

CANADA / JUDGMENT

Medina v. Wong

2018 BCSC 292

COURT

Supreme Court of British Columbia

DECIDED

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IN THE SUPREME COURT OF BRITISH COLUMBIA

Citation:

Medina v. Wong,

2018 BCSC 292

Date: 20180228

Docket: S154056

Registry: Vancouver

Between:

Cesar Alonso Medina, an infant by his Litigation Guardian,

Karalyn Stanley-Clarke

Plaintiff

And

Dr. Grover Wong, Dr. Laurie Anne Neapole, Fraser Health

Authority operating a public hospital Royal Columbian Hospital

and the said Royal Columbian Hospital

Nurse Jane Doe #1, Nurse Jane Doe #2 and Nurse Jane Doe #3

Defendants

Before: The Honourable Mr. Justice Abrioux

Reasons for Judgment

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Place and Date of Trial:

Vancouver, B.C.

October 16-19, 23-27, 30-31,

November 1-2, 6-9, 2017

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I: INTRODUCTION

- [1] The infant plaintiff Cesar Medina, who was delivered by emergency caesarean section on June 24, 2012, brings this proceeding by his mother, Karalyn Stanley-Clarke, for damages suffered at birth.

- [2] Cesar, who is now 5 years old, has been profoundly disabled since his birth. He sustained a catastrophic brain injury, has cerebral palsy and is 100% dependent on others for all aspects of his care. He cannot walk or talk.
- [3] The trial was restricted to liability. Damages were agreed to by the parties, leaving two issues:
- a) whether the defendants failed to adhere to their respective standards of care; and
 - b) causation.
- [4] Dr. Wong is a family physician with a significant practice in obstetrics. He was the physician responsible for the initial primary care of the plaintiffs on June 24, 2012.
- [5] Dr. Neapole is a physician who specializes in obstetrics. After being consulted by Dr. Wong, she delivered Cesar by caesarean section.
- [6] The defendants, Jane Doe #1, #2 and #3, are obstetrical nurses Natalie Howe, Kim Mahal and Elizabeth White, who attended to Ms. Stanley-Clarke and provided nursing care to her at various times upon her admission to the Royal Columbian Hospital (the "Hospital") on June 24, 2012.
- [7] Reduced to its essentials, the plaintiff's theory of the case is that Cesar sustained an acute hypoxic-ischemic brain injury during his delivery.
- [8] As explained by Dr. Michael Marrin, one of the plaintiffs' experts:

Hypoxia is the state in which there is insufficient oxygen in the blood to meet the body's normal metabolic needs. Ischemia refers to an insufficient flow of blood to the body's tissues. Of the two, ischemia is the less well tolerated as the lack of sufficient blood flow results not only in impaired oxygen and glucose delivery but also impaired removal of carbon dioxide and other metabolic wastes. While hypoxia alone may be tolerated by the brain for several hours ischemia cannot be tolerated for more than several minutes. In the majority of cases involving the fetal or immediate newborn periods both phenomena are almost always present.

- [9] The plaintiffs allege that the defendants, individually and collectively as an obstetrical team, failed to provide Cesar and his mother with the safe medical treatment to which they were entitled.
- [10] In their written closing submissions, the plaintiffs say the following:
- The heart of Cesar's case is that the plaintiffs were entitled to timely and competent medical intervention leading up to the time of delivery.
 - A central feature of the case is risk management.
 - Had the defendants met their respective standards of care, Cesar would have been born an hour or more earlier, thereby avoiding or minimizing his injury.

[11] In response, the defendants' position is that:

- They met or exceeded their respective standards of care.
- The plaintiffs have not proven that an acute hypoxic event occurred during the delivery.
- In any event, the plaintiffs have not established that an earlier time of delivery would have avoided or minimized Cesar's condition at birth and thereafter.

[12] In their reply submissions, the plaintiffs say that taking into consideration all of the expert evidence "results in the inference that the injury likely occurred during the last 14 minutes before birth".

[13] One of the key issues to be decided is the interpretation of the fetal heart monitoring strips and what the plaintiffs allege was and/or should have been done by the defendants as a result.

[14] As Justice Satanove [Kloegman] stated in *Smith et al v. Grace et al*, 2004 BCSC 395 at para. 5:

It is trite to say that just because a baby is born with brain damage, it does not mean that the medical professionals involved in his birth were negligent. However, given the plethora of personal injury claims in our courts arising out of the birth process, some classic statements of law bear repeating. In *Whitehouse v. Jordan*, [1980] 1 All E.R. 650 (C.A.), Lord Denning said the following at 652-53:

Being born is dangerous for the baby. So much so that an eminent professor in this case tells us that: "Throughout history, birth has been the most dangerous event in the life of an individual and medical science has not yet succeeded in eliminating that danger." He parodies the psalmist by referring to "valley of the shadow of birth".

[15] This has its legal consequences. It follows that, when a baby is still-born or dies soon after birth or is born damaged or deformed, that fact alone is no evidence of negligence on the part of the doctors or nurses attending the birth. It does not speak for itself. The maxim *res ipsa loquitur* does not apply. In fact, the maxim should be treated as "expired". *Fontaine v. British Columbia (Official Administration)*, [1998] 1 S.C.R. 424.

[16] For the reasons that follow, while this is indeed a tragic case, the action is dismissed.

II: BACKGROUND

[17] For the most part, the facts are not in dispute. The following chronology of events describes what occurred on June 24, 2012, and consists largely of an edited version of background facts taken from the parties' written submissions, principally those of the plaintiffs.

[18] In these reasons, the summary of facts that follows reflects evidence that either was not in dispute, or, where it was in dispute, I have made factual findings based on a consideration of the evidence as a whole.

- [19] Later in these reasons, I shall outline the plaintiffs' claims against the various defendants and the alleged factual basis upon which they are made. To the extent required, I will then make additional findings of fact and reach certain conclusions based on my consideration of the evidence as a whole.
- [20] Attached as Appendix A to these reasons is an excerpt from page 37 of the Society of Obstetricians and Gynecologists of Canada ("SOGC") guidelines relating to the interpretation of fetal heart monitoring. Appendix B consists of the Fraser Health Electronic Fetal Heart Monitoring Guide (the "Fraser Health Card") which was available on the ward and attached to the fetal heart monitors in the Labour and Delivery ward. This card is modelled after the SOGC guidelines and essentially incorporates Appendix A and classifies electronic fetal monitoring into three categories "normal", "atypical" and "abnormal". The card also sets out the "action required" in relation to the three categories.
- [21] Attached as Appendix C is a table prepared by counsel for the defendant Health Authority, which sets out the various electronic fetal heart monitoring interpretations in this case. The appendix does not include Nurse Howe's interpretation of what she considered to be a profound deceleration of Cesar's heart rate commencing at 12:15 on June 24, 2012.

The Gestation Period

- [22] Karalyn Stanley-Clarke was born on March 3, 1985. She was 27 years old when Cesar was born. Her pregnancy with Cesar was her first pregnancy. Leading up to the date of delivery, it was healthy.
- [23] On December 22, 2011, an ultrasound indicated that she was 13 weeks and 5 days into her pregnancy, plus or minus one week. No abnormalities were seen in the fetus.
- [24] On February 2, 2012, a second ultrasound confirmed that the fetal position was cephalic, the placenta was anterior and the amniotic fluid was normal. No abnormalities were observed.
- [25] On May 24, 2012, a microbiology exam confirmed that Ms. Stanley-Clarke was positive for Group B Streptococcus ("GBS").

The Delivery

- [26] On June 24, 2012, at approximately 07:30 hours, Ms. Stanley-Clarke attended the Hospital. It was noted that her contractions began around 03:00 that morning, her membranes were intact and she was GBS positive. At the time, there were no pregnancy concerns.

- [27] At approximately 07:40, Nurse Howe assessed the fetal heart rate (referred to as "FHR" in expert reports, guidelines and testimony) by intermittent auscultation. She assessed the fetal heart rate to be 155 beats per minute ("bpm"), with a regular rhythm, accelerations--including an acceleration with fetal movement to 170 bpm--and no decelerations. She classified the fetal heart rate as normal. She was satisfied that the baby was healthy and there were no concerns with respect to fetal well-being.
- [28] At 08:05, Nurse Howe performed a vaginal examination of Ms. Stanley-Clarke. On examination she found that her cervix was 2-3 cm dilated, 100% effaced and the baby's head was at the spines. She also found there was no loss of fluid.
- [29] At approximately 08:00, Nurse Howe called Dr. Wong to advise him that Ms. Stanley-Clarke was in hospital and that she was GBS positive. He gave an order to start treatment with Penicillin G and to let her walk around.
- [30] At approximately 08:25, intravenous Penicillin G was started for Ms. Stanley-Clarke.
- [31] At 09:05, Nurse Mahal assessed the fetal heart rate by intermittent auscultation. She assessed the fetal heart rate to be 156 bpm, with regular rhythm, accelerations and no decelerations. She classified the fetal heart rate as normal. She felt that the baby was well and that the fetal monitoring strip showed no worrisome features. She also noted that Ms. Stanley-Clarke's contractions were occurring every 5 minutes, her blood pressure was 141/84, her pulse was 86, her temperature was 37.6 and her respiration rate was 18.
- [32] At 09:50, an unidentified nurse performed an assessment of the fetal heart rate by intermittent auscultation. She assessed the fetal heart rate to be 158 bpm, with regular rhythm, accelerations and no decelerations. She classified the fetal heart rate as normal.
- [33] At 10:40, Ms. Stanley-Clarke was assessed by Dr. Wong. While doing a vaginal examination of Ms. Stanley-Clarke, he noted significant swelling of the fetal scalp and gristle on Cesar's forehead. This led him to conclude that Ms. Stanley-Clarke's membranes had already ruptured. He noted that Ms. Stanley-Clarke needed low dose oxytocin when staff became available, and that an epidural was appropriate. He also ordered a complete blood count from the laboratory in preparation for the epidural.
- [34] At 11:20, Nurse Mahal performed an assessment of the fetal heart rate by intermittent auscultation. She assessed the fetal heart rate to be 154 bpm with regular rhythm, accelerations and no decelerations. She classified the fetal heart rate as normal. Again, she felt that the baby was well.
- [35] Around 12:00, the status of the fetal heart rate changed. Nurse Howe performed an assessment of the fetal heart rate by intermittent auscultation and assessed the fetal heart rate to be 170 bpm following contractions. She classified the fetal heart rate as abnormal.

- [36] Prior to this fetal heart rate assessment, all assessments were normal, indicating that the fetus was well and healthy. This was the first fetal assessment that fell outside the parameters of normal.
- [37] At 12:07, Nurse Howe commenced electronic fetal heart rate monitoring ("EFM") in response to the abnormal fetal heart rate and Tracing #1 began. Cesar's heart rate was recorded to be 165 bpm.
- [38] Nurse Howe advised Nurse Mahal that she had commenced EFM in response to a tachycardia assessed on intermittent auscultation. She asked Nurse Mahal to watch the tracing, then left Ms. Stanley-Clarke.
- [39] It was Nurse Howe's expectation that Nurse Mahal would attend the patient and do a systematic assessment of the fetal heart rate. Nurse Mahal understood that this was what was expected of her.
- [40] Nurse Howe did not inform Dr. Wong of the abnormal fetal heart rate noted at 12:00. It was her expectation that once she passed off care to Nurse Mahal, it would become Nurse Mahal's responsibility to talk to Dr. Wong. Nurse Mahal understood that if a fetal tachycardia was confirmed, this would be part of her report to Dr. Wong.
- [41] Shortly after Tracing #1 began at 12:07, Nurse Mahal formally assumed care of Ms. Stanley-Clarke.
- [42] At 12:15, Cesar experienced what some of the witnesses described as a prolonged fetal heart rate deceleration down to 80 bpm, lasting more than 3 minutes.
- [43] Around 12:15, the obstetrician, Dr. Neapole, began discussing her recommendation for a caesarean section with a different patient attempting vaginal birth after caesarean section (the "VBAC patient").
- [44] At 12:25, Dr. Neapole booked the operating room ("OR") for the VBAC patient's caesarean section.
- [45] At 12:30, Nurse Mahal administered a second dose of penicillin to Ms. Stanley-Clarke for the GBS and reviewed the fetal heart tracing. She noticed that there was an uninterpretable section of the tracing beginning at 12:15, and that when the tracing resumed there was a normal baseline, good variability, accelerations and no decelerations.
- [46] At 12:35, Nurse Mahal noticed an event on the fetal heart tracing that she interpreted as capturing the maternal heart rate instead of the fetal heart rate. She confirmed this was the case by taking Ms. Stanley-Clarke's pulse, and made a note of "MHR" on the tracing.
- [47] At 12:49, Nurse Mahal paged Dr. Wong due to her concerns with the fetal heart tracing and her desire to attach a fetal scalp electrode for a more accurate reading.

- [48] Around 12:50, Cesar experienced what some witnesses described as a prolonged fetal heart rate deceleration lasting more than 3 minutes.
- [49] At 12:55, Nurse Mahal applied a pulse oximeter to provide a tracing of the maternal heart rate on the tracing and to track Ms. Stanley-Clarke's oxygen saturation levels.
- [50] At approximately 13:00, Dr. Wong arrived to check on Ms. Stanley-Clarke. Around this time Nurse White assumed care of Ms. Stanley-Clarke.
- [51] At 13:05, Nurse White charted on the Labour Partogram that the baseline fetal heart rate was 160 bpm with moderate variability, accelerations and variable decelerations. She classified the fetal heart rate as atypical.
- [52] At 13:06, Ms. Stanley-Clarke was taken from the assessment room to a labour and delivery room and Tracing #1 ended.
- [53] At 13:11, Dr. Neapole's VBAC patient arrived in the OR for her caesarean section. Dr. Ramsden was the attending anesthesiologist for that operation.
- [54] Around 13:14, Dr. Wong applied a scalp electrode to Cesar and Tracing #2 began. He proceeded to review the fetal heart tracing back to 12:07 with Nurse White.
- [55] At 13:26, a progress note made by Dr. Wong indicated: (i) that there had been some variable decelerations and Ms. Stanley-Clarke needed to be moved to the labour room; (ii) a vaginal examination indicated that the cervix was 4 cm dilated; (iii) there was significant swelling of the fetal scalp; (iv) the presenting part was still at station -2; and (v) an epidural would be requested.
- [56] Around 13:26, Dr. Wong attempted to locate the anesthesiologist Dr. Ramsden in order to place the epidural. At this time, Dr. Wong learned that Dr. Ramsden was involved in another surgery and was unavailable. This was the VBAC patient's caesarean section that Dr. Neapole was conducting.
- [57] At 13:50, Dr. Neapole completed the VBAC patient's caesarean section. The VBAC patient left the OR shortly after.
- [58] Around 13:55, Dr. Ramsden arrived in the labour and delivery room to administer Ms. Stanley-Clarke's epidural.
- [59] At 14:07, Dr. Neapole dictated her OR notes for the VBAC patient.
- [60] At 14:10, the epidural was in place. Shortly after, Nurse White assessed the fetal heart rate and classified it as abnormal with good variability. She then paged Dr. Wong and asked him to return to the labour and delivery room.
- [61] At 14:16, Dr. Wong returned to the labour and delivery room.

- [62] At 14:20, Dr. Wong paged Dr. Neapole due to concerns about the decelerations on the fetal heart rate tracing.
- [63] At 14:27, Tracing #3 commenced.
- [64] Around 14:30, Dr. Neapole arrived in Ms. Stanley-Clarke's room to discuss options for delivery.
- [65] Around 14:40, the decision was made to proceed with a caesarean section. Ms. Stanley-Clarke's temperature was elevated at 38°C and her pulse was 113 bpm.
- [66] The OR was available when the decision was made to carry out the caesarean section.
- [67] At 14:45, the OR was reserved for the caesarean section and further antibiotics were administered to Ms. Stanley-Clarke.
- [68] The porter then arrived and transported Ms. Stanley-Clarke to the OR where she arrived at 14:55. Anesthesia was started at 14:56.
- [69] At 15:01, Tracing #4 commenced.
- [70] Around 15:10, the fetal heart monitor was removed in preparation for the caesarean section.
- [71] At 15:16, the surgery commenced.
- [72] At 15:23, Cesar was delivered by caesarean section.
- [73] At 15:49, the procedure was complete and Ms. Stanley-Clarke left the OR shortly after.

