

Every 5 minutes in the second stage."

i. Although the intervals between monitoring reduced (inconsistently) from 1138 both midwives gave evidence consistent with the detailed contemporaneous records, that FS was not in the 2nd stage of labour but, in due course, believed by them to be in transition between the first and second stages. On balance and with some qualms, I accept this evidence, which is consistent with a lack of a note indicating the arrival of the 2nd stage of labour and reject the assumption relied upon by DS that an increase in monitoring could only have been instituted because FS was believed to be in the 2nd stage of labour. In the circumstances I conclude that monitoring at least every 5 minutes was not mandatory before 1500.

j. In the initial Particulars of Claim it was alleged that FS's contractions ceased altogether at 1330 consistent with her statement. However, this allegation has been withdrawn although it remained part of FS's statement which she confirmed at trial. The records, including the partogram record, show that the contractions continued to be felt e.g. at 1335, 1345, 1406. While it is plainly possible that auscultation of the foetal heart at 1457 may have indicated possible foetal bradycardia at that time I do not accept the Claimant's case that failure to monitor his heart beat at 1457 was in breach of the midwives' duty. The increase in frequency of monitoring of the foetal heart-beat was, I accept, due to enthusiasm by the student midwife rather than because it was recognised the FS had begun the 2nd stage of her labour. The reduction in frequency of contractions recorded in the notes between 1230 and 1429 was not a demonstration that FS was in her 2nd stage.

k. I am not satisfied that the midwives ruptured the amniotic sac of membranes with an instrument. On the contrary rupture was spontaneous and I am satisfied that the Claimant's grandmother probably mistook the Foetal Scalp Electrode for a hooked tool because this was inserted within a few minutes of the spontaneous rupture of the sac of membranes and at a time of distress and concern in the labour room. I am also not satisfied that rupture of the membranes was accompanied with any significant bleeding, as described by ES.

l. While it is agreed that a FHR of 60bpm was recorded at 1500 I am not satisfied that it is possible to say, even on the balance of probabilities, that DS' heart beat had been at that rate from shortly after 1452. I find that it was reasonable for the midwives not to treat the 1500 reading as indicative of severe foetal bradycardia requiring immediate medical assistance at that time.

m. However, at 1500 the nature of FS' labour changed. A deceleration occurred in the FHR due to placental abruption which had taken place upon rupture of the membranes or shortly before. The question is, when should the midwives have realised that medical aid was essential or rather, has the Claimant proved that failing to call for an obstetrician from 1500 to 1507 was a negligent failure to perform their duty?

n. I am satisfied that continuous monitoring of the FHR from when the deceleration was first

detected at 1500 should have been instituted and any reasonable body of midwives would have made this a priority because if it demonstrated that the FHR was low for a continuous period of 3 minutes the Trust's guidance mandates the calling of medical help and the expedition of delivery: in short, an emergency situation. Although the midwives did not fail to react to the deceleration: MWV took over primary care for FS, made her comfortable after rupture of the membranes and began to try to discover the reason for the deceleration and whether it was temporary, they failed to institute continuous monitoring. None of the midwives provided any coherent explanation for this except by reference to experience showing how frequently sudden decelerations in FHR recover.

o. This was a reasonable approach at 1500 but I find that after four further minutes it became evidence of unjustified and dangerous complacency. The deceleration should plainly not have been treated as temporary thereafter. When MWV established that the deceleration had not recovered by 1504 she called the Labour Ward Coordinator and they carried out a vaginal examination including the attaching of a Foetal Scalp Electrode to begin continuous monitoring. This caused a further delay of 3 minutes before Dr Deshmukh was called. While these were reasonable steps which a reasonable body of midwives could have chosen to carry out in respect of a previously normal labour I do not accept that it was reasonable to carry them out after 1504 when there had been a potential period of hypoxia from at least 1500 already and, as far as the midwives knew, from sometime before then, without also calling for medical assistance at the same time. Although it is inappropriate to attempt to attribute particular time intervals to the actions carried out I am quite satisfied that between 1500 and 1507 there was a negligent delay of 3 minutes in calling the obstetrician.

p. It follows that the calling of the Labour Ward Coordinator, whilst entirely acceptable practice, is a step which should not have delayed seeking medical assistance once it had to be presumed that the FHR had been at a very low level between 1500 and 1504. I accept the Claimant's case that considering matters prospectively, at the time, if the midwives were to carry out a vaginal examination after 1504 that should have been alongside taking the action of calling for an obstetrician. I accept that there was no evidence to confirm placental abruption as the reason for the reduced FHR until blood was seen during the vaginal examination carried out by Dr Deshmukh (recorded as occurring at 1508-09) however, this does not absolve the midwives, and it was their duty to seek medical assistance after the FHR had not recovered by 1504.

q. In short, given that low risk pregnancies are midwife led and decelerations in FHR occur frequently towards the end of labour whereupon spontaneous recovery is usual, it was not mandatory for the midwives to call for an obstetrician before 1504. Until then the midwives caring for FS could have reasonably instituted continuous monitoring, determined whether FS was fully dilated, tried to make adjustments to enable the FHR to recover and seek to determine for themselves what the cause of the deceleration was and whether it could be counteracted but by 1504 a FHR deceleration of at least 4 minutes duration had to be assumed (in the absence of continuous monitoring) and it was mandatory to obtain obstetric assistance. The delay thereafter was in negligent breach of duty.

The Obstetrics Evidence

117. Doctor Deshmukh made a statement on 19th August 2013. She obtained her medical degree in India in 1989 and trained in Obstetrics and Gynaecology. She moved to the United Kingdom in 2001 and took up Senior House Officer roles in Pontefract and Wakefield. In 2004 she became a member of the Royal College of Gynaecologists and in June 2005 she was working as a Registrar in Obstetrics and Gynaecology at Scunthorpe General Hospital. In 2008 she became a General Practitioner. She stated that she had a good recollection of the relevant events and the contents of her statement were from memory and also review of the contemporaneous medical records and her usual clinical practice. It is appropriate to set out some parts of her statement in full.

"When I arrived in the room I took a history from the midwife and ascertained that FS had had spontaneous rupture of the membranes at 1500 and there was a bradycardia. Due to difficulties in

locating the foetal heart, the midwives had applied a foetal scalp electrode. Sometimes, when the mother commences pushing it can cause a transient bradycardia and I needed to rule this out. I also considered the possibility of cord prolapse. I performed an abdominal examination which would have taken about 30-60 seconds. I noted that the uterus was contracting and was possibly tender. The foetus was in the cephalic position and 1/5th was palpable i.e. the foetal head was in the pelvis but still palpable abdominally. I reviewed the CTG trace and noted a foetal bradycardia of 70-80 bpm.

I then performed a vaginal examination. This took approximately 1-2 minutes. I immediately saw blood stained liquor. The cervix was fully dilated and the foetal head was at station 0 i.e. at the level of the Ischial spines. The foetal head was in the ROP Right Occipito Posterior Position. I ruled out a cord prolapse and considered a possibility of placental abruption. Sometimes, if there is a huge fluid loss caused by rupture of the membranes (i.e. a sudden gush of fluids) the placenta is pulled away from the uterine wall and starts to separate.

Although I have not recorded this in my retrospective note, I remember debating in my mind whether to do a trial of forceps. The foetal heart was palpable and low down in the pelvis but the rotation was not complete (the baby was in the ROP position) so it wouldn't have been the easiest of forceps delivery. However, as I withdrew my fingers I noted further fresh vaginal bleeding. When I saw the fresh blood, placenta abruption was the likely diagnosis so I decided not to waste any time trying a forceps delivery and at 151`3 I called a crash section. Overall it took me 5 minutes to take a history, perform an abdominal and vaginal examination, assess the situation and make the decision to perform the crash caesarean section".

118. She went on to describe explaining the situation to FS and removing her to theatre. She used a cordless phone to speak to the consultant on call en route to theatre. Her operation note written retrospectively includes the following information

"Cleaned, draped and catheterised. Transverse lower abdominal incision to open lower abdomen. Lower segment C- shaped incision to uterus. Baby delivered as cephalic, male, floppy, live. Placenta partially separated, with large retro-placental clot, delivered by CCT. Uterine cavity checked – blood clots removed.....Estimated blood loss 1500 ml approx... including the clots found in the uterine cavity...Baby was deflexed, ROP at spines, head had to be pushed from below. Placenta was partially separated with bit retro- placental blood clot, more than ?, was already detached....diagnosis: massive placental abruption? Associated placental haemorrhage from placental site... "

Her statement continues by recording that the operation was conducted very quickly

"Knife to skin occurred at around 1528. The foetal head was low in the pelvis and I had to ask one of the midwives to assist in pushing the foetal head back up so I could deliver.....The baby was delivered in poor condition, was very pale and floppy..."