Cesar's Post-delivery Condition

- [74] Cesar's Apgar scores were 1, 4, and 7, at 1, 5, and 10 minutes following birth, respectively. Thick meconium was noted and the umbilical cord was wrapped around the plaintiff's neck three times.
- [75] Cesar's blood lactate concentration after birth was elevated at 11.4 mmol/L. He was noted to be hypoglycemic and was treated with glucose boluses and hydrocortisone. Cesar's arterial cord gases were pH 7.1 with a base excess of -10.
- [76] Cesar required ventilation for 24 hours, and a further 24 hours of continuous positive airway pressure. He began having seizures at 8 hours of age.
- [77] Cesar's treating neonatologist, Dr. Al-Nudaffer, assessed him as having a Sarnat score of 2 on a scale of 0 (normal) to 3 (severe). Sarnat staging is a classification system for the severity of hypoxic-ischemic brain injury in newborns.

[78] The placental pathology report indicated the presence of moderately severe acute chorioamnionitis (acute inflammation involving the chorion and amnion layers of the fetal surface of the placenta) and acute chorionic vasculitis (acute inflammation of the fetal blood vessels branching out from the umbilical cord blood vessels radiating across the fetal surface of the placenta).

III: FETAL HEART RATE MONITORING AND REQUIRED ACTION PER ACCEPTED GUIDELINES

[79] The defendants Dr. Wong, Dr. Neapole, and Nurse White agreed that the purpose of medical attendance upon a labouring woman is to try to ensure, as much as possible, maternal and fetal well-being throughout labour and delivery. A difficulty in assessing the health of the baby lies in the fact that direct access to the baby is not possible. As a result, one of the primary methods of assessing fetal well-being is through monitoring the fetal heart rate, known as intrapartum fetal surveillance. There are two main methods of assessing. The first, intermittent auscultation, involves listening to the fetal heart rate. The second, EFM, involves the running of a continuous strip to assess the heart rate. The goal of monitoring is to recognize changes in the fetal heart rate and intervene before injury actually occurs.

[80] The SOGC Guidelines serve the important function of minimizing the variation in interpretation by using standard definitions and categorizing certain findings.

[81] All of the experts and defendants who testified in relation to the SOGC Guidelines agreed that these were the guidelines that they were expected to follow.

[82] Dr. Garry Feinstadt, a family physician qualified to give expert opinion with respect to the standard of care expected of a family practitioner and nursing staff when caring for labouring mothers, outlined the need for a systematic assessment of the fetal heart rate tracing, using the mnemonic DR C BRAVADO:

An established method of assessing FHR tracing is through the use of the following mnemonic:

DR C BRAVADO

- DR - determine risk: In the context of this case, for example, the primary risk would be the presence of GBS and the risk of ascending infection in the birth canal with possible fetal and neonatal sepsis.

- C - assess contractions: This refers to the frequency, duration and intensity of the uterine contractions.

- BR - determine baseline rate: The normal FHR range is 110-160 bpm. Below 110 is defined as a fetal bradycardia and above 160 is defined as a fetal tachycardia.

- A - assess accelerations: Acceleration is defined as an abrupt increase in the FHR in <30 seconds to at least 15 beats above the baseline and lasting at least 15 seconds but less than 2 minutes.

· VA - assess variability: Variability refers to fluctuations in the baseline FHR. Variability is defined as:

Undetectable Absent

<-5 BPM Minimal

6-25 BPM Moderate

25 BPM Marked

· D - assess decelerations: Variable Decelerations are defined as a visually apparent abrupt decrease in the FHR reaching its nadir in less than 30 seconds and an abrupt return to baseline. Variable decelerations are divided into uncomplicated and complicated. Complicated variable decelerations may be indicative of fetal hypoxia.

o Late Decelerations are defined as a visually apparent gradual decrease in the FHR and return to baseline with the onset of the deceleration to the nadir of at least 30 seconds. The onset, nadir and recovery of the deceleration occur after the beginning, peak and ending of the contraction respectively. Late decelerations are found in association with uteroplacental insufficiency and imply some degree of hypoxia.

o Early decelerations tend to be associated with contractions and mirror the contraction. They are generally thought to represent head compression and are thought to be benign.

o A single deceleration lasting more than 3 minutes and less than 10 minutes defines the tracing as abnormal.

· O - overall assessment: FHA tracings are defined as Normal, Atypical, and Abnormal. According to the EFM cards from Fraser Health Authority in use in 2012, the presence of an Abnormal tracing requires prompt action.

[83] Nurse Angela King, an obstetrical nurse who was qualified to give expert opinions regarding the standard of care expected of obstetrical nurses, provided in her report of August 19, 2017, a similar but not identical description of the terms used in fetal heart monitoring and difficulties which may arise:

I agree that it is vital to know when a deceleration is occurring in relation to the contraction when you are trying to determine between an early deceleration and a late deceleration, however, Ms. Stanley- Clarke's fetal monitor tracing displayed variable decelerations. An obstetrical nurse knows that variable decelerations occur during uterine contractions due to umbilical cord compression. The umbilical cord is compressed during the contraction causing an abrupt decrease in the fetal heart rate followed by an abrupt increase. When variable decelerations occur, it may indicate the umbilical cord could be beside the head of the fetus or around the neck of the fetus. The Delivery Record indicated the umbilical cord was noted around Baby Boy Stanley-Clarke's neck three times at birth.

Decelerations are decreases in the fetal heart rate from its baseline. The duration and the occurrence of the deceleration in relation to the contractions are interpreted accordingly.

Variable decelerations are a response of the fetal heart rate to cord compression and usually occur during a contraction. They are V-shaped on the fetal monitor tracing and are referred to as being uncomplicated or complicated.

Uncomplicated variables begin with an acceleration followed by an abrupt decrease in the fetal heart rate by at least 15 beats below the baseline. The deceleration lasts at least 15 seconds to under 2 minutes in duration followed by a rapid return to baseline fetal heart rate and a secondary acceleration.

Complicated variables may have the following characteristics:

- rapid decrease in the fetal heart rate less than 70 beats per minute for more than 60 seconds;
- loss of variability (fetal heart rate fluctuation);
- biphasic deceleration (2 decelerations occurring right after another without return to baseline fetal heart rate in between);
- prolonged secondary acceleration over 20 beats per minute above baseline lasting more than 20 seconds;
- presence of fetal tachycardia (fetal heart rate > 160 beats per minute for 10 minutes); and
- presence of fetal bradycardia (fetal heart rate < 110 beats per minute for 10 minutes).

Late decelerations are a gradual decrease in the fetal heart rate with a gradual return to baseline fetal heart rate. These decelerations appear to be spoon-shaped on the fetal monitor tracing. The deceleration begins at the peak of the contraction and returns to baseline after the contraction has completed. Late decelerations indicate uteroplacental insufficiency (decreased circulation and oxygen supply to the placenta, thereby decreasing oxygen supply to the fetus).

As stated earlier in this report, the more subcutaneous (fatty) tissue that is on the abdomen, the more difficult it is for the toco transducer to determine any pressure or record uterine contractions accurately, it is also more difficult for the nurse to palpate uterine contractions on a patient with more subcutaneous tissue. An obstetrical nurse can spend endless time trying to get an accurate recording of the uterine contractions. No matter how many times the toco is repositioned, the patient is repositioned or how long the nurse palpates the abdomen, reality is that in some circumstances it may not be possible to obtain a clear tracing of uterine contractions.

IV: THE LEGAL FRAMEWORK

[84] An action for negligence requires proof of a duty of care, breach of the standard of care, compensable damage and causation: *Ediger v. Johnston*, 2013 SCC 18 at para. 24 [Ediger - SCC].

Duty of Care

[85] A doctor's duty of care to a patient is comprehensive and includes a duty to assess, diagnose, communicate and to refer when required: *Pinch (Guardian ad litem of) v. Morwood*, 2016 BCSC 938 at para. 147.

[86] Nurses also owe a comprehensive duty of care to their patients: *Jackson v. Kelowna General Hospital*, 2006 BCSC 279 at para. 34, *aff'd* 2007 BCCA 129.

[87] Both doctors and nurses owe a duty of care to a fetus subsequently born alive: *Steinebach (Litigation guardian of) v. Fraser Health Authority*, 2010 BCSC 832 at para. 44.

[88] There is no dispute in this case that the defendant doctors and nurses owed the infant plaintiff and his mother a duty of care.

Standard of Care

Physicians and Specialists

[89] All physicians have a duty to conduct their practice in accordance with the conduct of a prudent and diligent doctor in the same circumstances. The standard was summarized in *Crits v. Sylvester*, [1956] O.R. 132 at 143, *aff'd* [1956] S.C.R. 991:

Every medical practitioner must bring to his task a reasonable degree of skill and knowledge and must exercise a reasonable degree of care. He is bound to exercise that degree of care and skill which could reasonably be expected of a normal, prudent practitioner of the same experience and standing.

[90] Specialists, such as obstetricians, are held to a higher standard than generalists. In *ter Neuzen v. Korn*, [1995] 3 S.C.R. 674, the Supreme Court of Canada outlined the standard applicable to specialists at para. 33:

In the case of a specialist, such as a gynaecologist and obstetrician, the doctor's behaviour must be assessed in light of the conduct of other ordinary specialists, who possess a reasonable level of knowledge, competence and skill expected of professionals in Canada, in that field. A specialist, such as the respondent, who holds himself out as possessing a special degree of skill and knowledge, must exercise the degree of skill of an average specialist in his field.

- [91] Medical procedures can change rapidly as scientific knowledge develops in a particular area. Medical practitioners are not required to be clairvoyant during these periods of transition. Physicians and specialists will not be found liable if the diagnosis and treatment they provide corresponds with the recognized medical science at the time of the alleged negligence: *ter Neuzen* at para. 38.

Nurses

- [92] The standard of care owed by a nurse was described in *Durnin v. Victoria Hospital*, 2012 ONSC 320 at paras. 18-19:

Nurses have a duty to use their professional skill and knowledge in making appropriate assessments of patients and to accurately communicate those assessments to physicians. Nurses must exercise the care and skill that is reasonably expected of a prudent and careful nurse in similar circumstances.

- [93] Like obstetricians, obstetrical nurses are held to a higher standard than general nurses when providing obstetrical care. They are expected to be more proficient as a result of their specialization and are assessed relative to other nurses with similar expertise and knowledge.

Team Approach to Obstetrics

- [94] In a hospital setting, obstetrical care is provided by a complement of doctors and nurses working as a team. The team dynamic requires effective communication and a reasonable degree of skill and diligence from all members of the team in order to provide effective treatment.
- [95] This structure informs the applicable standard of care. Members of an obstetrical team are entitled to rely on the accuracy of information given to them by the other care providers. As a result, when there is a defect in the overall care provided by an obstetrical team, the court must assess the conduct of the team members individually to determine if any of them breached the standard of care: *Granger (Litigation Guardian of) v. Ottawa General Hospital* (1996), 7 O.T.C. 81 (Ct. J. Gen. Div.) at para. 43, citing *Anderson v. Salvation Army Maternity Hospital* (1989), 93 N.S.R. (2d) 141 (S.C.T.D.).
- [96] In *Granger*, the court described the team approach to obstetrics and its implications at paras. 40-42:
- [40] those involved in obstetrics work as a team and that the interaction between members of that team is vitally important particularly in terms of reliance on one another for the provision of accurate information . . . We simply do not have the financial resources to enable every professional to double check the work of other professionals and because each professional within the obstetrical team has a defined role, it is essential that each person's role be carried out within a standard of care and training appropriate to the professional involved.

- [41] If staff obstetricians, for example, cannot rely upon staff obstetrical nurses to provide accurate assessments, given all of the constraints under which they are operating, I am satisfied our system would fail . . . It is not for the obstetrical nurse to fully understand all of the subtleties that may be determined on a fetal heart monitor strip, but it is the responsibility of that nurse to understand and report problems to someone else on the obstetrical team, problems such as severe persistent variable decelerations.
- [42] . . . The staff obstetrician should be entitled to rely upon the information being given to him or her by the staff nurse on the understanding that the nurse, assigned by the hospital to these duties, has been properly trained, is sufficiently experienced and knows what he or she is doing at all times within the scope of his or her professional responsibilities.

Competing Schools of Thought

- [97] In certain circumstances, medical practitioners, acting reasonably, may reach opposite or different conclusions based on the same medical evidence. This is particularly common when the state of scientific knowledge is in flux and there is more than one recognized body of medical opinion regarding a diagnosis or course of treatment.
- [98] Expert medical evidence is necessary to determine if two valid, competing schools of thought actually exist. After considering all of the evidence, the trier of fact must be convinced that there is more than one viable approach, not simply a handful of expert witnesses who say they would have approached a particular clinical situation differently. In *Cleveland v. Whelan*, 2011 ONCA 244, the court discussed the necessary caution when considering this "respectable minority principle" at para. 51:

The courts have recognized that the respectable minority principle does not absolve a doctor from liability in negligence whenever there is a conflict in the expert evidence led at trial concerning the reasonableness of a doctor's conduct . . . As Picard and Robertson point out in *Legal Liability of Doctors and Hospitals in Canada* at p. 364, "were it otherwise, nearly every medical negligence case would be resolved in favour of the doctor, because they almost always involve a conflict of expert evidence."

- [99] The jurisprudence is clear that the role of the court is not to weigh the competing schools of thought and assess their relative merit. Rather, the task is to determine if a medical practitioner has acted in accordance with one of the accepted courses of diagnosis and treatment. If they have, they will not be found to have breached the standard of care: *Belknap v. Meakes* (1989), 1 C.C.L.T. (2d) 192 at paras. 79-80 (B.C.C.A.); *Brimacombe v. Dr. Matthews*, 2001 BCCA 206 at para. 90.

Errors of Judgment

- [100] Medical practitioners should not be held liable for errors of clinical judgment that are distinguishable from professional fault: *Lapointe v. Hôpital Le Gardeur*, [1992] 1 S.C.R. 351 at 720.
- [101] Clinical judgment is not guesswork based on incomplete information. Exercises of clinical judgment are decisions made by medical practitioners once they have considered all of the relevant information it is reasonably possible to obtain under the circumstances. This includes the results of tests and consultations: *Campbell v. Roberts*, 2014 ONSC 5922 at para. 100.
- [102] This statement applies to both doctors and nurses, with the caveat that a nurse's discretion is more limited because they do not occupy the same diagnostic role as doctors and cannot depart from a doctor's instructions absent clear and obvious negligence or incompetence: *Tekano (Guardian ad litem of) v. Lions Gate Hospital* (1999), 16 B.C.T.C. 194 at paras. 109-110 (S.C.).
- [103] It is important to note that an error of judgment does not necessarily shield a medical practitioner from liability. The error must be assessed relative to the conduct of a reasonable practitioner in similar circumstances. As stated in *Whitehouse v. Jordan*, [1981] 1 All E.R. 267 at 281 (H.L.):

Merely to describe something as an error of judgment tells us nothing about whether it is negligent or not . . . it depends on the nature of the error. If it is one that would not have been made by a reasonably competent [professional] professing to have the standard and type of skill that the defendant held [themselves] as having, and acting with ordinary care, then it is negligence. If, on the other hand, it is an error that a [professional], acting with ordinary care, might have made, then it is not negligence.

See also: *Brodeur v. Provincial Health Services Authority*, 2016 BCSC 968 at paras. 104-105.

Foreseeable Degree of Risk

- [104] The standard of care is sensitive to the degree of foreseeable risk. If a medical practitioner has, or ought to have, knowledge of a particular risk to a patient, the standard of care is more demanding in relation to that risk: *Brodeur* at para. 107; *Ediger v. Johnston*, 2009 BCSC 386 at para. 49, *aff'd* 2013 SCC 18 [*Ediger - BCSC*].

Charting

- [105] In their exercise of due care, doctors and nurses have a positive obligation to take notes and chart their findings where appropriate. The court in *Fullerton (Guardian ad litem of) v. Delair et al.*, 2005 BCSC 204, *var'd* on other grounds 2006 BCCA 339, stated at para. 175:

The duties of a nurse include reliable and accurate charting. The chart is the common source of information and direction for patient care and the absence of contemporaneous chart entries at crucial points permits the court to infer that nothing was charted because nothing was done.

[106] More recently, this Court in *Pinch* at paras. 113-114, reaffirmed that when the required charting is not completed by a doctor or nurse, the court is permitted to draw the inference that no care was provided. See also *Gemoto* at para. 100.

Guidelines

[107] Clinical guidelines, including hospital policies and protocols, are useful evidence of the standard of care, but they are not determinative: *Ediger - BCSC* at paras. 52-60. Guidelines provide predictability and assist practitioners in the everyday delivery of services, but the trier of fact must determine the applicable standard of care based on all the available evidence. This discretion is not inconsistent with ensuring that patients in Canada receive clinical care be based on published, objective and clearly articulable standards. See *Allen v. Bishop of Victoria*, 2016 BCSC 1078 at para. 36.