119. In evidence she said that she had not known anything about FS or her situation when she arrived. It is possible that the note at 1507 was correct and that she had been told she was needed to review a FHR but she didn't think that was the position. Thus, on arrival she had to take sufficient relevant history. Low risk pregnancies are midwife-led. A midwife gave her a brief history, from memory she believed that this included a low risk labour until very recently, had been progressing well, membranes had ruptured, the FHR had dropped, the co-ordinator had been called, a vaginal examination was done and she asked whether the position had been changed and the midwife said that that had already been tried. The scalp electrode was on and there was no cord prolapse FS was fully dilated and the DS's position was OP at the spine. Doctor Deshmukh was asking the questions during this conversation and she was told that the low heart rate did not recover during intermittent monitoring and changing of the position of FS.

120. She would have asked when the last heart rate was normal and was told it was normal until the waters broke. It looked normal when she looked at the notes, the last reading being eight minutes before the waters broke. She said that getting all this information would have taken 1-1½ minutes. Then she did her own vaginal examination which she did not time: a pack was opened and FS positioned. If she was contracting they would have waited for it to pass. She would have washed her hands and gloved up. Finally she would have put lubrication on her fingers and inserted her fingers into the vagina about 4cms to feel the level of the head in relation to the spine, check there was no cord prolapse in fact and check position of the head. All of this is normal procedure.
121. With hindsight she agreed that she could have just gone for a crash call based on the heart rate. But she maintained that she wasn't wasting any time. She was making decisions as to the quickest route out for the baby and at that time the quickest route could have been an instrumental delivery. In the five minutes she was in the labour room there would have been at least two contractions maybe more, so if she would have to wait for one to pass her work would take longer. She would be more likely to wait if FS was uncomfortable during the contraction.

"I would have to be satisfied that what I was getting were findings upon which I could make a decision".

122. It was put to her that it had taken her a long time to come to a decision in light of what was written in the notes. She disagreed: it was during the vaginal examination that she first saw blood and, when withdrawing her hand at the end of her examination, she saw fresh blood. She insisted that she had not stopped doing something between 1508 and 1513 in particular she didn't stop after the sudden blood from the vagina noted at 1508-09. She must have completed her vaginal examination by something like 1512 and then spoken to FS and to the midwives. She agreed it was clear to her from when she arrived that the baby had to be born soon and she knew the difference that 2 or 3 minutes might make to the outcome but that is what the vaginal examination is for i.e. to decide whether to try forceps. She said,

"I was in the room at 1508 and baby was out 21 minutes later. We made our best efforts.....If the time was taken with positioning the lady, opening the pack, waiting for a contraction to pass then that time was taken (i.e. it was inevitable). I decided not to attempt forceps delivery, she was fully dilated and pushing very well. I wanted to get the baby out as soon as possible."

123. Forceps delivery was seriously considered but given the position of the baby's head she decided not to try a trial of forceps. She stated she was not taken by surprise by any of her findings but she was doing her own examination and based on her own findings she had to take the decision as to the quickest way to deliver the baby. She said that two or three minutes in a labour can make a difference positively as well as negatively e.g. she could have seen a change in position of the baby to a more favourable position. It was accepted by counsel for the Claimant that Dr Deshmukh would have been in breach of her duty had she not done her own vaginal examination but he put to her what would have been wrong with making the crash call as soon as she realised the position of the baby? She replied

"..there was such a call, I was still in my gloved hands when we had a conversation with the mother and then went for the crash call. I had decided that vaginal delivery was not possible so I could not do a trial of forceps."

124. It was put to her that she could have done a crash call before she carried out her vaginal examination and saved 5 minutes. She replied

"..we do not normally do that, make a crash call in the second stage of labour, when I am anticipating a vaginal delivery. I disagree that as soon as I entered the room I should have made a crash call because of the scale of the bradycardia, I knew (of the) bradycardia, I knew it had lasted for 8 minutes at least and may have been 16 minutes...a crash call means alerting everyone and them all coming and by that time I may have done a ventouse delivery."

Mr Elgot persisted with his point that her reasoning should have been that if she did a crash call and then it

turned out a caesarean was not necessary it would have been wiser even if the call out was wasted. Dr Deshmukh said a crash call could not be taken lightly

"in hindsight the outcome was not good but at the stage I entered the room we do not do a crash call. At the time that I entered the room we were still hoping that a vaginal delivery was possible although it was clear that the baby had to be delivered expeditiously."

125. Mr Elgot conceded that once the crash call had been made things went as well as they possibly could. He made it clear his criticism was that it took Dr Deshmukh five minutes to decide to make the crash call. Dr Deshmukh said that with the benefit of hindsight one could say she had not needed to do any of the examination she had done but that was what she was trained to do and although she agreed there was very little to lose in making the crash call as soon as she had heard the full account from the midwives, she had to make a decision there and then on the mode of delivery and so she did what she needed to do to make that decision. She explained that circumstances can change in 3-5 contractions when the mother is contracting well. From experience there was a fair chance that vaginal delivery could be achieved provided rotation happened.
126. When pressed about her training she said that she was trained to do an abdominal examination to feel how far the head had gone and if the uterus was contracting well having determined the position of the baby. The vaginal examination was necessary to get a clear picture. The advantages of ventouse or forceps would have been that delivery would have been quicker and also a major operation (emergency caesarean) would have been avoided. If it had been possible she would have done a non-rotational forceps delivery immediately. If she had put out a crash call immediately on her arrival in the room 10-15 people would have been taken away from other work they were doing at that time including other patients they were caring for in non-emergency situations. If she had then discovered a forceps delivery was possible her competence would have been questioned and she would have wasted the time of many medical professionals.
127. She also confirmed that it was unusual for such a low risk labour as FS's to progress to such an outcome but she denied again that any time was wasted. They had all done what they needed to do. She denied that a crash call would only involve 3 or 4 people and further when she was asked about some handwriting on the CTG trace which appears to indicate that the vaginal examination took place at 1508-1509 rather than spreading over to 1512-1513 she said it was not her handwriting and someone else may have written VE in the wrong place on that CTG.
128. I found Dr Deshmukh to be an impressive witness and she displayed a reasoned response to the matters being put to her. Once she had made the crash call at 1513 she acted efficiently and expeditiously to deliver DS via emergency caesarean section and DS was born 16 minutes later. I have no doubt that had she been able to she would have delivered DS instrumentally within the labour room which would have saved important minutes. I have also no doubt that her decision upon consideration that instrumental delivery was not likely to succeed was a good decision. The real issue is whether the Claimant has proved that she should have made that decision more quickly.
129. Mr Gerald Jarvis (GJ), a consultant obstetrician and gynaecologist produced a report on 15 July 2015. He is Emeritus consultant at St James' University Hospital, Leeds. He has been involved in this speciality for 42 years having qualified in medicine in 1971. He is a Fellow of the Royal College of Obstetricians and Gynaecologists and a Fellow of the Royal College of Surgeons of Edinburgh. He has written a postgraduate text book in the field and has provided expert testimony in similar cases in the past. He last delivered a baby in 2002 and retired from obstetric practice then. He produced his first report for the Claimant in 2008.
130. The defendant's obstetrics expert was Dr D J Tuffnell (DT). He is a consultant in obstetrics and gynaecology at Bradford Hospitals since 1994 and has been an honorary visiting Professor in obstetrics since 2007. He was the Clinical Director for Women's and Children's Health at Bradford hospitals between 2006 and 2011 and was the Deputy Medical Director for Bradford Hospitals between 2007 and 2014. He also has national committee responsibilities including membership of a number of NICE development groups. He has acted in enquiries into maternal deaths and similar circumstances. He has regional roles, for example he is the lead for the Yorkshire

Obstetric Critical Care Group. He has provided Medico Legal Reports for Claimants and Defendants on a number of occasions and has written over 60 peer reviewed publications.