[108] If a medical practitioner acts in accordance with the relevant guidelines and policies, this is compelling evidence that their conduct did not fall below the standard of care. Conversely, if a medical practitioner fails to act in accordance with guidelines and policies, this can be compelling evidence that the standard of care was breached: *Kern v. Forest*, 2010 BCSC 938 at paras. 161-167.

Hospitals

[109] Broadly speaking, hospitals are required to take reasonable care for the safety of their patients: *Larche v. Ontario* (1990), 42 O.A.C. 391 at para. 9. This requires that the hospital, among other things, exercise the skill and diligence ordinarily employed by hospitals in a similar locale under similar circumstances: *Forde v. Inland Health Authority*, 2010 BCSC 91 at para. 18.

[110] More specifically, hospitals are responsible for ensuring that their staff members, including doctors and nurses, are reasonably qualified to do the work they are expected to perform: *Forde* at para. 19.

Damage

[111] There is no dispute in this case that the infant plaintiff suffered damage, the amount of which has been agreed to by the parties.

Causation

The "But For" Test

[112] The generally accepted test for causation that is appropriate in the vast majority of circumstances is the "but for" test. A claimant must demonstrate that their injury would not have occurred but for the negligence of the defendant. In *Clements v. Clements*, 2012 SCC 32, the Court described the analysis at paras. 9-10:

The "but for" causation test must be applied in a robust common sense fashion. There is no need for scientific evidence of the precise contribution the defendant's negligence made to the injury . . .

. . . A common sense inference of "but for" causation from proof of negligence usually flows without difficulty. Evidence connecting the breach of duty to the injury suffered may permit the judge, depending on the circumstances, to infer that the defendant's negligence probably caused the loss.

The Material Contribution Test

[113] In *Clements*, the Court also addressed the applicability of the rarely applicable "material contribution" test for causation. This approach has previously been employed when there are multiple defendants and it is difficult or impossible to determine which of them caused a claimant's injuries using the "but for" approach. The Court clarified the exceptional nature and limited applicability of the material contribution test in Canada at para. 46(2):

Exceptionally, a plaintiff may succeed by showing that the defendant's conduct materially contributed to risk of the plaintiff's injury, where (a) the plaintiff has established that her loss would not have occurred "but for" the negligence of two or more tortfeasors, each possibly in fact responsible for the loss; and (b) the plaintiff, through no fault of her own, is unable to show that any one of the possible tortfeasors in fact was the necessary or "but for" cause of her injury, because each can point to one another as the possible "but for" cause of the injury, defeating a finding of causation on a balance of probabilities against anyone.

Insufficient Evidence

[114] A claimant bears the onus of establishing causation on a balance of probabilities. She/he/they must lead sufficient evidence for the trier of fact to conclude that the defendant's negligence did, in fact and in law, cause the damage. When determining causation, a trial judge is entitled to take a robust and pragmatic approach that involves an assessment of all the available evidence: *Briante v. Vancouver Island Health Authority*, 2017 BCCA 148 at para. 155.

- [115] It is not enough for a claimant to establish that a medical outcome might have been better had the defendant(s) acted differently. The trier of fact must be convinced by the evidence that the outcome probably would have been more favorable to be satisfied of causation on a balance of probabilities: *Seattle (Guardian ad litem of) v. Purvis*, 2005 BCSC 1567 at para. 145, *aff'd* 2007 BCCA 349.
- [116] A trial judge may draw inferences with respect to causation if one party fails to lead sufficient evidence. This is an exercise of the trial judge's discretion, an example of which is described in *Briante* at para. 155:
- ... the trial judge may draw an adverse inference of causation against the defendant if the plaintiff presents at least some evidence and the defendant does not lead sufficient contrary evidence, though the judge is not required to draw such an inference: *Benhaim v. St Germain*, 2016 SCC 48 at paras. 41-42, 54.

The Thin Skull Doctrine

- [117] A tortfeasor does not escape liability for injuries that are more severe than expected because of a pre-existing vulnerability. This causation principle is known as the thin skull doctrine which was discussed this way by Justice Smith for a five-member division of the Court of Appeal in *T.W.N.A. v Canada*, 2003 BCCA 670 @ paras. 16-22:
- [16] Determining the cause of loss and damage must be kept separate from the assessment of damages to compensate for that loss and damage, since different principles govern the two questions. The analytical distinction between causation and compensation may be illustrated by reference to *Athey v. Leonati*. The appellant in that case suffered a disc herniation as a result of the combined effect of a pre-existing disposition and injuries he had sustained in two motor vehicle accidents. Major J., speaking for the court, distinguished between causation and the assessment of damages in his summary of the applicable principles:
- [41] ...If the injuries sustained in the motor vehicle accidents caused or contributed to the disc herniation, then the defendants are fully liable for the damages flowing from the herniation. The plaintiff must prove causation by meeting the "but for" or material contribution test. Future or hypothetical events can be factored into the calculation of damages according to degrees of probability, but causation of the injury must be determined to be proven or not proven.
- [17] Proof on a balance of probabilities that the wrongful conduct was a factual cause of the damage is necessary (*Athey v. Leonati* ¶ 13) but not sufficient to establish liability. The wrongful conduct must also be shown to be the legal cause of the injury, since a defendant is not liable for damage that is "too remote" from the wrongful conduct. At one time, it was thought that a defendant should be liable for all direct loss caused by his wrongful conduct, even if the particular loss was an unforeseeable consequence: *Re Polemis*, [1921] 3 K.B. 560 (C.A.). However, *Overseas Tankship (U.K.) Ltd. v. Morts Dock & Engineering Co. Ltd.*

("Wagon Mound"), [1961] A.C. 388 (P.C.), known as Wagon Mound No. 1, established that only reasonably foreseeable losses attract liability.

- [18] This qualification of the test for legal causation called into question the continuing vitality of the traditional "thin skull" rule, first announced in *Dulieu v. White and Sons*, [1901] 2 K.B. 669 at 679:

If a man is negligently run over or otherwise negligently injured in his body, it is no answer to the sufferer's claim for damage that he would have suffered less injury, or no injury at all, if he had not had an unusually thin skull or an unusually weak heart.

- [19] As Major J. said in *Athey v. Leonati*, this rule:

- [34] ...makes the tortfeasor liable for the plaintiff's injuries even if the injuries are unexpectedly severe owing to a pre-existing condition. The tortfeasor must take his or her victim as the tortfeasor finds the victim, and is therefore liable even though the plaintiff's losses are more dramatic than they would be for the average person.

- [20] *Smith v. Leech Brain & Co. Ltd.*, [1962] 2 Q.B. 405 addressed the rule in light of the new requirement of reasonable foreseeability. Mr. Smith, an employee of the defendant in its ironworks, was burned on the lip by a splash of molten metal as a result of a breach by the employer of its duty of care. The burn became malignant and Mr. Smith subsequently died. The burn was a cause-in-fact of the cancer, but the issue was whether it was the legal cause so as to make the defendant liable at the suit of Mr. Smith's widow, who relied on the thin skull rule, citing *Dulieu v. White and Sons*, *supra*. The employer argued that the rule was inconsistent with the reasonable foreseeability test announced in *Wagon Mound No. 1*, *supra*, and that while the burn was foreseeable, the cancer was not. Lord Parker C.J. concluded there was no inconsistency and found the defendant liable, stating, at 415:

...it seems to me that this is plainly a case which comes within the old principle. The test is not whether these employers could reasonably have foreseen that a burn would cause cancer and that he would die. The question is whether these employers could reasonably foresee the type of injury he suffered, namely, the burn. What, in the particular case, is the amount of damage which he suffers as a result of that burn depends upon the characteristics and constitution of the victim.

- [21] Thus, the thin skull rule is a rule of liability relating to legal causation. It was applicable in *Athey v. Leonati* because, as Major J. said:

- [47] ...The pre-existing disposition may have aggravated the injuries, but the defendant must take the plaintiff as he finds him. If the defendant's negligence exacerbated the existing condition and caused it to manifest in a disc herniation, then the defendant is a cause of the disc herniation and is fully liable.

- [22] The defendant is "fully liable" because liability cannot be apportioned between causes (Athey v. Leonati ¶ 19-23). Once causation has been proven, the tortfeasor is fully liable for whatever damage his or her wrongful conduct has caused the plaintiff.

V: THE EVIDENCE

- [118] I do not intend to set out a detailed summary of the evidence of each witness, including the experts who testified and/or whose reports were filed as exhibits at the trial. Rather, I shall set it out in a general way and leave certain details for discussion under the issues I need to consider. In reaching my conclusions, I have considered the totality of the evidence.

Ms. Stanley-Clarke

- [119] Ms. Stanley-Clarke testified that this was her first pregnancy. She stated that prior to June 24, 2012, the pregnancy had been very positive and no issues were raised. In particular there were no concerns about the fact that she was GBS positive.
- [120] She stated she recalled that when Dr. Wong initially examined her at the Hospital he was surprised that her membranes were not intact anymore. He asked her if she knew when her water had broken, to which she replied that as far as she knew this had not yet occurred. She recalled Dr. Wong being with her for a period of 10-15 minutes after the scalp clip for the fetal heart rate monitor was applied. She estimated that he was with her for about 30 minutes in total.
- [121] She was transferred to a delivery room at about 13:00 and later was administered an epidural injection because she was in severe discomfort. At no time did Dr. Wong advise her that the baby was in trouble, but he did mention that the labour was not progressing.
- [122] Ms. Stanley-Clarke testified that although she was aware of the fetal heart rate monitoring, at no time were any concerns raised by the nursing staff or Dr. Wong as to the health of the baby.
- [123] Ms. Stanley-Clarke recalled Dr. Neapole attending upon her, asking questions and conducting a vaginal examination. She agreed that Dr. Neapole reviewed certain options, which included proceeding with a vaginal delivery or undergoing a caesarean section. She also agreed that Dr. Neapole could have recommended a caesarean section, but did not recall specifically whether that had occurred. Her interaction with Dr. Neapole at this time took approximately 20 minutes.
- [124] Ms. Stanley-Clarke also recalled that during the operation the anaesthesiologist told her that "everything was ok".

The Defendants

[125] In order to consider the allegations against the defendants in the factual context most favourable to the plaintiffs, what follows is largely extracted from their written argument which includes references to evidence provided on examination for discovery that was read in as part of the plaintiffs' case. I will refer to additional portions of certain of the defendants later in these reasons.

Nurse Howe

[126] Nurse Howe first saw Ms. Stanley-Clarke at approximately 07:30 on June 24, 2012. At this point, Nurse Howe's understanding was that Ms. Stanley-Clarke was in early labour, she had a normal, healthy pregnancy, her membranes were intact and she was contracting every five minutes.

[127] Upon receiving Ms. Stanley-Clarke into her care, Nurse Howe performed her own assessment. She auscultated the fetal heart rate, took a prenatal history after looking at the chart, palpated Ms. Stanley-Clarke's abdomen and did a vaginal exam. To auscultate the fetal heart rate, she waited for a contraction to end and then auscultated for two minutes. Nurse Howe did not take Ms. Stanley-Clarke's temperature.

[128] Nurse Howe saw Ms. Stanley-Clarke "on and off" from 07:30 until 12:00. Between her first assessment and 12:00, Nurse Howe had no concerns about fetal well-being as all indicators were that the baby was healthy.

[129] At 12:00, Nurse Howe auscultated a fetal heart rate tachycardia of 170 bpm, in response to which she applied EFM for assessment. When EFM was applied, the fetal heart rate was found to be about 165 bpm, then 180 bpm. Nurse Howe recognized this as tachycardic, and was concerned about it.

[130] Nurse Howe understood at the time that Ms. Stanley-Clarke was GBS positive and that infection of the baby was possible even though antibiotics had been administered. She further understood that fetal tachycardia was a potential indicator of an infected baby, and for that reason it would be very important to carefully monitor the fetal heart rate.

[131] In response to the detection of fetal tachycardia on intermittent auscultation, Nurse Howe understood that various interventions set out in the Registered Nurse Initiated Activities Decision Support Tool No. 2 were required of her, including interpreting this abnormal finding in conjunction with the total clinical picture. In this case, the patient's clinical picture included the fact that this baby was at risk of infection because of the mother's GBS positive status.

- [132] Nurse Howe agreed that other interventions were also required in response to the fetal tachycardia including taking the maternal pulse, temperature, blood pressure, respirations, and repositioning the patient to increase uteroplacental perfusion or alleviate cord compression. Nurse Howe did not perform any of these interventions.
- [133] In response to what she considered to be fetal tachycardia, Nurse Howe commenced EFM and then informed Nurse Mahal of her reason for applying EFM (that the fetal heart rate was tachycardic). Nurse Howe stated that she asked Nurse Mahal to watch the tracing, and that Nurse Mahal indicated she would do so. Nurse Howe understood that what was required in response to the abnormal fetal heart rate identified on intermittent auscultation was to inform the primary care provider, Dr. Wong. Nurse Howe did not do so. She thought it was necessary to have a more fulsome picture of the fetal heart rate and classify the tracing before contacting the physician. She thought this would require about 10 minutes of tracing.
- [134] Nurse Howe transferred Ms. Stanley-Clarke's care to Nurse Mahal shortly after 12:00. It was Nurse Howe's understanding that Nurse Mahal would attend to Ms. Stanley-Clarke and systematically assess the fetal heart rate.
- [135] In her examination for discovery she acknowledged the presence of a 30 second deceleration when the EFM was applied, with a recovery to a tachycardic baseline, followed by a very significant deceleration with a slow return to baseline. Nurse Howe stated that she did not believe she was with Ms. Stanley-Clarke at the time of the significant deceleration, and did not know if anyone was providing one-to-one nursing care to Ms. Stanley-Clarke from 12:00 on. She stated that she did not do any assessment at that time other than applying EFM. It was Nurse Howe's belief that she simply put the transducer on and had no further involvement with this patient.
- [136] Nurse Howe provided similar evidence at trial. She gave evidence that she knew she was not present during the deceleration at 12:15 on the basis that if she was still present, she would "absolutely" have charted the "large deceleration", and agreed that she would have charted what was a prolonged deceleration greater than 3 minutes, but reiterated that she was not there.

Nurse Mahal

- [137] Nurse Mahal was the charge nurse on June 24, 2012. Her first contact with Ms. Stanley-Clarke was at 09:05 when she assessed the fetal heart rate by intermittent auscultation. On assessment, she assessed the fetal heart rate to be within normal parameters at 156 bpm, with regular rhythm, accelerations and no decelerations. She classified the fetal heart rate as normal. She also recorded Ms. Stanley-Clarke's temperature to be 37.6°C and noted that this was a "borderline temperature."

- [138] Nurse Mahal's next involvement with Ms. Stanley-Clarke was at 11:20. She did her own assessment of mother and baby, with the assessment of the baby focussed on her intermittent auscultations. Based on her assessment, Nurse Mahal concluded that both mother and baby were perfectly healthy at that time. She did not take Ms. Stanley-Clarke's temperature.
- [139] Nurse Mahal agreed that she was responsible for Ms. Stanley-Clarke's care when Nurse Howe handed off care shortly after 12:00.
- [140] Nurse Mahal was familiar with the Perinatal Services of BC Decision Support Tool. She agreed that this document was used to support clinical decisions and that she was required to use it to guide safe patient care.
- [141] In cross-examination, Nurse Mahal agreed that an auscultation of a fetal heart rate of 160 bpm or higher is abnormal, and requires intervention pursuant to the Perinatal Services of BC Decision Support Tool. She understood that Nurse Howe had not conducted a systematic assessment of the fetal heart rate once she had started EFM because Nurse Howe left moments after commencing the tracing. Nurse Mahal agreed that it was her responsibility to do that systematic assessment.
- [142] Nurse Mahal understood that if the strip became atypical or abnormal, this would constitute a concern that the nurse was obligated to make the physician aware of as soon as possible.
- [143] She further understood it was Dr. Wong's expectation that the nursing staff would advise him of any developments that might suggest potential problems for the mother or the baby. Dr. Wong testified that it would have been his expectation for the nursing staff to call him no later than 12:20 in response to the prolonged deceleration at 12:15, as this deceleration classified the tracing as abnormal.