131. Helpfully for the court these two experts also took part in a joint meeting the fruits of which were noted down and signed by them on 19 February 2016. It is not necessary to set out all the topics they discussed in detail. They agreed that a vaginal examination by a doctor was not mandatory at 1406 or 1430 hours. Whilst the cervix was not fully dilated a check of the FHR should have been recorded no less frequently than 15 minutes. Once the cervix was fully dilated this recording should be increased to no less frequently than every 5 minutes. The obstetric experts deferred to expert midwifery opinion but on a simple arithmetical analysis of the foetal heartbeat readings in the medical notes, the recording intervals plainly varied between close to 5 minutes and over 15 minutes.

132. Question 9 on the agenda was:

"The Claimant's heart beat was monitored at 1452. Should the Claimant's heartbeat have been monitored at 1457 or is that a matter for the midwifery experts. Please give reasons for your answers."

The experts confirmed again that the rate of monitoring depended on which stage of labour FS had reached. GJ however expressed his opinion that "on the balance of probability the cervix was fully dilated, then auscultating every 5 minutes would mean that the auscultation after 1452 should be 1457".

133. In the next question on the agenda the experts were asked to express an opinion on the balance of probabilities as to what a FHR recording at 1457 would have shown. GJ said that the foetal bradycardia would have been recognised 3 minutes earlier than it was. DT said that as this was before the rupture of membranes his view was that the reading would have been normal.

134. The obstetricians agreed that the symptoms of placenta abruption are continuous abdominal pain and vaginal bleeding. The classical sign is of a hard tender uterus and depending upon the degree of placental separation there may be FHR abnormalities as well. They also agreed that in response to a placental abruption the frequency of maternal contractions would typically be of a lower amplitude. The cause of the foetal bradycardia at 1500 hours was probably placental abruption. They also agreed that the abruption may have commenced before the membrane rupture but without any significant symptoms or signs and the rupture of the membranes may have led to a rapid extension and the sudden foetal deterioration.

135. The first indication of placental abruption was the FHR abnormality noted at 1500 hours. When asked to state their view as to when full dilatation had been reached GJ stated that full dilatation occurred between 1406 and 1505 but on the balance of probability closer to 1505. DT agreed that the cervix was identified as being fully dilated at 1505 and it was possible the cervix was fully dilated before that but it was not possible to identify the point at which that occurred.

Question 17 asked

"What was the likely sequence of events between the rupture of the membranes and the foetal bradycardia at 1500 hours?"

GJ was uncertain as to the meaning of the question. He said "spontaneous rupture of the membranes and the onset of the foetal bradycardia are not synchronous nor are they directly related although rapid release of liquor can increase the degree of placental separation. Artificial rupture of the membranes would often be a clinical response to foetal bradycardia". DT answered question 17 in this way, "the membranes ruptured, releasing tension in the uterus which led to acute placental separation and a sudden foetal bradycardia".

136. The most significant relevant difference between the experts was in respect of question 20

"Using the delivery suite clock timings, how long did it take Dr Deshmukh to assess the patient and

make a decision to proceed to an emergency caesarean section? Having regard to the Bolam test was this a reasonable or unreasonable time interval for this assessment?"

The experts agreed that Dr Deshmukh was present at 1508 and made the decision for caesarean section at 1513. GJ continued, "given the combination of a foetal bradycardia and a presumed placental abruption it should have taken no longer than 3 minutes. To take longer was unreasonable. In the presence of a foetal bradycardia time is of the essence and small differences in time can be crucial to the outcome for the baby." DT responded to the question in this way "this was reasonable as she had to assess the situation on arrival and then perform a vaginal examination to see if delivery would be vaginal or by caesarean section. To take 2-3 minutes to decide to deliver and then 2-3 minutes to perform a vaginal examination to decide on mode of delivery so 5 minutes overall was reasonable." GJ went on to reply in respect of a subsequent question that "by 1508 there had been a foetal bradycardia for at least 8 minutes. Within 1 minute of arrival at 1508 there was vaginal bleeding. All that was needed for a decision was a decision as to the mode of delivery, the vaginal or abdominal thus 3 minutes was the maximum time required (to request Caesarean section after her arrival)".

137. Finally, the experts agreed they could not give an exact duration for the period of bradycardia and hypoxia on a balance of probabilities because they did not know when the bradycardia began. They did agree that there was at least 29 minutes of bradycardia before delivery and potentially a further 3 or slightly more minutes but this was a matter upon which they deferred to the paediatric experts.
138. In cross-examination GJ denied that he had ever expressed a view to the effect that Dr Deshmukh should have requested a caesarean section within a minute of her arrival. Any reference to such a claim within the pleadings in the case was not his responsibility. He agreed that upon arrival Dr Deshmukh should introduce herself, receive a short relevant summary from the midwife, ask any questions necessary, look at the heart rate recordings given they were the primary reason for her being called and then make a decision which could include a vaginal examination even though one had recently been performed. However, the degree of urgency of the situation should effect how long all of this should take. This was one of the most serious obstetric emergencies and it would have taken GJ himself less than 30 seconds to get the relevant information. He could also see an argument for not performing a vaginal examination as it was obvious that delivery was required and he would have made that decision on the information he had gleaned himself. If a vaginal examination was to be done all that was necessary was to obtain verbal consent, it was not necessary for the doctor to wash her hands in a situation as urgent as this, she could simply put on sterile gloves. FS may have had to wriggle down the bed a little, with help. It would be necessary to clean the vulva with antiseptic and put on some lubricating cream, the labia would be parted with the left hand and the doctor should insert two fingers from the right hand into the labia for the examination. It doesn't take long to confirm full dilatation and whilst ascertaining the station of the baby's head against the ischial spines he would have left a hand on FS's lower abdomen in order to be able to combine the abdominal and pelvic findings. The midwives had excluded cord prolapse and with the information thus gathered he would know whether it was going to be an easy or difficult operative vaginal delivery. If it had been easy he would have proceeded with a vaginal delivery, if difficult or he was worried that it might fail he would proceed with a caesarean section.
139. From the point of verbal consent to withdrawing his fingers following the vaginal examination would take 1-2 minutes at this point the decision is virtually instantaneous because the vaginal examination would have told him if vaginal delivery was possible. In his opinion a maximum of 3 minutes is all that could reasonably be required and the 3 minutes period was in his view the slowest time that a reasonable obstetrician would take in an emergency situation such as this.
140. He was surprised at the evidence from Dr Deshmukh that the time required was or may have been extended by contractions. The only reason to desist during a contraction would be to avoid giving the mother two lots of discomfort and whilst sympathising with her given the clinical emergency GJ would not desist in his vaginal examination despite the discomfort. He also disagreed that the hope of the baby's head rotating from an OP position at full dilatation was a realistic one. In his experience it is not uncommon for someone who has had a baby before to achieve such a rotation but uncommon for someone in their first labour to do so.

141. He expressed a view that once the CTG print out is examined and assuming the electronic times recorded there are correct then it would appear that the foetal scalp electrodes trace started at 1506. The pattern of the trace looks different post 1508 and it may be that that was when Dr Deshmukh was doing her vaginal examination and her fingers interfered with the foetal scalp electrode. It may be that at 1508-1509 was the time when the vaginal examination was actually being performed despite Dr Deshmukh's evidence that she finished her vaginal examination just before 1513 and made her decision at that time. On the other hand the CTG contains final traces at 1512 which would be consistent with Dr Deshmukh's evidence because the foetal scalp electrode would be taken off the baby's head at the end of the vaginal examination because a decision had been taken to have a caesarean section. He denied that 10-15 people would be summonsed were an emergency crash call made, in his experience it would be a far smaller number of people.
142. He agreed that in the vast majority of placental abruptions no cause can be identified and it occurs "out of the blue". He also agreed that it's not possible to determine full dilatation without vaginal examination. He agreed that there were no convincing signs of full dilatation as 1406, the additional evidence of vulval pouting and anal dilatation was timed at 1415. It was unlikely that FS had been in the second stage of labour from then until 1500 given the absence of other evidence. It was sensible to say the onset of full dilatation was closer to 1505 than 1406. However onset of full dilatation should have been presumed if the midwife had evidence that FS may have been in the second stage of labour on the basis that frequency of observations must increase for good reason. In those circumstances one either did the vaginal examination or erred on the side of caution and initiated second stage observations at no more than 5 minute intervals.
143. GJ interpreted the number of recorded observations and SMW's assertion that she was acting in accordance with the Unit's policy together with all the other pieces of evidence suggests to GJ that the midwives did think FS was in the second stage. He did not consider FS's evidence of a hard abdomen to be evidence of a massive abruption earlier in the day although it could have been evidence of a small abruption which did not have an effect on the FHR. Bleeding in an abruption occurs between the placenta and the wall of the uterus i.e. outside the amniotic sac and it takes time for the blood to get in to the amniotic sac and mix with the fluid therein. However rapid release of the liquor at rupture of the membranes may make a placental abruption which has already occurred worse. When the FHR was listened to quickly after rupture of the membranes it was 60 beats per minute and not in the process of falling. If the spontaneous rupture had been the cause of the abruption the fall in the FHR would not have been instantaneous, it would have taken some time and would not have reached a steady 60 beats per minute so soon. On the balance of probabilities GJ' view, in evidence, was that abruption preceded rupture of the membranes and the FHR fell progressively until 60 began the new steady rate. On the balance of probabilities he believes that an auscultation at 1457 would not have given a reassuring reading. The drop in FHR was unheralded but it only occurred after the abruption had happened and so abruption before 1500 is a probability in his view rather than simply a possibility. He stated that this view was speculative i.e. there is no certainty. What I took him to mean by that was that it was his best shot at interpreting the evidence, using his expertise he was not suggesting it was guess work or mere speculation. He accepted that in his report he had stated that "the slow foetal heart rate at this time [1500] leads me to propose that the placental abruption had probably just occurred."
144. He was asked whether spontaneous rupture of the membranes itself could have been the sole cause of placental abruption and he said that where there is excessive liquor volume that was possible but with a normal liquor volume he had not seen a placental abruption and found it improbable given the number of times that membranes do spontaneously rupture.
145. Returning to Dr Deshmukh it was GJ's view that in a life threatening situation such as this one although the obstetrician was entitled to make her own assessment she should have achieved that within three minutes rather than the five minutes that she took. The five minutes was unacceptably long in his opinion, indeed three minutes was longer than Mr Jarvis would himself have required but there has to be a range and in his view the reasonable range was up to three minutes. What was at stake was not how long the doctor wants to take but how long the baby could spare. In GJ's view five minutes was too long when there had already been prolonged bradycardia. Returning to the topic of crash calls he agreed that the last time he had put out a neonatal crash call would have been in the early half of 2002, but he denied that he had underestimated the number of medical

professionals who would be required to respond to such a call.

146. DT's evidence under cross examination was that FHR changes can be very quick. When decelerations occur the rate can go from normal to 50 or 60 within 5 to 10 seconds, for example as the uterus contracts the FHR may plummet and then recover quickly. His view was that there is likely to have been a small placental abruption earlier than 15:00 but when the dramatic effect of rupture of membranes at full dilatation was felt the major abruption took place. He urged caution in respect of slicing up time periods in order to ascribe particular moments to specified actions. He denied that Mr Jarvis was right and that it should have taken Dr Deshmukh little more than a minute or a minute and a half from 15:08 when there was sudden blood loss to decide the mode of delivery. In DT's view the situation was urgent but the key was to make the right decision as to mode of delivery and Dr Deshmukh was making the decision carefully. She was a doctor in training and she should not be blamed for taking a few more minutes to make the decision than another doctor may have done. I understood DT to be saying no more than Dr Deshmukh's reactions were within a reasonable range rather than that special allowance should be made because she was a junior doctor.
147. When she had referred in her evidence to the court to the possibility of her judgment being questioned if she had made a premature crash call, in DT's view she was simply reflecting honestly on the case. Sometimes it takes a bit of time to make the decision right and she was trying to work out as quickly as possible what was the best way out of the situation. To make the decision for an emergency caesarean section within five minutes was reasonable, that was five minutes split up between deciding to deliver and deciding mode of delivery. It was important to remember she had never met FS before. In the context of obstetricians making serious decisions everyday going for a caesarean section when the baby's head had gone down could lead to difficulties when trying to get the baby out or to maternal danger, so although a placental abruption is an emergency situation for the baby there was a lot for the doctor to consider. What was reasonably required was to take a decision within a reasonable time and in his opinion this is what Dr Deshmukh had done.
148. As to detailed examination of the minimal traces captured on the CTG DT urged caution because this case concerned a very short period of time and it was not possible to be robust about the particular time a reading or note should be ascribed to. He made the sensible observation that usually CTG traces are considered following recording over a period of hours. In conclusion he told the court that that an instrumental delivery in FS's situation would have achieved birth more promptly but the risk was that the doctor could embark upon an instrumental delivery and fail, which would lose time and cause further trauma. *"It is one of the more challenging decisions in obstetrics, deciding whether to achieve birth in the room and we are entitled to take time to make the decision we consider to be reasonable. Dr Deshmukh did just that"*.

Findings as to Obstetrics

149. I make the following findings as to the obstetrics evidence (I have born in mind the paediatric expert evidence which is summarised later in this judgment):
 - a. Although detection of a bradycardic heart rate earlier than at 1500 would have meant, in all likelihood, that the actions carried out at 1500 would have occurred earlier, resulting in delivery and resuscitation earlier, I am not satisfied on the balance of probabilities that foetal heart monitoring at 1457 would have revealed a bradycardic heart rate. I accept the evidence of DT that is much more likely that had a FHR monitoring taken place at 1457 the rate would have been normal. Decelerations can occur very quickly and this one was due to abruption rather a long-term cause. DS' brain damage had caused less serious disabilities than might be expected after a long period of acute hypoxia and the evidence tends to suggest a shorter period would explain that. These are some of the reasons why I have concluded that monitoring at 1457 would probably not have caused alarm.
 - b. I accept Dr Deshmukh's evidence that she was not aware she was being called specifically because of a pathologically low FHR but she was aware of that fact as soon as she entered the labour room.
 - c. Dr Deshmukh arrived expeditiously. She was suitably qualified and experienced to be the on-call

obstetrician. The history taking and speaking to FS was appropriate and swift.

d. Dr Deshmukh decided to do her own vaginal examination and it was reasonable for her to do so. Dr Deshmukh was able to start her vaginal examination within a minute of arrival.

e. The sudden loss of blood per vagina at 1508-1509 during the vaginal examination alerted all the Trust's staff present that a placental abruption was likely to be the cause of the low FHR.

f. Thereafter Dr Deshmukh's task was to decide whether DS could be delivered vaginally with instruments, which would have been a speedier delivery, or whether an emergency caesarean section was the only option. She took between 1509 and 1513 to make that decision. She made a crash call at 1513. I am satisfied that this was a reasonable period of time for an obstetrician to make the decision, although other obstetric colleagues may have made the decision more quickly, the four minutes taken was within the range of reasonable periods. In other words I do not find that it was mandatory for her to have decided to do a caesarean section within 3 minutes of entering the labour room. I found the evidence of GJ to be a counsel of perfection and influenced, to a degree, with the benefit of hindsight.

g. The Claimant has not persuaded me on the balance of probabilities that his obstetrician was negligent in her treatment of FS. The delivery of DS at 1529, within 21 minutes of her arrival in the labour room demonstrates her efficiency and the urgency with which she worked. I am satisfied that this was her attitude throughout her dealings with FS, not just after she'd made the decision for a crash call.

The Remaining Experts

150. Given the findings I have made as to negligence, namely that there was a maximum of 3 minutes of negligent delay from 1504 to 1507 only, the evidence of the remaining experts, particularly those concerned with causation, is strictly of less relevance, as it has not been contended that a saving of 3 minutes would have materially affected the degree of injury. However, lest my findings on breach of duty are challenged subsequently I will go on to consider the case on causation both on the basis of a 6-9 minute negligent delay and a 3 minute negligent delay.