Nurse White

- [144] Nurse White began providing care to Ms. Stanley-Clarke at 13:00. From 13:00 until the time the infant plaintiff was delivered, Nurse White was providing nursing care only to Ms. Stanley-Clarke.
- [145] When Nurse White assumed care, she did not get a status report from a nurse, and no one informed her of the reason why EFM was applied to Ms. Stanley-Clarke. She was simply told that the patient required a fetal scalp clip and assisted with that process.
- [146] Nurse White understood that Ms. Stanley-Clarke's status as GBS positive was an important part of her overall clinical picture. She agreed that fetal tachycardia, elevated maternal temperature and an increase in maternal pulse are all indicators of maternal infection.

- [147] Shortly after the scalp clip was applied and EFM was recommenced, Nurse White reviewed the prior EFM tracing from 12:07-13:05 with Dr. Wong. This consisted of the two of them looking at the entire tracing as far back as the monitor tracing went.
- [148] Nurse White agreed on cross-examination that the expectation of her was that if a tracing was abnormal, she would have no choice but to call the physician as soon as possible. She explained that a physician cannot be held accountable for things that he/she is unaware of.
- [149] With respect to the EFM tracing commencing at 13:15, Nurse White agreed on examination for discovery that the fetal heart monitoring strip showed repetitive decelerations commencing from 13:15 onwards.
- [150] Nurse White also agreed during her examination for discovery that the strip was abnormal from 14:00 onwards. At 14:08 she pressed the call button to summon Dr. Wong as the fetal heart tracing had gotten worse and he attended right away. She told him he needed to consult with Dr. Neapole. He agreed and did so immediately. Her explanation for the 8-minute delay in notifying Dr. Wong was that she was holding Ms. Stanley-Clarke in position for her epidural injection.

Dr. Wong

- [151] Dr. Wong first attended to Ms. Stanley-Clarke at 10:40. From his assessment and the information in Ms. Stanley-Clarke's chart, Dr. Wong concluded that the baby was healthy. He performed a vaginal examination and discovered that her membranes were ruptured. The fact that they were ruptured, and had been ruptured for an unknown length of time, created a risk of ascending infection, which was understood by Dr. Wong.
- [152] Dr. Wong understood that if a mother develops a fever due to infection, this can interfere with the baby's reserves, and can make it more difficult for the baby to withstand the rigours of labour. In that scenario, deterioration of the fetus can occur more quickly, as the baby's compensatory mechanisms can be diminished.
- [153] At 12:49, Dr. Wong was paged by Nurse Mahal who was unhappy with the look of the fetal heart monitoring strip, and he attended to look at it. Dr. Wong agreed that the strip showed a deep prolonged deceleration at 12:15, and that prior to that the baseline was tachycardic.
- [154] Dr. Wong testified that he would have expected the nursing staff to call him no later than 12:20 in response to the prolonged deceleration which occurred at 12:15. Dr. Wong further testified that if called, he would have attended within 5 minutes. He agreed that when he came back in he would have noted the profound deceleration and the fact that the fetal heart rate baseline was tachycardic. He would have assessed the EFM tracing as abnormal, by definition.

- [155] Dr. Wong agreed that the Guidelines and the Fraser Health Card classify a tracing as abnormal if it shows a prolonged deceleration of more than 3 minutes but less than 10 minutes. Dr. Wong acknowledged that the Fraser Health EFM Card indicated the guidelines he was expected to follow, and that if he was going to deviate from the guidelines, he would need a good reason for doing so. He agreed that he would need to chart his deviation from the guidelines and the reason for the deviation.
- [156] Dr. Wong understood that the SOGC's goal in implementing the SOGC Guidelines was to minimize variation in interpretation of fetal heart monitoring strips. It was also Dr. Wong's understanding that if a tracing fit the definition of normal, atypical or abnormal, then the action in response to each of these classifications was indicated in the SOGC guidelines.
- [157] Dr. Wong understood the importance of monitoring the fetal heart rate, as this is used as the main indicator as to whether the baby is tolerating the stresses of labour appropriately.
- [158] Dr. Wong also understood that the rationale behind monitoring the fetal heart rate is that changes to the heart rate will occur if the baby is in a hypoxic environment, and that those changes are demonstrated on the fetal heart tracing before any actual damage occurs to the baby. He agreed that the concept of modern obstetrics is to intervene before permanent injury occurs.
- [159] Dr. Wong was also aware that building hypoxia in a fetus can be demonstrated in a fetal heart strip as a profound prolonged deceleration greater than three minutes.
- [160] Dr. Wong agreed that if there are indications in the clinical data made available to him that a baby is running into problems, the standard of care requires him to call for help as soon as possible.
- [161] After being called by Nurse Mahal at 12:49, Dr. Wong arrived in Ms. Stanley-Clarke's room around 13:00. After moving her to another room, he applied a fetal scalp clip in order to obtain a more accurate fetal heart rate tracing.
- [162] Dr. Wong's explanation for not following the SOGC guidelines at this point and obtaining help was that:

I'm not looking at a guideline. I know the guidelines roughly, but I can't quote you the guidelines. And there are guidelines set for everything, and as you said initially, it's an attempt to try and get people to try and follow safe practises. I'm attempting to follow my safest practice here without knowing the exact numbers or what the exact definitions that are in the guideline.

[163] In cross-examination, Dr. Wong agreed with the following propositions:

- The standard of care is driven by the concept of patient safety.
- The standard of care requires very careful monitoring of both mother and baby throughout labour and delivery.

- The standard of care required continuous electronic monitoring be implemented as soon as any concern arose regarding the fetal heart rate (which is what happened in this case).
- The standard of care required intervention if there is any injury to the baby.
- The standard of care required prompt delivery if the medical team cannot satisfy itself as to fetal well-being.
- Prolonged decelerations of the fetal heart rate can be an indication that the baby's reserves are running out.
- If there is any indication in the clinical information made available to him that the baby is running into problems, he is required to call for help as soon as possible.

[164] Dr. Wong testified that after the fetal scalp clip was applied he only saw tracing as it came out, and only looked at the last half-hour.

[165] Dr. Wong applied the fetal scalp clip at approximately 13:15. He testified that the strip generated by the fetal scalp clip showed that "there were some areas of concern" between 13:15 and 13:30. Specifically, he acknowledged that the tracing showed a tachycardic baseline and a pattern of repetitive decelerations. He was aware that variable decelerations can be the result of cord compression, and he understood that repetitive variable decelerations, if they persist over a long period of time, can result in hypoxia for the baby. He also understood that if hypoxia lasts long enough it can cause brain injury to the baby.

[166] Dr. Wong agreed in cross-examination that intact variability of 6-25 bpm is an indication that the baby is not yet sufficiently acidotic to be neurologically compromised, but the purpose of appropriate care is that intervention occurs before getting to that point.

[167] Dr. Wong's evidence was that once the scalp clip was applied, he interpreted the strip and concluded that the infant plaintiff was "still not hypoxic because it's still showing signs of variability going up and down." He also agreed that loss of variability occurs once the baby becomes acidotic enough that neurologic function is affected, and the point is to intervene before that occurs. He expressed a concern about intervening too early and performing unnecessary surgery, but also agreed that this was a better course of action than intervening too late, after brain damage has occurred to the baby.

[168] Instead of calling for an urgent obstetrical consult in response to the strip, Dr. Wong ordered an epidural, which he hoped would unobstruct Ms. Stanley-Clarke's labour.

[169] Dr. Wong stated that if he could not reassure himself of fetal well-being, that he would get an obstetrician involved. If the obstetrician could not satisfy him or herself of the fetal well-being, Dr. Wong acknowledged that the next step would be to deliver the baby as soon as possible. From the time a caesarean section is called by the obstetrician, it was Dr. Wong's experience that the time to delivery is 10-15 minutes.

[170] Approximately one hour after the fetal scalp clip was applied, at 14:15, Dr. Wong called Dr. Neapole for an obstetrical consultation.

[171] Dr. Wong indicated on cross-examination that when he called Dr. Neapole at 14:15 he thought the baby was in trouble, but that he had developed concerns about the fetal heart strip from the time of the first deceleration around 12:15-12:20. Specifically he stated:

Q: Okay. Is it your evidence that you didn't become concerned about the strip until 14:30 hours?

A: No, it's not. You can see the first drop at 12:20. You can see another drop possible. That's the time that you're concerned. As soon as you see one of those, that's my concern. But I had enough reassuring signs that this child was okay.

Q: Doctor, I'm going to suggest to you that as a clinician at the bedside, when you see indications on a fetal heart strip that a baby is potentially getting into trouble, the standard of care requires you to act in - first and primarily in the interests of the baby to act as safely as possible to seek help so that you're sure as best as you can be that this baby doesn't actually get into trouble. Do you agree with that?

A: Correct.

[172] Dr. Wong agreed that when a tracing is potentially abnormal, sometimes minutes matter, and that in those cases necessary steps need to be taken simultaneously rather than sequentially. He also said that at the time he felt that his first priority was to gather more accurate information. Specifically, he testified that:

Q: The action required if you have an abnormal tracing is to 1, review the overall clinical situation, institute intrauterine resuscitation, determine the cause of the abnormal pattern, obtain fetal blood samples and undertake transfer or operative delivery. Those are the expected responses?

A: Yes, it is if this is the true -- if this is the true deceleration or the true impression of it. And that's what I needed to find out, is this real or is it not. I agree with you. If it really is, that's abnormal. I need to do something. But before I go there, is it real. That's my first priority.

Q: I think you said earlier that your first task is to ensure fetal well-being or to make sure the baby is okay; right?

A: Correct. And that happens with more accurate information. The more accurate it is the more better decisions I make. So I need accurate information first of all.

Q: One of the realities of obstetrical practice when you have things that could be potentially abnormal in terms of the fetal heart tracing is that sometimes minutes matter; right?

A: Correct.

Q: And in situations where minutes matter, the standard of care requires that you often do things -- rather than sequentially you do them at the same time; right?

A: Okay. Yes.

Q: You agree with that?

A: I agree with that. Sometimes you have to.

Q: And in terms of determining whether or not this is an abnormal -- sorry, whether or not this baby is actually running into problems, your first goal has to be making sure that the baby remains safe; right?

A: Correct.

Q: And taking steps to make sure that the baby remains safe is to initiate contact with - one of the things is to initiate contact with the obstetrician so that if the baby is, in fact, running into trouble steps can be taken at the earliest possible moment to rescue the baby from what is becoming a hostile environment; fair enough?

A: Yes. If I am sure that this baby is in trouble I will contact --

Q: No. It isn't a question of whether -- if you're sure that the baby is in trouble. If there is any real indication that this baby is in trouble the standard of care requires you to react to that possibility by calling for help?

A: I didn't think this baby was in real trouble.

Q: If there's indications in the clinical data made available to you that this baby is running into problems the standard of care requires you to call in help as soon as possible; fair enough?

A: Fair.

Dr. Neapole

[173] Prior to her involvement with Ms. Stanley-Clarke, Dr. Neapole had been involved in the care of Ms. Doe, the VBAC patient, including performing a caesarean section. She was out of the OR following the VBAC patient's procedure at 13:50.

[174] Dr. Neapole testified that when Dr. Wong called her for a consultation which was based on decelerations on Ms. Stanley-Clarke's baby's fetal heart monitoring strip.

[175] It was Dr. Neapole's evidence that based on her notation on the chart, she entered Ms. Stanley-Clarke's room around 14:30, performed her assessment, and completed her consultation note on or after 14:40. Her usual practice was to look at the entire fetal heart strip upon coming into a new situation.

- [176] Dr. Neapole stated that upon entering Ms. Stanley-Clarke's room and observing the fetal heart monitoring strip, she recognized that the tracing was abnormal. She further stated that her assessment indicated that there were repetitive deep variable decelerations, there had been some progress in cervical dilatation but there was still a high presenting part with significant caput. Her plan was to recommend a caesarean section due to concerns with the strip.
- [177] In the context of a labour where the baby's head is not engaged, Dr. Neapole understood that caput is a potential sign of dystocia--an inadequate progress of labour. In Dr. Neapole's assessment, Ms. Stanley-Clarke had not reached the second stage of labour.
- [178] Dr. Neapole understood that the rupture of the membranes is a very significant factor in the context of a labouring mother, as this increased the risk of an ascending infection. She further understood that an infection can interfere with the baby's ability to compensate for the stresses of labour.
- [179] After assessing the clinical situation, Dr. Neapole concluded that the infant plaintiff should be delivered by emergency caesarean section. She explained the factors that led her to come to that conclusion as follows:

A: Certainly. Several factors. In the event of the abnormal fetal heart rate tracing, I felt that it was important to either reassure myself about the fetal status and continue labor or proceed to delivery by Caesarian section.

Q: Right.

A: The fact that there had been progress in the cervical dilation was interesting in the sense that there had been some progress. However, I still felt that there was likely a situation of dystocia because of the unengaged presenting part and the caput.

Q: Right.

A: So although there had been quite a bit of progress between the last vaginal exam and my examination in terms of cervical dilation, I did not feel that vaginal delivery was imminent. It's impossible to predict whether it would have occurred at all, but I felt it was unlikely. And given that, I did not feel that continuing the labour was indicated.

- [180] She agreed that an atypical or abnormal fetal heart rate tracing is considered to precede hypoxia, and the goal of intrapartum fetal surveillance is to try to intervene before hypoxia results in permanent injury to the baby. Specifically, she stated:

Q: Well, being the clinician at the bedside, if you have indication of fetal hypoxia; for example, if you have reduced variability, if you have repetitive either late or variable decelerations, those clinical indicia of hypoxia in the baby may - sorry. When you have those indications of hypoxia in the baby, you can't tell sitting at the bedside which babies are actually coping quite well and which are not; correct?

A: I will say that fetal health surveillance - or fetal surveillance in labour is difficult because as you pointed out earlier, there really is no way to very accurately determine the fetal condition in utero.

Q: Right.

A: We don't have a method to be able to do that with complete accuracy.

Q: Right.

A: The goal of intrapartum fetal surveillance is to try to identify a situation where a timely intervention may prevent adverse sequela for the baby. And therefore, we interpret the electronic fetal monitoring based on criteria, basically as a screening test, and when that screening test is normal, we feel very reassured that at that time the baby is well oxygenated, has a normal metabolism. When that screening test is not normal, in the case of an atypical or abnormal fetal heart rate tracing, it is not a diagnosis that the baby has trouble, you're right. It doesn't tell you if the baby is actually acidemic, but it is an indication to further assess the clinical situation and potentially the fetal condition and make a plan.

Q: In terms of assessing the clinical indication, the task of the obstetrical team is to satisfy themselves as to fetal well being, and there are techniques that have been developed over time, intrauterine resuscitation techniques, et cetera. And if they are successful in reversing the clinical indications of hypoxia, then the labour and delivery can continue. If they're not, if you can't satisfy yourself as to fetal well being, then you have to move to deliver the baby; correct?

A: I would say that if the fetal heart tracing is atypical or abnormal which may precede fetal hypoxia, the idea of EFM is that it's meant to precede hypoxia -

Q: Exactly.

A: -- because it's meant to be able to alert you so that you prevent hypoxia.

Q: Right.

A: So it doesn't necessarily mean hypoxia has occurred.

Q: Exactly.

A: But if that's the case, then, yes, the next step is to try to improve the intrauterine environment for the fetus, as you say, perhaps decrease the contractions. If, for example, oxytocin is being used, decrease the oxytocin or stop it.

Q: Right.

A: Intrauterine resuscitation measures that you've discussed. And then the clinical decision made regarding whether the labour - whether it's reasonable to continue the labour or whether it's reasonable at that point to deliver the baby, and other - and there may be other ways to assess the fetal well being in utero to help you make that decision.

Q: The point that I was trying to get at is if you cannot satisfy yourself as to fetal well-being, you have to take some action. You have to either deliver the baby or take some step which will allow you to satisfy yourself as to fetal well being?

A: Correct.

[181] Dr. Neapole completed her initial interaction with Ms. Stanley-Clarke at approximately 14:40 and she then left the room.

[182] The timeline following Dr. Neapole's arrival commences at paragraph 64. The surgery to deliver Cesar commenced at 15:16 and he was delivered at 15:23.

The Plaintiffs' Experts

[183] A brief summary of the plaintiffs' expert evidence is as follows.

Dr. Gary Feinstadt

[184] Dr. Feinstadt is a family physician whose practice includes maternity and intrapartum care.