Neuro-radiologists

151. The evidence of the neuro-radiologists was agreed and neither Dr Forbes nor Professor Griffiths was called for cross examination. A joint expert's meeting had taken place and the record is signed by both experts on 3 March 2016. A recent MRI scan from earlier in 2016 was available and examined. The experts had prepared their reports based on an MRI scan in 2006 but this was superseded by the fresh radiology evidence. They agreed as to the expected areas of injury following the sort of hypoxic episode endured by DS. Although there is in general a relationship between the severity of ischaemic injury and duration of acute profound hypoxia (i.e. more severe exposure tends to produce more extensive injury) there is no simple relationship between the degree of exposure and the individual sites of anatomical injury. DS's pattern of brain injury as revealed by the neuroradiology is consistent with acute profound hypoxic ischaemic injury. The brain was otherwise morphologically normal for a mature infant prior to the insult responsible for the abnormalities described. There was no evidence of major developmental malformation or congenital abnormality. The experts also noted from the Claimant's medical records that there was very little head growth in the week after birth. His head circumference initially being on the 75th centile falling to the 9th centile at ten weeks, 2nd centile at four months and subsequently to 0.4 centile.
152. Having regard to the MRI scan of 18 February 2016, the major location of white matter damage was described by the experts and both agreed that the Claimant's microcephaly (reduced skull) is an atypical feature. Microcephaly would be expected if there was very extensive white matter involvement (i.e. loss) but this was not present in DS's case. Both neuroradiology experts remain unsure as to why DS is microcephalic and have considered whether there may be another cause such as genetics. Importantly these experts both agree that the

location, pattern and distribution of brain damage visible on the 2016 MRI scan is consistent with a period of acute hypoxic ischaemia and inconsistent with a period of chronic hypoxic ischaemia.

Neonatal Experts

153. Dr Anthony Emmerson (AE), a consultant neonatologist, was instructed on behalf of the Claimant and provided a report dated 3 January 2016. He is an extremely well qualified expert. Having become a medical doctor in 1983 he was appointed a consultant neonatologist in 1993, from 1996 to 2003 he was the clinical director at St Mary's Hospital for neonatal medicine and held that post for both neonatal medicine and surgery between 2003 and 2011. He is a fellow of both the Royal College of Physicians and Royal College of Paediatrics and Child Health and was the lead clinician for the Greater Manchester Neonatal Network until April 2012. The area of his expertise particularly called upon in this case is the treatment of DS immediately after his birth and whether this may have made any contribution to his ongoing disability and the impact of any additional time required for resuscitation of unnecessary delay in expediting DS's delivery.
154. The neonatal expert instructed on behalf of the Trust, Dr Janet Rennie (JR) is an established and experienced expert witness. Her practice as a doctor began in 1978, she was elected to a fellowship of the Royal College of Physicians in 1994, she is also a fellow of the Royal College of Paediatrics and Child Health and in 2008 she was elected a fellow *ad eundem* of the Royal College of Obstetricians and Gynaecologists. She has a special interest in brain injury in babies and held a consultant appointment at Cambridge University until 1995 where she was also director of medical studies at Girton College. She has had other academic roles in consultancy and has been clinical lead in neonatology at University College London Hospitals. She has published extensively. Including contributing chapters to the major British textbook of paediatrics. She has extensive involvement in research into neonatal brain injury and has published many peer reviewed papers on that topic. From 2002 to 2005 she was the chair of the Royal College of Paediatrics and Child Health Specialist Advisory Committee, responsible for setting standards in training in neonatal medicine in the United Kingdom, having been on the Committee since 1997. She has 20 years' experience of medicolegal work advising claimants and defendants in approximately equal proportions and appearing in court when required.
155. A joint meeting of neonatal experts was held by telephone on 16 March 2016. The notes of that meeting were signed on the same date and provide a useful summary of the expert opinion for the court. The experts agreed that the pattern of brain damage seen in DS's brain is that of an acute profound hypoxic ischaemic insult. They noted the mismatch between the extent of white matter loss (which is not very extensive) and the microcephaly evident in DS. On the question of the immediate cause of the deceleration in DS's heart rate detected at around 15:00 hours, they deferred to the expert obstetricians but noted that both of them agreed that it was the placental abruption although Mr Tuffnell was of the opinion that there was a bradycardia in response to the rupture of the membranes and acute placental separation at 1500, while Mr Jarvis was not so sure about the direct relationship between the two things.
156. Question 3 on the agenda was,

"What was the nature and duration of the brain insult suffered by the Claimant following the placental abruption?"

The experts agreed that the acute profound hypoxic ischaemia probably lasted from around 1455-1500 until resuscitation was achieved. Resuscitation in these circumstances is acknowledged when a heart rate of more than 100bpm was obtained. There was agreement that a previously healthy foetus could withstand 10 minutes of acute profound hypoxic ischaemia without sustaining irreversible brain damage, although they were both aware in clinical practice both shorter and longer periods may be seen.
157. They were asked what would be the minimum period after which the foetus would not be expected to survive, and they agreed that in primate animal experiments performed in the 1970s more than 25 minutes acute profound total hypoxic ischaemia could be the subject of resuscitation but animals who has suffered such a long insult generally died in the neonatal period. In modern neonatal intensive care units the experts observe that it is possible for babies who have experienced a longer than 25 minute period, to be resuscitated and survive. This

evidence demonstrates how remarkable DS's condition is in that he has suffered by any measure, a long period of hypoxia but has severe, rather than profound disabilities.

158. DS's heart rate was recorded as at 100 beats per minute by 15:44 he having been born at 15:29. DS's condition at birth was very poor, he was effectively still born. He had no recorded heartbeat, was floppy, pale and not breathing. DS required full cardiopulmonary resuscitation with chest compressions, positive pressure ventilation and intravenous adrenaline. Taking into account the notes kept post-delivery, the period of resuscitation required was between 10 and 15 minutes, JR preferred 15 minutes and AE preferred 10 minutes. By 15 minutes post-delivery, DS's heart rate was noted to be above 100 beats per minute. When asked to consider the likely duration of foetal compromise following the placental abruption on the balance of probability, the experts agreed that the period before birth was approximately 29 minutes (or 32 minutes if the insult started at 1457). Given that resuscitation was between 10 and 15 minutes, the total period was between 42 and 47 minutes or 44 to 47 minutes. The period it took to resuscitate DS equates to the period of hypoxic ischaemic damage continuing post-delivery.
159. The experts agreed on a period of 10 minutes of profound asphyxia insult being bearable without it causing damage to the foetus. Assuming that the start of the insult was 1457 or 1500, 10 minutes of non-damaging hypoxia would move the threshold for intact survival to 1507 to 1510.
160. The Claimant's case being that he should have been born at 1520 or 1523 instead of at 1529 and would have been born at those times had there not been negligent delay of either nine or six minutes in the treatment of SS's later stages of labour, the experts were asked whether birth nine or six minutes earlier than 1529 would have made any material difference and if so how. JR's view was that if DS had been born at 1520 to 1523 he would still have required a period of resuscitation. As the period of resuscitation in her view was the order 15 minutes, earlier delivery would have required resuscitation for a shorter period but still likely to have been more than five minutes probably of the order of eight minutes. The total period of insult would then have been the order of 30 minutes rather than up to 44 minutes. Given this duration and the unusual nature of DS's microcephaly, JR was of the opinion that there would have been little functional difference in outcome to DS of delivery six to nine minutes earlier. The microcephaly would still have been present but not as marked, which would probably have led to less severe cognitive impairment than is now the case, but DS would still, in her opinion, have had mild to moderate cognitive impairment and motor difficulties.
161. AE was of the opinion that a reduction in nine or six minutes before delivery would have reduced the period of resuscitation required to no more than five minutes. As a result, the insult would have been ended closer to 1525-1528, therefore an insult of seven to 10 minutes in total (allowing for 10 minutes non damaging hypoxia at the start) hence the reduction would have made a material difference.
162. On the basis of around 30 minutes of insult JR would expect the Claimant to sustain similar damage to the vulnerable structures of the deep grey matter to that which he has now and the microcephaly would still have occurred to some degree. By contrast AE while accepting that there would have been some damage to the deep grey structures is of a view that if the microcephaly was due to the extended period of insult then this would have been avoided if the total insult had only been 7-10 minutes.
163. The experts were asked to identify the likely contribution made by the periods of alleged negligent delay on a balance of probabilities. JR's response to this was that if the microcephaly was due to the insult this would have been less severe had the delay if proved not taken place but it would still have been present to a degree and DS would have had some learning difficulties in combination with motor problems and she did not feel able to suggest a percentage. AE deferred to the paediatric neurologists on this topic.
164. Both experts agreed that given the lack of neuro-radiological evidence of extensive white matter loss the DS's microcephaly is an atypical feature but if a genetic or other cause is excluded then it is probable that the microcephaly was caused by the insult. They agreed that the microcephaly is likely to be contributing to DS's learning difficulties. In particular, the damage seen to the hippocampi is likely to be responsible for memory problems and can impact on learning but on the evidence available it was not possible to exclude a genetic cause

for the microcephaly.

165. In evidence AE stated that it was important to be realistic about timings concerning resuscitation. During resuscitation the neonatal heart is listened to briefly and a judgment is made as to what the heart rate is. This is different to the antenatal position where listening is done for a whole minute. In his opinion taking matters in the round it was likely that resuscitation to the extent of a heart beat per minute of around 100 was achieved at about ten minutes post-delivery or just after ten minutes. Whilst resuscitation was taking place DS's brain would still have been deprived of oxygen but less so than in utero. There was evidence of anaemia in this case which makes resuscitation more challenging. AE described DS as not the most profoundly disabled child. He accepted that adrenalin was administered to DS during resuscitation. This pushes the heart rate up but does not necessarily increase the volume of flow of blood and it would have been administered to get the heart beating more quickly. He agreed that the adrenalin took the heart beat up to over 100 beats per minute but he did not accept that this meant recovery did not take place until after the adrenalin was administered 14.05 minutes post-delivery. He agreed that it was a judgement call as to when adrenalin is given and adrenalin is only given if necessary, but he maintained his view that resuscitation did not take up to 15 minutes. He described this as a "deduced opinion" and not speculation but agreed that there was no hard evidence in the notes to support it.
166. In his report he had expressed a view that resuscitation was achieved at 10-12 minutes after birth but by the joint meeting he had reduced his view to the lower end of that bracket. He said his mid-point was 11 and he stood by it. In essence he accepted that DS had been born at 1520 or 1523 he would still have needed resuscitation and the disagreement between himself and JR was simply as to the period of time needed to afford that resuscitation. DS was gasping very quickly after birth and in the witness's opinion that is not something which happens in a baby who is more profoundly asphyxiated.
167. When JR was cross examined she agreed that the joint statement following the joint telephone meeting was the most important statement of expert opinion in this field because it had taken place following the latest MRI scan of this year. It was put to her that the early gasping motions recorded in the notes could demonstrate the Claimant required less resuscitation than she had stated but she said that although there must be some heart rate when a baby is gasping the algorithms used in this situation would not indicate adrenalin or chest compressions unless the heart rate was less than 60 beats per minute. There is no note that this was the heart rate but she said that all junior medical staff are trained using algorithms which mandate no adrenalin or chest compressions if the heart rate reaches over 60 beats per minute. It wasn't necessary for them to note the heart rate in the medical notes but the fact that they gave chest compressions and adrenalin indicates that DS required it to achieve resuscitation. Adrenalin is a powerful drug which would not be given unless it was indicated. She described the training for junior doctors as standard throughout Europe and there is no indication that these junior doctors were following any other advice than the standard NHS procedures in 2005.
168. As far as microcephaly is concerned she agreed that if 6-9 minutes were saved in the overall time period and the microcephaly was due to a progressive process then some degree of microcephaly would have been avoided but she did not agree that the entirety of the microcephaly occurred at the end of the hypoxic insult because there was no evidence upon which to base such a conclusion. She agreed that DS's motor function would have been the same even if he had been delivered 6-9 minutes earlier.

Paediatric Neurologists

169. Two witnesses gave evidence in this field, Dr M Clarke (MC) and Dr L Rosenbloom (LR). Both men are experienced experts. Dr Clarke has been a consultant paediatric neurologist for the last 25 years and is a fellow of the Royal College of Paediatrics and Child Health as well as honorary clinical senior lecturer in paediatric neurology at the University of Leeds. The management of neurological disability in childhood is an important part of his clinical practice. Dr Rosenbloom holds an honorary consultant appointment at the Alder Hey Children's NHS Trust Liverpool, having held an appointment there from 1971 until his retirement from the NHS in 2004. His practice is principally concerned with neurological disabilities in childhood and in advising those affected and their families. He is an honorary fellow of the Royal College of Paediatrics and Child Health and an originating fellow of the Expert Witness Institute. Following retirement he continues in private paediatric

neurology practice on a part-time basis and maintains an active involvement in medico legal practice and medical publishing. He has a research interest in aspects of cerebral palsy, which he has pursued throughout his professional career. Both experts have an extensive medico legal practice and give evidence in court frequently.

170. An experts' meeting took place by telephone on 17 March 2016. They recognised that when dealing with causation they had to consider their opinions upon the balance of probabilities in a pragmatic way. The notes of the joint meeting provide an extremely helpful summary of DS's current physical and cognitive abilities. The experts agree that DS has spastic cerebral palsy with the lower limbs being more severely affected than the upper limbs and with the additional presence some dystonia affecting the upper limbs. His head circumference is below the third centile at 49.2cm. He has good head control, can sit unsupported and crawl and bunny hop. He can pull up to standing with difficulty and has limited mobility indoors using a handheld K-Walker. On a Growth Motor Function Classification System cerebral palsy DS's function is level III. He can use his left hand to reach, grasp and play and can feed himself to a limited extent. He is not able to undertake any living activities himself. He does have difficulties with chewing. He can communicate using speech with short phrases rather than long sentences. There is no severe degree of dysarthria (unclear speech). Cognitively DS's abilities to understand, reason and interact socially and communicate are like those of a 4-5 year old, as opposed to his chronological age of 10 years. His younger brother, who is now aged 6, has developed beyond DS's capabilities. In summary, the experts agree that DS is on the border line between severe and moderate cognitive impairment and that if his IQ was measured it would be around 50.
171. When asked whether they found any clinical evidence of spasticity, they agreed that by January 2015 his legs demonstrated moderate hypotonia rather than spasticity. There was some residual spasticity, i.e. persistent increase in muscle tone seen in the hamstring muscles on each side, possibly more so on the right, and a degree of weakness in the lower limbs. The experts considered that his reduced muscle tone and weakness were a consequence of surgical procedures he had undergone.
172. When asked about any clinical evidence of dystonia, the experts agreed that he has dystonic posturing of the upper limbs, most marked in the right hand.
173. Question 6 on the agenda was

"Having regard to the neuro-radiologists Joint Statement, on the balance of probabilities what was the cause and mechanism of the Claimant's brain damage?"

The experts answer was:

"We note that the neuro-radiologists conclude that the pattern of brain injury seen in DS's brain is that of an 'acute profound' hypoxic ischaemic insult. They point out, and we agree, that there is a mismatch between the extent of white matter loss (which is not present) and DS's microcephaly. We agree that DS's radiologically demonstrated pattern of brain damage is a consequence of an episode of acute and profound cerebral hypoxic ischaemia (APA). We agree that the clinical presentation of DS is unusual in terms of the pattern of his cerebral palsy and that it is much more usual to see a dystonic cerebral palsy with athetosis as a consequence of extrapyramidal motor function impairment. However we agree that bilateral spastic cerebral palsy can be seen."

Question 8 was

"What was the nature and duration of the brain insult suffered by the Claimant following the placental abruption?"

In response the experts agreed that DS was exposed to and sustained his brain damage as a consequence of a period of "acute profound" hypoxic ischaemia (APA). They continued,

"So far as the duration of this period is concerned, we consider that this probably lasted from around 14:57 to 15:00 (the time of onset as a continuing profound foetal bradycardia until resuscitation was

achieved as marked by achieving a neonatal heart rate of more than 100 beats per minute between 10 and 15 minutes after birth. We agree that DS was born at 15:29... Hence the duration of the hypoxic episode was a maximum of 47 minutes (14:57 to 15:44) and a minimum of 39 minutes (15:00 to 15:39)."

174. The experts agree that a previously healthy foetus can withstand 10 minutes of APA without sustaining irreversible brain damage, although in clinical practice both shorter and longer periods may be seen. The experts also dealt with discrepancies within the notes concerning discrepancies between the labour ward clock and the delivery suite clock. Within this judgment the labour ward clock timings have been used and all other timings adjusted accordingly.
175. The experts were next asked to summarise and agree if possible the Claimant's condition at birth. They answered in this way:

"We agree that DS was in very poor condition at birth, effectively still born. He had no recorded heartbeat, was floppy, pale and not breathing. DS required full cardiopulmonary resuscitation with chest compressions, positive pressure ventilation and intravenous adrenaline. We agree that determining the duration of the resuscitation is best done by referring to the neonatal records, and Apgar. The paediatric team will almost certainly have assigned Apgar scores and made notes of events using the timer on the resuscitator rather than referring to any clocks or watches. We agree that the Apgar score at 10 minutes recorded a heart rate of less than 100bpm, and by 15 minutes of age DS's heart rate was noted to be above 100bpm."