[185] He was of the opinion that Dr. Wong failed to meet the standard of care of a reasonable and prudent family physician providing maternity care in British Columbia. This opinion was based the following assertions:

- As at 13:00, Dr. Wong ought to have been aware of the risks including a patient with GBS, partially obstructed labour and that vaginal delivery would not have occurred in a timely fashion.
- The EFM indicated a fetal tachycardia from the time it had been commenced at 12:07. Dr. Wong should have been aware that fetal tachycardia can be the result of sepsis.
- Dr. Wong, as at 13:00 hours, was aware of a deep deceleration at 12:15-12:20 as well as complicated variable decelerations in the presence of an erratic baseline. This, together with the presence of a second deep prolonged deceleration at 12:50-12:55, should have led to the conclusion that the tracing was abnormal and that there could be a risk of hypoxia and subsequent neurological damage. He left the ward at 13:25 and despite these risks, he did not obtain an obstetrical consultation until advised to do so by Nurse White at 14:15 hours.
- Dr. Wong failed to initiate preparations for an emergency caesarean section such as notifying the operating room, anaesthesia and paediatrics of the likelihood of an emergency caesarean section.
- Dr. Feinstadt disagreed, in part based on the fetal heart rate monitoring with Dr. Lawson that the situation did not require an obstetrical consultation until 14:15.
- Dr. Feinstadt was also of the opinion that Nurse Mahal did not meet the standard of care of a maternity nurse. She assumed care of Ms. Stanley-Clarke at 12:10, and Dr. Feinstadt expressed this criticism:

It does not appear that [she] monitored the FHR tracing between 12:10 and 13:00 hours. She therefore failed to observe the deep prolonged deceleration occurring at 12:15 to 12:20 hours. The reasonable and prudent maternity nurse would have been aware that such a deceleration would define the FHR tracing as abnormal [and] would have immediately notified the attending physician.

Dr. Jon Barrett

[186] Dr. Barrett is a specialist in maternal-fetal medicine with expertise in both low and high risk pregnancy including intrapartum care. He is Chief of Maternal Fetal Medicine at Sunnybrook Health Sciences Centre in Toronto, Ontario.

[187] He was of the opinion that the care provided by Dr. Wong to Ms. Stanley-Clark during her labour and delivery fell below the expected standard of a family physician with an obstetrical practice for the following reasons:

- The fetal heart rate monitor revealed a pattern of a persistent fetal tachycardia and of repetitive decelerations which were "classical of umbilical cord compression". The pattern was evident as early as 12:15 to 12:20 and was understood by Dr. Wong of being "potentially quite worrying for fetal well being" in that they were indicative of potential fetal hypoxia.
- Despite the recognizable pattern and his concern, Dr. Wong did not call for obstetrical help or take any steps to remediate the pattern, such as changing the patient's position or giving oxygen.
- At 12:15, and with the presence of variable decelerations and a fetal tachycardia, Dr. Wong should have been called. Had this occurred, he should have made an urgent call to the obstetrician shortly after and that physician would have moved to have the baby delivered by caesarean section, which would have occurred by 12:55.
- The need for an obstetrical consultation became more urgent between 13:15 and 13:40 since the situation had obviously progressed and worsened. It became "more chaotic" and by this time it became clear that the baby needed to be delivered by emergency caesarean section. Had Dr. Wong made that call by 13:40, then the attending obstetrician would have attended, recognized that the baby was at serious risk of hypoxic injury, and moved to deliver the baby immediately.
- This failure to summon obstetrical help in the face of an obvious abnormal fetal heart rate fell below the expected standard of care, which resulted in significant delay to performing the procedure "to resolve the unrelenting cord compression that was obvious on the fetal heart rate monitor".

[188] In so far as Dr. Neapole was concerned, Dr. Barrett was of the opinion that she, too, fell below the expected standard in that having been summoned by Dr. Wong at 14:15, she should have attended within 5 minutes and ordered a caesarean section within 5 minutes of arrival. The 15 minutes it took for her to attend Ms. Stanley-Clarke and the further 15 minutes to book the emergency procedure represented an avoidable delay. There was a "slow response to a clearly evident umbilical cord compression that should have been easily

suspected during the labour by the classical fetal heart rate pattern and was confirmed at delivery". This was the case even though Dr. Neapole was not responding to a "STAT" page.

[189] He was also of the opinion that had Drs. Wong and Neapole met the standards of care expected of them, the baby "would have been born at least one hour earlier when the fetal heart rate strip still showed some evidence of fetal health, viz the variability".

Dr. Alan Hill

[190] Dr. Hill is a pediatric neurologist.

[191] He noted and essentially agreed with the report relating to the first MRI, taken on June 26, 2012, which was to the effect that the findings were "compatible with hypoxic ischemic injury". He also agreed with the interpretation of the second MRI scan of July 3, 2012, and was of the opinion that it indicated a "severe injury to the thalami and to the white and grey matter of the cerebral hemispheres, e.g. laminar cortical necrosis [which] represents an evolution of the initial injury".

[192] Dr. Hill, "based on the interpretation of the fetal heart rate monitoring by Dr. Barrett", was of the view that there was an insult which "began sometime around 1 hour prior to delivery as a mild hypoxic ischemic insult and which then progressed in an exponential fashion into a significant insult. [emphasis added]

[193] This insult:

would initially be tolerated by the fetus through utilization of fetal reserves to compensate for the lack of oxygen. However, when the fetal reserves became exhausted, irreversible brain injury would begin and it is most probable that the vast majority of Cesar's injury occurred towards the end of insult in the run up to delivery. In my opinion, it is most probable that delivery approximately 1 hour earlier would have prevented Cesar's brain injury and his subsequent neurological abnormalities. The obstetric analysis by Dr. Barrett together with the early neonatal and brain imaging data are consistent with this scenario.

Dr. Michael Marrin

[194] Dr. Marrin is a neonatologist and the current Medical Director of the Neonatal Transport Team and Deputy Director of the Neonatal-Perinatal residency Program at McMaster University in Hamilton, Ontario.

[195] He was of the opinion that Cesar's neurological problems were entirely due to a neurological injury the root cause of which was likely caused by intrapartum hypoxia-ischemia. While he was exposed to his mother's fever, "apart from rendering his brain more susceptible to hypoxia-ischemia due to the fever, any independent contribution of the infection was likely marginal".

[196] The crux of Dr. Marrin's opinion was:

The constellation of several findings indicate that Cesar experienced intrapartum hypoxia-ischemia ultimately leading to a brain injury in the last 30 or so minutes of the labour. The C-section was done in response to a deteriorating fetal heart rate tracing which, by one and half hours before the birth, was "abnormal". At the delivery, the amniotic fluid was found to be heavily stained with meconium - the contents of the fetal colon. While hypoxia-ischemia is not the only cause of fetal meconium expulsion, its appearance during the labour is consistent with the other evidence of fetal distress. Cesar was "flat" at birth with a heart rate below 60 bpm. His cord blood gases document a metabolic acidosis, indicating an impairment of fetal oxygen delivery. Consistent with this was an elevated blood lactate at about 40 minutes of age. Cesar had an evolving "encephalopathy" (neurological dysfunction) typical for a newborn who has sustained an intrapartum hypoxic-ischemic insult. Seizure-like activity appeared at about 8 hours of age. The average age of onset of seizures due to intrapartum hypoxia-ischemia is about 9 hours of age, consistent with the injury having occurred close to the time of the birth. A MRI on the third day of life showed abnormalities consistent with an acute, severe hypoxic-ischemic injury. One week later a MRI showed substantial extension of the brain injury, consistent with the injury having occurred proximate to the birth. Finally, Cesar has cerebral palsy of the spastic quadriplegic type, a form of cerebral palsy commonly associated with severe intrapartum hypoxia-ischemia.

[197] He stated in his report that "where the interruption of oxygen delivery is absolute, brain injury can develop in as little as 12-15 minutes".

[198] In so far as the timing of the injury, Dr. Marrin was of the view:

In working toward a timing of the injury it is important to distinguish between the hypoxic-ischemic "insult" (or "process") and the resulting injury. The insult refers to the accumulating impact of hypoxia-ischemia on the fetal brain. At some point the threshold for injury is crossed, after which the injury will propagate over a scale of minutes. The period of deteriorating fetal heart rate abnormalities in the last hour or so of Ms. Stanley-Clarke's labour likely represents the insult - the period during which the threshold of brain injury was approached. Taking account of all of the available information, however, it is more likely than not that the threshold for injury was crossed in the last 1/2 hour or so of the labour. The cord gases, initial post-natal blood lactate and the first MRI are consistent with this. Had the hypoxia-ischemia reached the threshold for brain injury 45 or more minutes before the birth Cesar would likely have died in-utero or, at least, would have required a more extensive resuscitation.

[199] And in his reply report of August 24, 2017, he noted:

Summary

The diagnostic process is similar to assembling a puzzle. On the table we may have multiple puzzle boxes showing us the finished pictures (the potential diagnoses), and a pile of loose puzzle pieces (clinical observations and test results). We try to find the most probable fit between the pieces and the pictures. We can't see the picture- make a diagnosis- by looking a single piece. We have to assemble the pieces into what is the most probable picture.

Dr. Derek Armstrong

[200] Dr. Armstrong is a pediatric neuroradiologist whose opinion was based on his interpretation of the various brain imaging studies.

[201] In his report of July 18, 2017 he stated that he was of the opinion that the cause of the injury was a hypoxic-ischemic event. Specifically:

The brain imaging studies indicated that the brain injury showed features of prolonged partial hypoxia ischemia or moderate hypotension and profound hypoxia-ischemia or severe hypotension, in an otherwise pristine normally developed brain, between seven and ten days prior to the second MR study.

This would indicate that the brain injury occurred seven to ten days prior to the MR scan at nine days of age, and less than 24 to 48 hours before the Ultrasound study at one day of age. While beyond this the imaging studies would not be expected to indicate the precise time of the hypoxic ischemic event causing the brain injury, this would be ascertained from the clinical events and records.

...

Moderate hypotension, which injured the cerebral hemispheres extensively, may initiate brain injury by 30 minutes after its onset, while severe hypotension, which injured the basal ganglia I and thalami, is typically of 15 minutes duration prior to the onset of injury to these structures. If delivery had occurred earlier the brain injury would likely have been avoided.

Ms. Beverley Buchinski

[202] Ms. Buchinski is a nurse who is the current program coordinator of the Birthing Program at Children's and Woman's Health Centre of British Columbia.

[203] Her report of July 19, 2017, provides the basis for her opinion that the actions of nurses Howe, Mahal and White each fell below the expected standard of care.

[204] With respect to Nurse Howe, this included failing to adequately monitor both the mother and baby, the fetal heart rate and to be "an advocate on behalf of Ms. Stanley-Clarke and her baby".

[205] In so far as Nurse Mahal was concerned, the opinion was based on an alleged failure to monitor the mother and baby and to be an advocate on their behalf.

[206] As for Nurse White, the basis for the opinion was the same as for Nurse Howe, but with the additional factors of failing to: (i) initiate nursing interventions in the face of an atypical and abnormal heart rate strip; (ii) adequately monitoring the mother and baby; (iii) inform the attending physician in a timely manner of the baby's condition; and (iv) accurately document the course of events and care provided.

Defendant Doctors' Experts

[207] A brief summary of the defendant doctors' expert evidence is as follows.

Dr. Laurie Lawson

[208] Dr. Lawson is family physician who has an obstetrical practice. She is currently the managing clinician at the Lions Gate Maternity Clinic - Lions Gate Hospital in North Vancouver, B.C. Her opinion consisted of the following:

- Dr. Wong's investigation and treatment of Ms. Stanley-Clarke as at 13:00 was reasonable and in accordance of the expected standard of care. In particular he reacted appropriately to the several fetal heart decelerations which were noted during that time frame and calling for an epidural injection was an appropriate way to deal with the mother's obvious discomfort during labour.
- While Dr. Wong was attending to two patients between 13:00 and 15:00 hours, he relied appropriately on the obstetrical nurses to provide him the required assessments when he was not present with Ms. Stanley-Clarke.
- When Dr. Wong reattended on Ms. Stanley-Clarke at 14:15 he made the correct and appropriate decision to seek a consultation from Dr. Neapole. Despite the epidural anesthesia which was administered after 14:00, the fetal heart tracings remained difficult to interpret and there was no pattern of contractions on the tracing. Accordingly, it was appropriate at this time to seek a consultation from a specialist to determine the need for and arrangement of delivery by caesarean section.
- Overall, Dr. Wong had a clear care plan in place for the time frame between 13:00 and 14:15. Prior to 14:15 he was not alerted to any significant change in the clinical picture. Upon reassessing the situation at 14:15 he determined that the clinical situation was at that point one that necessitated an obstetrical consultation.

Dr. Jerome Dancereau

[209] Dr. Jerome Dancereau, an expert in obstetrics and gynecology, maternal-fetal medicine and clinical epidemiology who practices at the Victoria General Hospital in Victoria, B.C., gave evidence with respect to the standard of care expected of Dr. Neapole. His opinion included the following:

- Dr. Neapole was called at approximately 14:15 and responded in a timely manner by attending on Ms. Stanley-Clarke at approximately 14:30. This was not one of those extreme emergencies where a "STAT" caesarean section delivery was required, that is, "when the danger to the baby is great and imminent." In other words where the safety of the mother had to be compromised to avoid risking greater harm to the baby.
- The risk of poor outcome in this case, "whether caused by HI or sepsis, was less than 1%".

- After the caesarean was booked by Dr. Neapole, the surgery occurred without undue delay and the procedure itself was uneventful and followed standard steps.

Dr. Jill Boulton

[210] Dr. Boulton is a specialist in neonatology. From April 2015 to the present she has been a neonatologist at Kelowna General Hospital in Kelowna, B.C., and from April 2017 onwards has been the Medical Director, Perinatal and Neonatal Network for Interior Health, B.C. and a member of the adjunct staff, Department of Paediatrics Calgary Zone Alberta Health Services.

[211] Dr. Boulton was asked to comment on a number of Dr. Marrin's opinions. She was of the following view:

- While her specific area of expertise did not include the interpretation of fetal heart rate tracings, in her 29 years of experience in neonatal care "the interpretation and prognostication of fetal heart rate tracing is imprecise at best. Short of a sentinel event such as cord prolapse or loss of fetal heart rate, it is impossible to identify the exact timing of when brain injury occurs or is irreparable. Thus the abnormal tracing does not support the conclusion that a brain injury occurred in the last 30 minutes of labour".
- "The presence of meconium is a sign that fetal distress may be present. It does not provide information about the timing or severity of that distress."
- "The process of delivering the baby through uterine incision will sometimes result in an acute bradycardia." The fact that Cesar was "flat" at birth with a heart rate below 60 bpm "does not mean that the heart rate was that low throughout the preceding minutes or indeed declining during the last 30 minutes or so prior to birth."
- The presence of lactic acidosis is not specific to hypoxic ischemic injury as it can also be elevated in the presence of infection and other conditions.
- The onset of seizures after a hypoxic-ischemic insult generally occurs in the first 24 hours but the time of onset of neonatal seizures after birth is not a reliable indicator of the timing of fetal neurologic injury.
- While there have been many advances in neuroimaging, the ability to precisely time a hypoxic ischemic insult remains limited, that is days rather than hours or minutes. The brain imaging in Cesar's case "certainly does not provide evidence of injury during the very short timeframe of the 30 minutes prior to birth".
- The "constellation of findings" identified by Dr. Marrin "do not individually or together pinpoint Cesar's injury to the last 30 minutes or so of labour".

Dr. Sarah Keating

[212] Dr. Keating is a perinatal pathologist who from 2009 to the present is an associate professor of Laboratory Medicine and Pathobiology at the University of Toronto in Toronto, Ontario. Until 2016, she was also the director of Perinatal Pathology at Mount Sinai Hospital in Toronto. Dr. Keating was retained to review the placental pathology of Ms. Stanley-Clarke from the pregnancy resulting in Cesar's birth. She was asked to provide her opinions with respect to causation, and in particular her view of the findings related to placental and cord pathology.

[213] Dr. Keating's opinions included the following:

- "[T]he most significant finding on review of the pathology was the presence of heavy acute chorioamnionitis with a well established fetal inflammatory response".
- The maternal inflammatory response, according to the literature, "would have begun at least 12 hours prior to delivery in this case, and potentially more than 36 hours before delivery".
- Cerebral palsy is a motor disorder that occurs in 2-2.5 per 1000 births. Just over half of cerebral palsy cases occur in term infants following low risk pregnancies and the cause of cerebral palsy in this group "is poorly understood".

Dr. Marc Boucher

[214] Dr. Boucher is a specialist in obstetrics and gynecology and maternal-fetal medicine who is a member of the high risk pregnancy team at the Sainte Justine Hospital in Montreal, Quebec. He is the current co manager of the Labour and Delivery Department at that hospital.

[215] At pages 8 and 9 of his report of July 20, 2017, Dr. Boucher provides a detailed description of chorioamnionitis and how it can affect a fetus which I shall not repeat in these reasons.

[216] His opinions pertaining to causation in this case included the following:

- Dr. Wong correctly diagnosed a premature rupture of the membranes, that is, one that had occurred before the start of labour.
- The treatment provided given the fact that Ms. Stanley-Clarke was GBS positive was correct and appropriate.
- While variable decelerations were noted on a more frequent basis around 13:00 hours, there was "preserved adequate variability. A few of them being qualified as severe, the majority of those decelerations were of a mild nature. Around 14:00 the decelerations, all variable, [were] becoming more severe .Dr. Wong appropriately asked Dr. Neapole for a consultation, after which with a non reassuring [fetal heart rate] a [caesarean section] was recommended and performed. The procedure was performed according to obstetrical standard of care".

· The test results obtained after delivery "do not reflect a hypoxic-ischemic event of such magnitude to explain the unfortunate evolution of the infant".

· Although the timing of the rupture of the membranes was unknown:

it is probable it was for a period sufficient to produce the histological analysis of the placenta and membranes. However, there was no way the attending physician might have suspected early the presence of chorioamnionitis, as the patient had no signs or symptoms of that medical condition. The only sign of a possible problem of the sort was the maternal temperature at 38 [degrees] around 14:40. On the other hand the FHR tracing became non-reassuring in the afternoon and the reaction from the attending physicians was appropriate. I believe that the most important factor in the genesis of the problem here is the unsuspected chorioamnionitis, creating an intrauterine environment with inflammatory mediators that would increase the deleterious effect of the relatively mild hypoxia recorded here. It is truly a combination on negative factors that was responsible and on which the attending physician could not have any influence.

· An earlier delivery would not have produced a significantly different outcome. The infectious process was the main factor involved. The observable fetal heart rate was reflecting a mild level of hypoxia, "usually well tolerated as demonstrated by the nearly normal geometric values observed on the cord blood, values that are definitely not associable with cerebral palsy as a consequence".

Defendant Health Authority's Experts

[217] A brief summary of the defendant Health Authority's expert evidence is as follows.

Dr. Michael Farmer

[218] Dr. Farmer is a family physician who provided expert evidence as a family physician who provides maternity care. Dr. Farmer is the current Head of Department of Family Practice at BC Women's Hospital in Vancouver, B.C. In his clinical and administrative roles at BC Children's Hospital, he works on a daily basis with nursing and medical staff and has reviewed "hundreds of charts for quality assurance issues or for continuous quality improvement". In his report of March 28, 2017, he states that he provides expert advice to plaintiff and defence counsel in approximately equal numbers.

[219] From his review of both Ms. Stanley-Clarke and Cesar's hospital charts, which included the fetal heart monitoring strips, Dr. Farmer was of the view that:

All the nurses involved were extremely competent and acted with care, skill and diligence. They worked appropriately as part of an inter-disciplinary care team. The nurses monitored Ms. Stanley-Clarke appropriately while she was in early labour. The nurses did appropriate monitoring once Ms. Stanley-Clarke's labour became more active. The nurses appropriately interpreted the fetal monitoring strip once it became atypical they appropriately encouraged an urgent referral to obstetrics.

Dr. Jean Claude Decarie

[220] Dr. Decarie is a paediatric neuroradiologist who, until 2015, was head of the MRI Division of the Medical Imaging Department of the Sainte Justine Hospital in Montreal. His report of July 18, 2017 was entered as an exhibit at the trial, but Dr. Decarie was not requested to attend for the purposes of cross-examination.

[221] Having reviewed Cesar's head ultrasound of June 25, 2012, and the brain MRI's of June 26, 2012, and July 3, 2012, he was of the following opinion:

- The most probable diagnosis was that of hypoxic-ischemic brain injuries or encephalopathy.
- A concurrent infection could have rendered the patient's brain more susceptible to the effects of cerebral hypoperfusion but the imaging findings do not suggest an isolated process involving the brain.
- All the imaging was done in the acute and early subacute phase of the process.
- "The pattern followed by the brain oedema in this case suggests an event surrounding the time of birth, occurring even a few days before birth".
- The accuracy of imaging is "in days and not in hours or minutes. Better accuracy in the assessment of the timing can be achieved by the analysis of the laboratory and paraclinical findings".

Ms. Angela King

[222] Ms. King is a registered nurse with approximately 25 years of obstetrical experience. Since 2002 she has been a floor nurse at Markham Stouffville Hospital in Markham, Ontario. As such her duties consist of obstetrical triage, labour and delivery and postpartum care of the obstetrical outpatient clinic.

[223] Having reviewed the hospital chart and the fetal heart monitoring strips, Nurse King was of the opinion that the nursing care provided to Ms. Stanley-Clarke met the standard of care and managed patient care appropriately in the areas of: (i) initial assessment of labour; (ii) continued assessment of early labour; (iii) communication with the primary physician; (iv) management of the GBS; and; (v) responding to the fetal heart rate when it was outside of normal limits.

[224] In particular, Nurse King provided the following opinion:

- Nurses Howe and Mahal appropriately auscultated the fetal heart rate during Ms. Stanley-Clarke's care on the triage unit. The electronic fetal monitor was appropriately applied for further assessment when the fetal heart rate was auscultated to be elevated at 170 bpm.

- The fetal heart rate was assessed and documented by Nurse White every 15-30 minutes during the active phase of labour as per the SOGC Guidelines and every five minutes after the epidural injection.
- Physician notification of the change in fetal heart rate from atypical to abnormal by Nurse White was done in a timely manner and a request for consultation with the obstetrician was documented.

Dr. Al-Nudaffer

- [225] Dr. Al-Nudaffer, the attending neo-natologist who attended on Cesar immediately after his birth, gave evidence on behalf of the doctor defendants but did not do so in the capacity as an expert witness.
- [226] He reviewed portions of his discharge summary and confirmed that Cesar's heart rate was 60 bpm at birth and was incubated. At 5 minutes after birth the heart rate was 100 bpm and at 15:40 when Cesar was admitted to the neonatal intensive care unit it was 178 bpm.
- [227] At approximately 5 minutes after his birth, Cesar's breathing was characterized as "poor", but at 10 minutes he was breathing more spontaneously, albeit on a respirator.
- [228] At birth Cesar's colour was pale and poor but it was improved a few minutes later.
- [229] Dr. Al-Nudaffer's discharge report refers to "query" perinatal sepsis and perinatal depression as being possible "most responsible diagnoses".
- [230] On cross-examination he stated that the only thing that could be done for a depressed baby if it is hypoxic-ischemic is a "cooling " process, which he initiated, but he added that sepsis was present which had to be treated.

VI: LIABILITY OF THE DEFENDANTS

A: Nurse Howe

- [231] The claims against Nurse Howe can be dealt with summarily. That is because in their written argument the plaintiffs state:
166. The plaintiff submits that Nurse Howe fell below the standard of care expected of a reasonably competent obstetrical nurse when she failed to respond to the abnormal fetal heart rate of 170 bpm at noon by instituting appropriate interventions to improve the status of the fetus, commencing EFM, conducting a careful and systematic assessment of the fetal heart rate, and informing Dr. Wong of those findings.

167. If [the Court] finds that Nurse Howe appropriately delegated those responsibilities to Nurse Mahal, and Nurse Mahal understood this, then Nurse Howe met the standard of care expected of her. In other words, the standard of care required interventions, EFM, further assessment of the fetal heart rate and communication with Dr. Wong. Either Nurse Howe or Nurse Mahal was responsible for providing this care.
- [232] Nurse Howe was clear in her evidence that shortly after 12:00 she handed over Ms. Stanley-Clarke's care to Nurse Mahal. Nurse Mahal testified that she was responsible for Ms. Stanley-Clarke's care when Nurse Howe handed off care shortly after 12:00.
- [233] I accept Nurse Howe and Nurse Mahal's evidence on this point.
- [234] Accordingly, the claim against Nurse Howe is dismissed.
- B: Nurse Mahal
- [235] The plaintiffs frame their claims against Nurse Mahal as follows:
- Did Nurse Mahal meet the standard of care expected of her in providing care to Ms. Stanley-Clarke and the infant plaintiff when she assumed care shortly after 12:00 p.m.? In particular:
 - o Did Nurse Mahal attend to Ms. Stanley-Clarke to perform a systematic assessment of the fetal heart rate?
 - o Did Nurse Mahal perform a proper systemic assessment and interpretation of the electronic fetal heart monitoring tracing from 12:07 to 13:05?
 - o Did Nurse Mahal respond appropriately to worrisome features on the electronic fetal heart monitoring tracing from 12:07 to 13:05?
- [236] These claims are based, in part on what the plaintiffs say was a failure by Nurse Mahal to properly review Ms. Stanley-Clarke's condition for the approximately one-hour time frame between 12:07 and 13:05. It is said, correctly, that there are no nursing chart entries during this period with the exception of one note at 12:35 relating to the pickup of the tracing.
- [237] They point to what they say was the failure to contact Dr. Wong when there was "a deep and prolonged deceleration" between 12:15 and 12:20. For his part, Dr. Wong testified on cross-examination that he considered the strip to be abnormal at that time and would have expected to be called by no later than 12:20. He stated he would have attended within 5 minutes but went on to say that he would not have called Dr. Neapole at that point but would have waited "to see what happens".
- [238] Dr. Wong also testified that "it is what happens in the next 20 minutes that reassures me", and that, although the deceleration was abnormal, there was also variability and "when looking at the baseline and variability, they don't fall in the abnormal range".

- [239] The plaintiffs take issue with Nurse Mahal's description of the tracing during this time frame as being "uninterpretable". They also argue that Nurse Mahal did not properly monitor and assess Ms. Stanley-Clarke's condition based on the lack of nursing notes in the chart and suggest that the failure to chart the deceleration should give rise to the court concluding that her evidence should be rejected out of hand. In that regard they point to what they say are significant discrepancies between her evidence at her examination for discovery and at the trial.
- [240] I disagree. The authorities are clear that a "hindsight" analysis should be avoided. Furthermore, the experts who testified appeared to be in agreement that they were attempting to assess a defendant's actions as best as possible based on what was occurring at the time, not retrospectively.
- [241] I have concluded that Nurse Mahal met the standard of care which was expected of her. My reasons include the following.
- (a) Nurse Mahal is an extremely qualified nurse. She has a Master's Degree in nursing, has a Perinatal Certification and has taught obstetrical nursing at various institutions in British Columbia.
 - (b) More importantly, however, as the charge nurse that day, she was responsible for facilitating the flow of patients coming in and out of the labour and delivery unit and acting as resource for staff on the floor.
 - (c) June 24, 2012, was a very busy day and she stepped in at times to provide patient care when it was needed in addition to attending to her charge nurse duties.
 - (d) Although Nurse Howe was of the view that the fetal heart rate of 170 bpm at approximately noon was "tachycardic", this heart rate level had not been in existence for a period of 30-80 minutes to render the situation "atypical" or greater than 80 minutes to render the situation "abnormal" as per the SOGC Guidelines or the Fraser Health EFM Chart. This provides the proper context for Nurse Mahal's actions during this timeframe.
 - (e) As is seen from Appendix C, there are different professional views as to what the tracing indicated at 12:15 and also at 12:50-12:53. In fact, Nurse Mahal did contact Dr. Wong at 12:49, and Nurse King found her monitoring and actions to be timely and appropriate under the circumstances.
 - (f) It is also not accurate for the plaintiffs to allege that because there were no notations on the chart, Nurse Mahal was not monitoring Ms. Stanley-Clarke on an acceptable basis. She testified that there were monitors at the nursing station. Accordingly, she did not need to be bedside at all times.
 - (g) Furthermore, it is clear that she attended on Ms. Stanley-Clarke at approximately 12:30 to administer the second dose of antibiotic for the GBS condition. I accept her evidence that she likely reviewed the strip at that time.

- (h) At her examination for discovery, Nurse Mahal had not had the opportunity to review a note made by Dr. Wong and which is not included in the hospital chart. Since her examination for discovery, she also had the opportunity to review the telephone records which show that she called Dr. Wong at 12:49 because she was concerned as to what the strip was showing at that time. She had also re-read the entire chart and reviewed the strips themselves which she had not done prior to her examination. She confirmed her handwriting on Tracing #1 shortly after 12:30 recorded what she considered to be the maternal heart rate, and which I find, on a consideration of all the evidence to be the maternal heart rate not the fetal heart rate.
- (i) At 12:55, within minutes of her telephone call to Dr. Wong and just before Nurse White assumed nursing care, Nurse Mahal applied a pulse oximeter to provide a tracing of the maternal heart rate and to track Ms. Stanley-Clarke's oxygen saturation levels.
- (j) Several of the comments I make below with respect to Nurse White, in particular the alleged failure to perform appropriate intrauterine measures, also apply to Nurse Mahal.
- [242] Dr. Feinstadt and Nurse Buchinski had incomplete information at the time they authored their reports when they concluded that there was no evidence of any patient care provided by Nurse Mahal from 12:10-13:00 hours. That is because they were not aware of what I have just set out in the preceding paragraph, although Dr. Feinstadt did later acknowledge the administration of the antibiotic at 12:30.
- [243] I prefer the evidence of Dr. Farmer and Nurse King which, in my view, provides a more realistic assessment of the challenges faced by Nurse Mahal that day taking into account what Nurse Mahal actually did during this time frame.
- [244] I would add that I am not prepared to find Nurse Mahal liable on the basis that she failed to document certain matters between 12:10 and 13:00. The absence of charting permits the court to draw an inference that no care was provided, but this is discretionary, and I decline to do so here: Fullerton at para. 175.
- [245] First of all, I cannot conclude that there was any ulterior motive, as suggested by the plaintiffs, for Nurse Mahal not charting the tracings commencing at 12:10. The lack of charting is normally viewed as a credibility issue and I accept Nurse Mahal's evidence that she was doing what she has said she was doing: Pinch at para 113.
- [246] It would appear that at times Nurse Mahal was likely at the nursing station and not in Ms. Stanley-Clarke's room, but she still could observe the monitor. Furthermore, the obligation to chart and call Dr. Wong would only have arisen if she considered the tracing to be abnormal at that time, and, as Appendix C indicates, there are differing views as to whether that was indeed the case. She certainly could have charted this portion of the tracing when she re-attended at 12:30, but only if she considered it necessary to do so. She was also occupied administering the antibiotic at that time.

- [247] There is also the fact that even if Nurse Mahal ought to have called Dr. Wong at 12:15, his own evidence is that he would not have sought a consultation from Dr. Neapole based on that portion of the strip which was in existence at that time. And even if Dr. Wong had called Dr. Neapole, at that time she was occupied with an urgent VBAC patient, for whom she called a category 1A STAT caesarean section at 12:25. In that regard, the surgery booked by Dr. Neapole for Ms. Stanley-Clarke more than two hours later was category 1B, which means anytime within 8 hours. Clearly, the VBAC patient's situation was going to take precedence over Ms. Stanley-Clarke.
- [248] Finally, Nurse Mahal's actions in calling Dr. Wong at 12:49 because she was concerned at what she was seeing on the strip, is compelling evidence that she was indeed monitoring the fetal heart rate on a regular basis and consulted Dr. Wong when in the exercise of her professional judgment she considered it appropriate to do so. She was in fact on the phone to Dr. Wong when the deceleration at 12:50 commenced.
- [249] Accordingly I have concluded that the plaintiffs have not established that Nurse Mahal actions fell below the required standard of care and the action against her is dismissed.

C: Nurse White

[250] The plaintiffs frame their claims against Nurse White as follows:

- Did Nurse White meet the standard of care expected of her in providing care to Ms. Stanley-Clarke and the infant plaintiff when she assumed care around 13:00 hours? In particular:
 - o Did Nurse White perform a proper systemic assessment and interpretation of the electronic fetal heart monitoring tracing when she assumed care?
 - o Did Nurse White respond appropriately to the worrisome features on the electronic fetal heart monitoring tracing around the time she assumed care?
 - o Did Nurse White perform a proper systemic assessment and interpretation of the fetal heart monitoring tracing that commenced at 13:15 hours and continued, with some gaps, until birth?
 - o Did Nurse White respond appropriately to the worrisome features on the electronic fetal heart monitoring tracing from 13:15 hours until birth?

- [251] Nurse White began providing care to Ms. Stanley-Clarke at 13:00. From that time until the baby was delivered her only patient was Ms. Stanley-Clarke.
- [252] The plaintiffs submit that Nurse White failed to accurately interpret the tracings both before and after the scalp clip was applied by Dr. Wong at 13:07, and in particular failed to advise him of the alleged two prolonged decelerations at 12:15 and 12:50.
- [253] The plaintiffs also say that Nurse White did not keep Dr. Wong fully informed as to what the tracing was indicating from 13:15 onwards. In particular, as of 14:00 the strip was clearly abnormal and she did not summon Dr. Wong until 14:08. This delayed his attendance and also the request for the obstetrical consultation. It is said that this call, over an hour after

she had assumed care of Ms. Stanley-Clarke, did not meet the standard of care, which was to keep the physician advised of developments and to summon his attendance in an urgent manner.