176. When asked to deal with the likely period of time over which DS acquired his permanent brain damage, the experts disagreed as to the correct approach. LR described three possible ways of approaching this question.

- "1. An initial non damaging period of 10 minutes followed by a prolonged damaging period of 32 to 37 minutes;
2. A damaging period of closer to 15 minutes preceded by a prolonged non damaging period of 27 to 32 minutes;
3. Apportioning the total period of APA on the basis that 40% was non damaging and 60% was damaging, this is the model used when the conventional maximum period of APA of 25 minutes is the case."

LR preferred to adopt option 3 in this case, although he accepted there is an absence of published literature to support or refute his choice. He also pointed out the additional complication that DS's neurological disabilities are atypical because of the pattern of cerebral palsy and his microcephaly, but they are not at the most severe end of the possible spectrum and the abnormal radiology cannot offer precise or specific timings. Having made those observations, his answer to the question was that if option 3 was accepted that would lead to approximately 18 minutes of non-damaging hypoxia followed by a damaging period of 24-29 minutes. Thus the brain damage would have begun at 1515 and continued until 1539 or 1544.

MC preferred to use the conventional method because there is supportive experimental and clinical evidence that non-damaging APA is limited to a period of 10 minutes and the absence of published evidence that supports the apportion model relied on by LR. This analysis leads to an estimate of 10 minutes non-damaging hypoxia and 32-35 minutes of damaging hypoxia so the brain damage would have begun, at the earliest at 15:07, and continued until 15:39 or 15:44.

177. The experts agreed that on the conventional basis preferred by MC the threshold by which DS had to have been delivered for him to be born unscathed was on the balance of probabilities 1507. On the apportion model favoured by LR, assuming a start time for the APA of 1457, delivery and resuscitation by 1515 would have spared DS the brain damage.

178. The experts were asked to address their minds to the question of whether a saving of nine or six minutes in delivery would have made any material difference to the functional outcome for DS. They disagreed about the answer to this question. LR's view was that with birth nine minutes earlier, i.e. at 1520, and effective resuscitation achieved by 1530, DS would functionally have been the same as far as motor impairment from his cerebral palsy is concerned. It was probable however that his microcephaly would not have been as marked, although still present and he would have had less severe cognitive impairment than at present. He would have had a mild to moderate degree of cognitive impairment (approximately equivalent to an IQ of 70), and when considering this in the context of the physical difficulties, DS would still have required a very similar pattern of care and supervision as at present. With birth six minutes earlier and resuscitation achieved by 1535 and 18 minutes of damaging hypoxia as opposed to 15 minutes for birth nine minutes earlier, functionally the degree of motor impairment from cerebral palsy would have been the same, however he would have had a less severe cognitive impairment than is now the case and although a moderate degree would still have been present (approximate IQ between 50 and 70), when considered in the context of his motor difficulties this would still have required a very similar degree of pattern of care and supervision as at present. In summary therefore, LR's view was that even with delivery nine minutes or six minutes earlier than 1529, in essence the difficulties faced by DS and the degree of his need for care and supervision would have remained effectively the same leading to LR's conclusion that a degree of negligence contended for by the Claimant if proved would have led to no saving of injury had it been avoided.

179. MC however disagreed.

"In an acute asphyxia insult there is progressive neuroanatomical damage. It is hard to conceive therefore that saving six or nine minutes would have had no beneficial effect when it is clear that in APA the damage is progressive. Six to nine minutes is a significant proportion of the total asphyxia insult and would have been damaging, although how much less damaging is uncertain. Noting the sequence of neuroanatomical damage it is likely that the non-damaging period in respect to cognition is longer than 10 minutes and hence the damaging period less. In this case six to nine minutes would have been a greater proportion of the damaging APA and because of this have an even greater likelihood of reducing negative functional effects in respect to cognition. I consider that the intellectual impairment would therefore have been much less and that it is possible that it would not have been present at all. Hence using the estimates of IQ equivalent, given above, it is my opinion that DS would probably have functioned at IQ level 70 to 80."

180. The consequences of this difference in opinion was made clear later in the record of the joint experts meeting. LR stated that even if the court were to accept Dr Clarke's view that had the Claimant been born six to nine minutes earlier he would have had "significantly less" "intellectual impairment", the functional difference on the balance of probabilities would have not been significant, especially within the context that the physical impairments would have been the same. DS would not have had capacity, would have required 24 hour support and or supervision, would not have been capable of employment, however the content of his speech may have been better to reflect the likelihood that his cognitive abilities, whilst not normal, would have been better. MC on the other hand thinks that there would have been significant functional differences in his social and cognitive functioning in that he may have had capacity for everyday decisions, although it's not likely he would have had capacity for managing financial and legal affairs. Although he would still have required 24 hour support and or supervision this could have been by people attending to him in his own home, he would have been capable of unskilled and supervised employment and the content of his speech would have been better to reflect the likelihood of his improved cognitive abilities, although he added in evidence that an element of speech malfunction would have remained.

181. In respect of the unusual feature of microcephaly, the experts agreed with other experts that if a genetic or other cause was excluded then the Claimant's microcephaly must be a manifestation of his APA albeit it is unusual and atypical as there is no extensive white matter loss on the MRI scan. It was not possible to exclude a genetic cause for the microcephaly on the evidence they had available.

182. In evidence, MC was pressed by counsel for the Claimant on the potential difference in cognitive functioning of

a birth six to nine minutes earlier than was achieved. His reasoning was based on proportioning the degree of intellectual disability during the course of progressive hypoxia. He confirmed that it is difficult to predict ahead until DS reaches his high school years, but with improved cognitive functioning he might have been more likely to acquire continence which is a very significant thing. Small improvements in function, which were likely in MC's view, can have a big impact on how a person is on a day to day basis.

183. MC agreed that the total period of APA was 39-47 minutes. In evidence thought he did not agree however that if delivered at 1520 or 1523 DS's physical impairments would necessarily have remained the same.

"No, the diagnosis would have been the same but within it a shorter period of asphyxiation would have been associated with some changes in function."

184. He was challenged on this and agreed that in fact nothing had changed since the joint meeting he had had with LR but he said he had refined his thinking. He denied that his position was now a reverse of his opinion at the joint experts' meeting but stated that upon reflection he had come to the view that because the health consequences of any condition can occur at various levels and impairment is described at different levels he was referring to significant functional differences in the joint experts meeting whereas he was of the view that some functional differences would inevitably result from a shorter period of APA. I understand the distinction he is making to equate to the material and non-material degree of difference in ability/functioning.

185. In testing his evidence in respect of physical functioning counsel took him to his report but despite further testing, his final position was this.

"I think the description of his motor disorder would have stayed the same but the effect of it may well have been different."

186. It seems to me that MC's opinion amounts in the end to no significant changes in physical ability although potentially some better functioning. This is consistent with his report which stated that even if the height of negligence pleaded (9 minutes) be proved "DS's motor disorder would have been the same."
187. He was asked by the court about his opinion that DS may have achieved continence and why something apparently so significant was not mentioned in the joint meeting. He replied that continence is important and if DS was of a "normal" intellect he may well have gained continence because continence was an intellectual function or was related to intellectual function rather than simply a signal of physical functioning. I did not find this aspect of his evidence convincing and insofar as MC sought to soften the degree of physical impairment were the pleaded negligence of 6-9 minutes proved, I reject his stance as insufficiently reasoned.
188. In respect of cognitive functioning MC assumed a roughly linear progression of damage from APA: the amount of damage done would be greater the longer APA goes on. He agreed that in his report he had not drawn a distinction between delivery at 1520 and 1523 and when in examination in chief he said that DS could have obtained a low normal cognitive function, (that is an IQ of 80 where as in his report he said 70-80), he explained his reasoning as being that 6 or 9 minutes are a significant percentage of the total APA and so there must be a difference, albeit he could not provide a detailed assessment of the difference.
189. He had done a mathematical equation setting the proportion of damaging APA against the number of IQ points. This led him to assert that if the 6 or 9 minutes had been saved then DS would have retained an IQ of 75, i.e. half the cognitive impairment would have been avoided. It was put to him that IQ cannot be predicted in that blunt way and he agreed that he did not have any expertise on this discreet topic but he was simply explaining his opinion. Mr Evans QC put that even doing the mathematical calculation, if 25-33% of the damaging asphyxia would have been saved MC should have suggested an IQ improvement from 50 to 62-66 not 70-80. But the witness did not agree, he thought that 25% of a damaging element of asphyxia was more than minimal and therefore likely to have had more than a proportionally significant impact. I found this evidence unconvincing because there was no scientific basis for MC's calculation, which was close to guesswork and it was appropriate for MC to concede that he was not able to rely on research or discrete expertise to justify his opinion in this regard.