[254] With respect, I cannot accept any of these submissions and I find that Nurse White met the standard of care that was expected of her that day.

[255] First of all, I found Nurse White to be a reliable and credible witness and conclude that her evidence is a complete answer to all of Nurse Buchinski's criticisms.

[256] In addition, my reasons include the following:

- (a) As at June 24, 2012, Nurse White, who is now retired, had 40 years of experience. She has a Masters Degree in Nursing and has extensive experience teaching obstetrical nursing, including fetal health surveillance. Over her career, she has also held a number of nursing managerial positions. She started working at the Hospital in 1997 as the Patient Care Coordinator for the maternity unit, which is a position she held up until her retirement two years ago. As Patient Care Coordinator, she provided hands-on care to patients, provided education to the labour and delivery nurses and the medical staff at the hospital and conducted administrative duties. Nurse White testified that she has reviewed thousands of fetal heart strips over the course of her lengthy career as a nurse and a nurse educator.
- (b) Dr. Feinstadt was not critical of Nurse White's care, and I do not accept Nurse Buchinski's evidence where it conflicts with that of Dr. Farmer or Nurse King. Quite frankly, Nurse Buchinski presented as a largely unprepared witness whose evidence at times bordered on advocacy. There are also certain key omissions from her evidence, including matters she was either unaware of or ignored in reaching her opinions. An example is the assertion that Nurse White failed to take appropriate intrauterine resuscitation measures after she assumed nursing care, including repositioning the patient with the goal of alleviating pressure on the cord, and/or that this intervention would have made any difference in this case. Nurse Buchinski is critical for Nurse White not taking adequate measures to reposition Ms. Stanley-Clarke when both the tracing and Nurse White's evidence is clear that she was making efforts to do just that. There is also Ms. Stanley-Clarke's evidence that she recalled being repositioned.
- (c) There is also no evidence that Ms. Stanley-Clarke was de-hydrated. She had received an IV bolus at 12:30 when the second dose of antibiotic was administered and again at 14:00 just before the epidural. Her oxygen saturation range was also within acceptable limits.
- (d) As I have noted with respect to Nurse Mahal, Appendix C shows at times similar but often different interpretations of the fetal heart rate tracings from time to time. As a very experienced obstetrical nurse, Nurse White is entitled to exercise her professional judgment both in interpreting the readings and deciding what to do in response, unless that exercise of judgment is not one which a nurse in her position acting reasonably would have made that day: Tekano at para. 109. And another very experienced obstetrical nurse, Nurse King,

supports Nurse White's actions that day, as does Dr. Farmer.

- (e) Nurse Buchinski is critical of Nurse White for not notifying Dr. Wong about the abnormal fetal heart strip prior to the insertion of the epidural. It appears she was unaware that both Dr. Wong's evidence and Nurse White's evidence confirm that he was in the room at approximately 13:25-13:30 and aware of the strip. Nurse Buchinski agreed that if Dr. Wong was aware of the strip her criticism would be unfounded. With regard to Nurse White's care during the insertion of the epidural, it is very clear from Nurse White's testimony that Ms. Stanley-Clarke was difficult to hold still.
- (f) With regard to the timing of Nurse White's notification of Dr. Wong at 14:08 and the alleged 8 minute delay in doing so, Dr. Wong had requested Dr. Ramsden (who had just become available after the surgery with the VBAC patient had been completed) to proceed with the epidural and Nurse White contacted Dr. Wong once the epidural needle had been inserted. During the prior few minutes, Nurse White could not see the strip because she was holding the patient and the monitor was behind her. She testified she could hear the fetal heart audibly and thought she heard some changes, the rhythm was still regular. Once she could safely release the patient she immediately reviewed the strip and immediately called Dr. Wong. As the defendant Health Authority points out in its submissions, no expert has criticized the timing of Nurse White's notification of Dr. Wong after 14:00 hours, with Nurse Buchinski's criticism being in relation to the alleged failure to notify Dr. Wong prior to the insertion of the epidural, a criticism she agreed was not appropriate when presented with Dr. Wong's evidence that he was aware of the strip right up until the arrival of the anesthetist.

[257] In his reply report to the opinion of Nurse Buchinski, Dr. Farmer points to some of her erroneous conclusions some of which I have referred to above, stating at page 6:

She contends the nurses failed to adequately monitor the mother and baby and failed to advocate on behalf of Ms. Stanley-Clarke and her baby. When one closely examines all parts of the clinical record, it is quite clear that appropriate intermittent auscultation was actually done early in the labour.

Once there was an indication for continuous monitoring, this was attempted, but it was difficult based on the patient's habitus and movement and distress. The nurses did their very best in this difficult situation. The nurses were also in close communication with Dr. Wong throughout the morning, and at times were quite appropriately directive with their instructions regarding a need for a scalp clip and ultimately the need for obstetrical consultation.

[258] Accordingly, I conclude that the plaintiffs have not established that Nurse White's actions fell below the required standard of care and the action against her is dismissed.

D: Additional Comments regarding the Expert Evidence and the Claims against the Nursing Staff

[259] Dr. Farmer, as the head of the department of Family Practice of BC Women's Hospital, has a great deal of experience working as part of the obstetrical team from both a clinical and an administrative perspective. It was his opinion that all of the nurses involved were extremely competent and acted with care, skill and diligence. They worked appropriately as part of an interdisciplinary care team and also monitored Ms. Stanley-Clarke appropriately while she was in early labour. The nurses then properly continued to monitor Ms. Stanley-Clarke when her labour became more active. They appropriately interpreted the fetal monitoring strip once it became atypical and Nurse White appropriately encouraged an urgent obstetrical consultation when Dr. Wong attended upon Ms. Stanley-Clarke shortly after 14:00 hours. The standard of care provided by the nurses met and most often far exceeded the level expected of an obstetrical nurse.

[260] Dr. Farmer then concludes at the bottom of page 6:

The nurses appropriately interpreted the fetal monitoring strip, and once it became atypical they contacted Dr. Wong who would have been acting as the MRP (most responsible provider). The fetal heart strip deteriorated somewhat more and the nurses appropriately encouraged an urgent referral to obstetrics. Contrary to the opinions of the experts hired by plaintiffs counsel it is my continuing expert opinion that all members of the interdisciplinary care team are extremely competent and acted with care, skill, and diligence and worked appropriately as part of a team.

[261] Nurse Angela King, who as I have noted is a very experienced obstetrical nurse, was also very supportive of the nursing care rendered in this case. Unlike Nurse Buchinski who has not been involved in direct patient care for 20 years, this is Nurse King's daily area of responsibility. Nurse King, like Dr. Farmer, pointed out many of the errors made by both Dr. Feinstadt and Nurse Buchinski in the factual assumptions contained in their reports, and that they both missed crucial evidence about the nursing care provided, in particular by Nurse Mahal and her alleged deficiencies in her care between shortly after 12:00 and 13:00 hours to which I have referred above.

[262] Nurse King generally agreed with the interpretation of the fetal heart strip made by the nursing staff and was of the opinion that Dr. Wong was consulted when it was appropriate to do so. She noted the difficulties in picking up a reading, this due in part to a loss of contact which made the readings difficult to interpret.

[263] She disagreed with the characterization of the strip as abnormal prior to the epidural needle insertion, viewing it as atypical. She was also of the opinion that the fetal heart rate baseline was 160 bpm with average variability and uncomplicated variable decelerations. It was not until after the epidural was inserted that the fetal heart rate tracing for the first time started to display some abnormal characteristics and Nurse White appropriately called for Dr. Wong within 5 minutes of the development of those first abnormal signs. Her opinion that the nursing staff met the standard of care in this case did not waiver at all in

cross-examination.

[264] In conclusion, for the reasons I have outlined, including the critiques of both Dr. Feinstadt and Nurse Buchinski by Dr. Farmer and Nurse King, I prefer the evidence of the latter where it conflicts with the former.

[265] In so far as the interpretations of the fetal heart rate at various times by Nurses Mahal and White, I conclude that the supportive opinions of Dr. Farmer and Nurse King are at least as valid if not more so than those of Dr. Feinstadt and Nurse Buchinski.

E: Dr. Wong

[266] The claims against Dr. Wong are framed as follows:

- Did Dr. Wong meet the standard of care expected of him in providing care to Ms. Stanley-Clarke on June 24, 2012? In particular:

- o Did Dr. Wong perform a proper systemic assessment and interpretation of the fetal heart strip when he attended Ms. Stanley-Clarke around 13:00?

- o Did Dr. Wong respond appropriately to the worrisome features on the electronic fetal heart monitoring tracing from 12:07 to 13:05, including obtaining an obstetrical consultation at 13:15 in the presence of an abnormal fetal heart strip?

- o Did Dr. Wong initiate preparations for emergency delivery of the infant plaintiff at or shortly after 13:00?

- o Did Dr. Wong accurately interpret and respond to the electronic fetal heart rate tracing from 13:15 onwards?

[267] The plaintiffs position is that the appropriate standard of care, in the presence of an abnormal fetal heart rate tracing was not to "wait and see" before seeking an obstetrical consultation. They say that both the SOGC Guidelines and the Fraser Health Chart mandated requesting such a consultation in the face of an abnormal tracing as early as 12:15. When Dr. Wong arrived at 13:00 following Nurse Mahal's telephone call, while it was appropriate for him to apply a fetal scalp monitor, this should have been done in conjunction with calling Dr. Neapole pursuant to the guidelines. This was the plaintiff's expert, Dr. Feinstadt's opinion.

[268] Furthermore, the plaintiffs assert that by 13:40 at the latest Dr. Wong should have been sufficiently concerned by the tracing that an obstetrical consultation was required. This is the point in time that Dr. Barrett faults Dr. Wong for not seeking a specialist consultation.

[269] Then the plaintiffs point to what occurred after Dr. Wong was called by Nurse White at approximately 14:00. First, they say that when Dr. Wong ordered the epidural he should also have arranged for Dr. Neapole to attend. Then, shortly after 14:08 when he attended on Ms. Stanley-Clarke in person, the call to Dr. Neapole should have been made given the fetal heart rate tracings at this point in time. There was a further delay of approximately 7

minutes before the call was made at 14:15, and "minutes matter" in cases such as this. Both Dr. Feinstadt and Dr. Barrett agree with this position.

[270] Some of the salient aspects of Dr. Wong's evidence on these issues can be summarized as follows with my own comments in parentheses:

- Dr. Wong was actually contacted at 12:49, and then attended on Ms. Stanley-Clarke at around 13:00. He reviewed the tracing, but his initial review was probably back no farther than to about 12:35. About 15 minutes later, he and Ms. White reviewed the totality of the tracing, although he did not specifically recall doing so when he testified (Nurse White confirmed that this is what occurred).
- On Dr. Wong's initial review of the tracing, he appreciated an event which took place at around 12:35. He interpreted it as being a brief pickup of the maternal heart rate, even though he read the nearby initials as "FHR" (I have already found that this entry does indeed refer to the maternal, not the fetal heart rate).
- During the same initial review, Dr. Wong appreciated several decelerations after 13:50, with periods during which pickup of the fetal heart rate was lost, and at least one period during which the maternal heart rate appeared to have been picked up. He interpreted the decelerations as being uncomplicated variable decelerations (This is an interpretation shared by Nurse White, Dr. Neapole and Dr. Lawson). One of the decelerations could have been prolonged.
- Due to poor pickup, Dr. Wong and Ms. White considered it important to place a scalp clip.
- Ms. Stanley-Clarke was moved from the assessment room to one of the labour and delivery rooms. The scalp clip was applied and Tracing #2 was commenced. No further episodes of maternal heart rate pickup or prolonged decelerations were seen. Dr. Wong and Ms. White then reviewed the earlier tracing from the time of its commencement, and Dr. Wong remained with Ms. Stanley-Clarke to view the tracing as it was coming out. Dr. Wong believed that the tracing now looked better than it had just before application of the scalp clip (this appears to be confirmed by Tracing #2).
- Dr. Wong recognized there were features on the earlier tracing which would have rendered it abnormal at the time. However, subsequent portions provided reassurance in the form of good variability and accelerations. He considered these subsequent portions to be normal. Overall, considering the whole of Tracing #1 and the ongoing tracing which he saw coming out, during this time frame he would have categorized the tracing as being at the milder end of atypical.
- Around 13:26, Dr. Wong made the decision to arrange an epidural, but was made aware that the anaesthesiologist, Dr. Ramsden, was currently busy (none of the experts are critical of Dr. Wong for ordering the epidural). In fact, Dr. Ramsden was in the OR with Dr. Neapole and the VBAC patient.

· Around 14:08, after the epidural was in place, he was contacted by Nurse White. He attended on Ms. Stanley-Clarke, reviewed the tracing and the situation with her and agreed with her assessment that he should request an obstetrical consultation. He then paged Dr. Neapole who arrived within about 15 minutes.

[271] Having considered Dr. Wong's evidence, the chronology outlined above, the appendices to these reasons, and the evidence of Dr. Barrett and Dr. Feinstadt for the plaintiffs, and Dr. Lawson for the defendant doctors, I find that the plaintiffs have not established that Dr. Wong failed to meet the standard of care expected of him on June 24, 2012.

[272] My reasons include the following:

- (a) While I recognize that, since he had little independent recollection of the events in question, most of Dr. Wong's evidence was based from a review of the hospital chart, I find that he was attempting to be an accurate and truthful witness although, at times, he was quite defensive in his evidence on cross-examination.
- (b) Only Dr. Feinstadt is critical of Dr. Wong's care prior to 13:40, and in particular that he should have sought a specialist consultation at 13:00 on the basis that the strip as of 12:15 was abnormal. I agree with the defendant doctors that Dr. Feinstadt's interpretation of the guidelines, in particular that they leave "little, if any room for play", was "rigid, almost pedantic". In essence it was Dr. Feinstadt's opinion that once a tracing is abnormal it will remain abnormal. This seems contrary to the SOGC Guidelines themselves which contemplate intrauterine resuscitation and a return to normality. It is also contrary to the views expressed by Dr. Neapole and by Dr. Lawson and other experts who commented on this issue, including Dr. Barrett, although his views were closer to those of Dr. Feinstadt.
- (c) Dr. Feinstadt appears to have assumed Dr. Neapole would have been available had Dr. Wong sought a consultation prior to around 14:00 hours. Although this factor relates more to the issue of causation, the evidence at the trial was clear that Dr. Neapole was involved in the care of her VBAC patient from before 13:00 up until around 13:54, and Dr. Wong was made aware of Dr. Ramsden being in the OR at about 13:26.
- (d) I also do not accept Dr. Feinstadt's evidence that Dr. Wong should have made his own arrangements for a caesarean section, including booking the operating room himself before consulting with Dr. Neapole. Dr. Feinstadt's principal experience is derived from rural hospitals, not a tertiary care facility like the Hospital. The evidence was clear that at the Hospital only an obstetrician could make the necessary arrangements, including booking an operating room for a caesarean section. In fact, Dr. Wong testified that on other occasions he had made attempts to get the caesarean section process underway and had been unsuccessful. Dr. Lawson expressed a similar view based on her experience as a family physician who provides obstetrical care in this province. Even if I were to accept Dr. Feinstadt's opinion on this point, there is no evidence that any steps which might have been taken by Dr. Wong would have resulted in an earlier delivery.

- (e) Dr. Lawson, who I found to be a fair and objective witness agreed with the standard of Dr. Wong's care during this time frame. As was the case with Dr. Wong, Dr. Lawson recognized abnormalities in the tracings. She considered the 12:15 event as a prolonged deceleration, and recognized the 12:50 portion of the tracing as revealing a possible, second prolonged deceleration. Yet, she also considered the tracing to be overall atypical. Furthermore she was of the view that even if the strip were interpreted as abnormal, this would not necessarily require an obstetrical consultation. In particular she stated:

In practice we see abnormal strips very commonly. Using the criteria as their set out here in the SOGC guidelines we see abnormal strips all the time. And it isn't generally my practice or the practice of most people that I work with to make a consult based simply on an abnormal strip.