190. MC's calculation was that the reduction in insult would have taken DC out of the learning disability range he is in now into the low normal range. He also made allowance for the period of time taken for resuscitation and his view that a lesser period would inevitably have had an impact on cognitive functioning whether or not a linear calculation was justifiable. DS with a low normal range of IQ would have been able to enjoy more independence on a day to day basis with support for his physical difficulties and he would have been much more able to find solutions to daily problems for example getting dressed getting in and out of the bath and a much better chance of getting employment as well as a much better chance of becoming continent. However, he would still not have had capacity to manage his financial and legal affairs although, as recorded above, he may have had capacity for every day decisions.
191. In re-examination he confirmed that he had seen no evidence that the microcephaly was due to something other than the damage at birth. The agreed evidence is that DS's head circumference at birth was quite large but it declined in the first months after birth and the most likely reason in MC's view is that some acute insult at birth has had that impact of impaired brain growth and consequent microcephaly.
192. LR was also called during the trial and he confirmed that the recent MRI scan has changed the position of the experts regarding causation. He remained challenged by the microcephaly. It is an unusual outcome but on the balance of probabilities he was prepared to accept that it was caused by the hypoxia. DS's case was one of a remarkably long period of APA which in many less robust children would have resulted in profound rather than (merely) severe difficulties. There was no scarring in the white matter of the brain which is unusual when there is microcephaly and LR conceded that it was possible that there would have been less microcephaly with earlier delivery but he was not sure about that. It was not the same as there being less spasticity, about which he agreed with Doctor Clarke. In re-examination he reconfirmed his position that on the balance of probabilities microcephaly was caused by the APA but it was not possible reliably to expand on that statement in terms of timing and progress.
193. He was also asked in cross examination about MC's IQ hypothesis. His reply was
- "My clinical experience of many children exposed to APA is that there is a gradation of impairment...if only 5 minutes of APA insult then the individual would have disabilities but be largely mobile and largely cognitively intact by 10 minutes of APA insult a child would need a wheelchair for outdoor use and some degree of speech impairment and cognitive impairment. By 15 minutes of damaging hypoxia a child would be much more severely damaged...so I agree with the linear progression though it is not supported by research papers etc".
194. The effect of his evidence is that even with the maximum reduction in the relevant period, contended for by the Claimant, delivery at 1520 followed by 5 minutes of resuscitation the period of damaging hypoxia would have been a minimum of 15 minutes (1510-1525). With that period LR's assessment is of a severely damaged child, as DS is now.
195. LR maintained his position that although a lesser period of APA insult such as 6-9 minutes would have led to "a few more IQ points" in DS's case there would have been no material difference to his cognitive functioning.

Findings on Causation

196. On the basis of saving 6-9 minutes of negligent delay:
- i) It is agreed that DS's motor functions would not be materially different.
 - ii) Although there is understood to be a relationship between the duration of an acute profound hypoxic episode and the severity of brain injury caused, the relationship is not simple to define. The Claimant was apparently a healthy and robust foetus. He suffered a long period of hypoxia, at least 39 minutes (1500-1539) but more probably longer. Making an allowance of the generally accepted 10 minutes of non-harmful hypoxia (as described by the paediatric neurologists), he survived at least

29 minutes of injurious hypoxia but displays less profound injury than might be expected after that period of exposure. His neurological disabilities are atypical and not at the most severe end of the spectrum.

iii) While common sense suggests that a reduction of 6-9 minutes of exposure (as a proportion of the whole) would have made a difference to DS's cognitive abilities it is difficult to be certain, whether it would have been a material difference. This is especially so when DS's atypical radiology results are taken into account however, I have to apply a lower threshold of proof, namely the balance of probabilities.

iv) I am unable to decide on the evidence that AE is right when he says that had the 6-9 mins of alleged negligence been saved and DS been delivered at 1520 or 1523 DS would probably not have required more than five minutes of resuscitation. This evidence was based on his opinion that resuscitation is a process and progressive and although a healthy heart beat of 100bpm was not recorded as achieved by DS until 15 minutes post-delivery, he is likely to have recovered somewhat before that time. The difficulty with his analysis was, as he admitted in cross-examination, that he was making an assessment based on educated speculation rather than reliance on the resuscitation notes. He also disregards the evidence JR considers to be important; the fact that at 14.05 mins post-delivery DS was given a dose of adrenalin.

v) I accept JR's evidence, which was not contradicted by AE in this respect, that the training and algorithms of good practice relevant to neonatal resuscitation would not indicate adrenalin, which is a strong drug, unless necessary and it would be unlikely to be necessary if DS had been recovering already by 14.05 minutes post-delivery. The function of adrenalin is to stimulate the heart rate. It follows that I am not able to accept the AE's evidence that resuscitation time even with an earlier birth would have been much less than 8 minutes.

vi) If MC's attempt to use a mathematical formula to calculate a proportional improvement to DS's IQ were to be adopted, bearing in mind my finding that even after a birth 9 minutes earlier JR is right to predict 8 minutes or so of resuscitation, probably, at best an improvement in IQ from 50 (at present) to below 70 would result.

vii) In any event, AE, as C's neonatal expert, defers to the paediatric neurologists as to the difference in function that saving 6-9 minutes would have made. However, on all the evidence I have read and heard, I am persuaded that if birth had been as much as 9 minutes earlier, a substantial proportion of the total hypoxic insult would have been avoided and although I cannot calculate it exactly I am satisfied on the balance of probabilities that it would have made a material difference to DS's cognitive abilities so that although the care support he needed may have been the same his ability to manage himself, to make daily (not legal) decisions and the degree to which he would be able to join in his care would have been substantially improved.

viii) On the other hand, in all the circumstances the Claimant has not persuaded me that it is likely he would have suffered materially less injury had he been delivered 6 minutes before 1529 on 4th June 2005. DS was bound to suffer significant brain damage from the acute hypoxia following placental abruption until resuscitation and although a saving of 6 minutes before delivery and a consequential shorter period of necessary resuscitation may have made some proportionally minor difference to his cognitive functioning, it is impossible to say to what extent that saving of time would have improved his current condition.

197. On the basis of the negligent delay of 3 minutes I have found proved, my conclusion is that for all the reasons set out above, the Claimant has not proved on the balance of probabilities that but for the negligent delay in delivery of 3 minutes, he would have not sustained brain damage or that the damage he has suffered would have been materially less severe in its impact on his ability and capacity.

Conclusion

198. A small clutch of minutes that pass by unmarked in daily life can be of vital significance to the health of a foetus about to be born. The medical professionals who care for a mother and baby in labour carry a heavy burden of responsibility. When labour goes wrong unexpectedly it is always right to call those professionals to account for their reactions albeit the examination takes place retrospectively and with the inestimable benefit of hindsight. Whether or not a baby was deprived of oxygen during birth due to the fault of any person owing a duty of care to the child, was the principal question for the court. If negligence be proved, and no, or no such severe, injury would otherwise have been caused, compensation for the injury is to be paid. If not, though the injury remain, no award can be made.
199. This is a very sad case. DS deserves a life as happy and free from concern as any other 10 year old child. He has the inestimable benefit of being lovingly cared for by his mother and grandmother. This trial has aired all that can be discovered about the events immediately before and after his birth. It is with regret but no hesitation that I am unable to make findings which would compel a financial award to be made so as to lessen the impact of his disability on his future life.
200. I intend to deal with any consequential applications administratively if possible.