- (f) While Dr. Wong did leave Ms. Stanley-Clarke for some intervals of time, since he was caring for two patients, he explained in his evidence that there were times when Ms. Stanley-Clarke appeared to be doing fairly well and required little attention.
- (g) Dr. Barrett, for his part, opines that Dr. Wong failed to meet the requisite standard of care at 13:40 by not seeking an obstetrical consultation. Dr. Barrett agreed in cross-examination that an epidural was appropriate under the circumstances, but was also of the opinion that Dr. Wong should not have acted sequentially, and should have simultaneously arranged an epidural and sought out an obstetrical consultation. Given that both the anesthetist, Dr. Ramsden, and Dr. Neapole were in the operating room with the VBAC patient during this time frame until approximately 13:50, Dr. Barrett does not explain how this could have been accomplished at the time of the epidural or even a few minutes later as of 13:40. In fact, Dr. Ramsden arrived at Ms. Stanley-Clarke's bedside within five minutes of the completion of the VBAC surgery, that is, 13:50, and by 14:10 the epidural was in place. The lapse in time is partly explained by Ms. Stanley-Clarke's discomfort and the efforts being made by Nurse White to position her appropriately.
- (h) As Appendix C indicates, there were differing views between the various experts and the parties who testified on the point as to the interpretation of the fetal heart rate from time to time. While I accept that the SOGC Guidelines and the Fraser Health Chart have the common objective of standardizing interpretations and the actions that are required, even Dr. Barrett acknowledged that there remains a place for "opinion" in the interpretation and an element of subjectivity. He indicated that "it's getting better to get a pattern which should be easy to see or not easy to see and put it into a category". In these situations, the following comment is appropriate from Fairley (guardian ad litem of) v. Waterman, 2002 BCSC 10 at paras. 85-86:

the plaintiffs have at best established that there are two schools of thought in respect of the interpretation of these particular strips, the majority view being that the strips required no intervention. In circumstances where there are two competing and acceptable schools of thought, the Appellate courts have been quite clear in indicating that adherence to either school (in this case non-intervention versus intervention) is an acceptable standard of care, and a simple clinical misjudgement cannot amount to negligence.

- (i) Dr. Wong testified that "when you're looking at strips you're making judgments my job always is to figure out where we are going, is this kid getting better, is it getting worse or is it the same". And in relation to the infant plaintiff's strip, "and if you look at this strip and if you look at a heart rate you can see the heart rate is getting better".
- (j) Guidelines are just that, guidelines. As the authorities to which I have referred above indicate, they are a factor which can be considered in deciding whether the standard of care was met but they are not determinative in that regard, and as Dr. Wong noted the Guidelines do not take into account an abnormal strip which then improves. In my view this is one of those situations where, at best from the plaintiffs' perspective, there are differing views from recognized experts and professionals, including the parties, as to "what should be easy to see and not easy to see and put it into a category", per Dr. Barrett. Accordingly, it is not possible for me to conclude, given the evidence as a whole on this point, that Dr. Wong and, for that matter the nurse defendants, improperly exercised their judgment in their interpretations such that it was actionable, i.e. amounted to an error of judgment "that would not have been made by a reasonably competent [professional] professing to have the standard and type of skill that the defendant held [themselves] as having, and acting with ordinary care": Whitehouse at 281.
- (k) It is interesting to note in this regard that both Dr. Wong and Dr. Barrett referred to the heart rate as being "tachy", that is tachycardic at for example 13:15. But both the Guidelines and the Fraser Health Card define tachycardia as being greater than 160 bpm for more than 30, but less than 80 minutes for an atypical tracing and abnormal if it exceeded 80 minutes, which was not the case here.
- (l) Dr. Barrett did not provide an opinion about which action, that is the epidural or the obstetrical consultation, would actually occur first if, hypothetically, they were both sought at the same time. Nurse White testified that a complete obstetrical consultation and examination could not occur simultaneously with the placement of an epidural. Since Dr. Barrett stated that the epidural could provide a subsequent benefit during the caesarean operation, it seems logical, as the defendant doctors suggest, that it would be reasonable for the epidural to be placed before the obstetrical consultation began, on the assumption that both the anaesthesiologist and the obstetrician became available at the same time. In this case, Dr. Ramsden did perform the epidural and Dr. Neapole was then consulted.

- (m) Dr. Wong was specific in his evidence that an epidural often has very positive effects on a patient and he would not have ordered the epidural had he believed the baby was hypoxic. He also emphasized that one of the considerations is "not to intervene too quickly so that we cause surgery unnecessarily".
- (n) Although Dr. Barrett expressed criticism of Dr. Wong's actions at 13:40, Dr. Lawson supported Dr. Wong's actions and considered the timing of his request for a consultation with Dr. Neapole at 14:20 to be reasonable. Dr. Farmer also agreed with the standard of care provided by Dr. Wong.
- (o) In so far as the timing of the request for the consultation with the specialist is concerned, Dr. Barrett agreed on cross-examination that it was appropriate for Dr. Wong to apply the scalp electrode and arrange for the epidural prior to consulting Dr. Neapole. Due to Dr. Ramsden's involvement in the VBAC patient's surgery, the epidural was not in place until 14:10. Within 10 minutes, Nurse White and Dr. Wong had reviewed the tracing post epidural and concluded that Dr. Neapole should be paged which occurred at 14:20.

[273] Accordingly, I conclude that the plaintiffs have not established that Dr. Wong's actions fell below the required standard of care and the action against him is dismissed.

F: Dr. Neapole

[274] The claims against Dr. Neapole are framed as follows:

· Did Dr. Neapole fall below the standard of care expected of her in providing obstetrical care to Ms. Stanley-Clarke and the infant plaintiff on June 24, 2012? In particular:

o Did Dr. Neapole respond promptly to the telephone call from Dr. Wong indicating the presence of an abnormal fetal heart strip?

o Did Dr. Neapole accurately interpret the fetal heart monitoring strip when she attended at 14:30?

o Did Dr. Neapole organize and perform a caesarean section promptly when faced with an abnormal electronic fetal heart rate monitoring tracing and evidence that spontaneous delivery was not imminent?

[275] Dr. Neapole is an experienced obstetrician/gynecologist who at the time of this incident had been practicing in this capacity at the Hospital for 12 years. She has extensive academic training and expertise, including teaching the interpretation of fetal heart monitoring to nurses, fellow residents and other physicians. She is the current head of department of obstetrics and gynecology at the Hospital.

[276] Dr. Neapole has no independent recollection of the events which occurred on June 24, 2012, which give rise to this proceeding. She relied on the hospital chart and her routine practice in giving her evidence. She learned of the outcome of Cesar's birth well after the date of delivery and she was still unable at that time to recall any specifics as to what had occurred.

That is because it was her evidence that what took place that day does occur in her usual practice. She testified that there was nothing outside of what would usually happen in an emergency caesarean section operation that would assist her in recalling events.

[277] Dr. Neapole's evidence included the following:

- The changes in the SOGC Guidelines in 2007, while changing the categorization of fetal monitoring strips, did not change the subjectivity involved in interpreting strips, nor did they change the requirement to exercise clinical judgment in interpreting the significance of the different patterns of fetal heart rate and how one would react to them. She stated that studies are ongoing with respect to "hindsight bias", which reinforces the subjective nature of fetal heart rate tracing interpretation.
- Not every abnormal strip results in a caesarean section. It is common to see abnormal patterns and this does not always mean that the baby is in trouble. Obstetricians take the entire clinical picture into account in determining at what time and for what reason a caesarean section might be necessary.
- When considering a caesarean section, the obstetrician has two patients. In the usual course, vaginal birth is the lower risk for both the mother and the baby. Crash or STAT sections, on the other hand, increase the risk to both the mother and baby and are performed rarely. A STAT section is a very risky way to perform an operation and so for most circumstances, if a caesarean section is necessary, an emergency caesarean section will maintain integrity in the system and ensure safety to both the mother and baby.
- Furthermore, "10 minutes from the decision to the baby out would be our very very very best that we could do".

[278] The first allegation against Dr. Neapole relates to the alleged delay in her responding to Dr. Wong's page. The basis for this claim appears to be based on Dr. Barrett's assumption that it took Dr. Neapole 15 minutes to respond to the page and a further 15 minutes to assess the situation and to obtain Ms. Stanley-Clarke's consent to the caesarean section.

[279] According to Dr. Barrett, it should have taken Dr. Neapole 5 minutes to attend upon Ms. Stanley-Clarke after she was paged. I find this evidence to border on advocacy since it was made with no factual knowledge as to where Dr. Neapole was at the Hospital or the time it took for the page to reach the recipient, there being Dr. Wong's evidence this may take a few minutes.

[280] In fact, I find that it took less than 10 minutes for Dr. Neapole to attend once she received the page. I accept Dr. Neapole's evidence that she recorded her arrival at 14:30 in accordance with her usual practice. In that regard, I find that Nurse White made an honest mistake in her evidence when she testified that Dr. Neapole had arrived at Ms. Stanley-Clarke's bedside "shortly before" 14:30 and had completed her examination by that time.

[281] I also find that once Dr. Neapole arrived to attend upon Ms. Stanley-Clarke it took approximately 10 minutes for her to take a history, perform a suitable examination, review the tracing and have a proper conversation with Ms. Stanley-Clarke prior to receiving her informed consent to proceed with the operation. I find that this was entirely appropriate under the circumstances, particularly in light of the fact that this was an emergency, but not a STAT or crash situation, which would involve placing the mother's health at risk. It is noteworthy that the plaintiffs do not allege that a STAT caesarean section ought to have been performed. According to Dr. Neapole, an emergency caesarean section should be conducted "as soon as possible".

[282] I further find that the operation did occur as soon as possible under the circumstances. The OR was booked at 14:45, the porter arrived to take Ms. Stanley-Clarke to the OR shortly before 14:55 and she arrived at the OR at 14:55. Anesthesia commenced at 14:56. At 15:01 Tracing #4 commenced with the fetal heart monitor being removed at about 15:10 with the surgery commencing at 15:16 and Cesar was delivered at 15:23.

[283] Based on the time line of relevant events, I accept Dr. Dancereau's opinion that the time spent by Dr. Neapole in attending upon Ms. Stanley-Clarke and the baby was entirely appropriate.

[284] The timeliness of Ms. Stanley-Clarke's emergency caesarean section itself is reinforced when it is compared with the operation Dr. Neapole performed on the VBAC patient immediately prior:

Event

Ms. Stanley-Clarke

VBAC Patient

Decision to proceed with caesarean section

14:40

12:55

Patient in OR

14:55

13:11

Anaesthetic started

14:56

13:12

Procedure started

15:11

13:20

Surgery started

15:16

13:25

Delivery

15:23

13:34

Surgery finished

15:47

13:47

Procedure finished

15:49

13:50

Patient out of OR

15:55

13:54

[285] This leaves the allegation that Dr. Neapole failed to properly interpret the strip when she attended at 14:30.

[286] I do not accept this argument. First of all, I repeat what I noted at paragraph 272(h) and (j) above regarding the professional judgment involved in interpreting fetal heart monitoring strips. Dr. Neapole was an experienced specialist, which included an academic background in teaching the interpretation of fetal heart monitoring strips.

[287] I accept that Dr. Neapole interpreted the strip to the standard of a reasonably competent obstetrician and proceeded accordingly. As a result, there was no increased degree of risk she observed or ought to have observed when she attended at 14:30 that was indicative of the brain injury Cesar suffered. The risk was not reasonably foreseeable at the time, and the standard of care should not be applied to Dr. Neapole more rigorously in relation to that risk. As stated in Ediger - BCSC at para. 49, a more demanding standard of care is appropriate if a medical practitioner "has, or ought to have, knowledge of a particular risk to a patient." This was not the case for the chorioamnionitis given Dr. Boucher's evidence to which I refer at paragraph 216 above.

[288] In addition, it is contradictory for the plaintiffs to be alleging, in effect, that a proper interpretation of the baby's heart rate would have resulted in the conclusion that his health was in imminent danger while not pleading that the situation required a STAT caesarean delivery. If there was, in fact, an exponentially deteriorating condition, which foreseeably could have the alleged consequences between 15:10 and 15:23, why have the plaintiffs not pled that the situation warranted a STAT caesarean section, and that Dr. Neapole is negligent because she recommended an emergency caesarean instead? I deal further with this point below.

[289] Accordingly, I conclude that the plaintiffs have not established that Dr. Neapole's actions fell below the required standard of care and the action against her is dismissed.

VII: CAUSATION

[290] In the event I am wrong in dismissing the action against the defendants, I will consider the issue of causation.

[291] In response to the defendant Hospital's submission that the plaintiffs' theory of the case changed during the trial, plaintiffs' counsel stated at paragraph 1 of their reply submission:

1 It has been suggested that the plaintiffs' theory of causation has changed during the course of this trial. The plaintiffs' theory of causation was set out at the beginning of this trial, at paragraphs 51-52 of the Plaintiff's Opening as follows

51 It is the plaintiff's case that the infant plaintiff suffered an acute profound hypoxic\ischemic injury at or around the time of birth, an injury that was potentiated by the infection, being chorioamnionitis which was noted upon placental pathology after birth and\or by the hypoglycemia noted after birth which was caused by the hypoxia before delivery.

52 With respect to the type of injury suffered by the infant plaintiff there appears to be a general consensus that the infant plaintiff suffered an acute profound hypoxic ischemic injury. With respect to the question of timing, you will hear evidence that the injury occurred at or around the time of birth and that had the baby been delivered earlier the injury would've been avoided. These conclusions are based upon an analysis of the head imaging of the infant plaintiff (primarily the MRI scans done after birth) and upon the post birth clinical condition of the baby.

[Emphasis added]

2. This theory has not changed.

[292] In so far as the timing of the injury is concerned, the plaintiffs say, taking into consideration the evidence of the experts, that the inference to be drawn is that the injury likely occurred during the last 14 minutes before birth, the key features which weigh in favour of this conclusion being:

(i) the injury was an acute profound injury;

- (ii) the injury was ongoing at the time of birth;
- (iii) the progressive deterioration of the fetal heart monitoring strips, resulting in an abnormal tracing;
- (iv) the plaintiff was predisposed to suffer a more severe hypoxic-ischemic brain injury due to the presence of infection and the postpartum hypoglycemia; and
- (v) "not a single expert opined that this injury occurred more than 24 hours before birth and then recovered. No expert even mentioned it." [Emphasis added]

[293] The plaintiffs rely inter alia on Dr. Hill's opinion that the insult "began sometime around 1 hour prior to delivery as a mild hypoxic ischemic insult" and which then progressed "in an exponential fashion" into a significant insult, and Dr. Marrin's opinion that "Cesar experienced intrapartum hypoxia-ischemia ultimately leading to a brain injury in the last 30 or so minutes of the labour. The C-section was done in response to a deteriorating fetal heart rate tracing which, by one and half hours before the birth, was "abnormal".

[294] They say that an "insult" must be distinguished from an "injury" with the difference being described by Dr. Marrin as I outlined above at paragraph 198.

[295] During oral submissions, plaintiffs' counsel stated the following regarding the timing of the injury:

Counsel: What we look for is the base that Dr. Neapole agreed to that this baby needed to be delivered as soon as possible. And as soon as possible means is that you get in there and you get it done, you don't slash and cut in a Stat but you act expeditiously you act quickly and that didn't happen in this case.

And the context again for that is infection and the indications of infection, fetal tachycardia, maternal tachycardia at 14:35. We know that maternal fever lowers the threshold of injury, Dr. Neapole said the strip was clearly abnormal the only thing that she could tell was that it was abnormal we cannot take any reassurance to fetal well being other than that only tells us that the baby is not yet injured, the baby is not yet at the point where neurological compromise has occurred.

The Court: As of what time?

Counsel: Well at the -- up to the time the strip was taken off.

The Court: Being 15:07 or something?

Counsel: 15:09

The Court: Ok let's do this again, so up to 14:09 -15:09 - there is still some variability on the strip. All that tells you No I just want to make sure of what you just said to me, up to 15:09 there are no signs

Counsel: No up to 15:09 there is still fetal variability which only tells you there is not yet neurologic compromise/damage.

The Court: Just one second.

Counsel: It doesn't tell you how close to the edge of the cliff the baby is. We do know Dr. Neapole knew there was maternal fever because that was charted at 14:35/14:40. We do know that lowers the threshold for neuro .brain injury or hypoxia.

The Court: Ok, just before we leave, [i.e. for the afternoon adjournment] the baby is in fact delivered at 15:23. So in the plaintiff's theory of the case, the baby to use your expression "fell off the cliff" between 15:09 and 15:23.

Counsel: Yes absolutely - that is when the damage actually occurred, that is when the neurologic compromise finally happened.

The Court: And that is a key finding of fact I have to make for the plaintiff to be successful in this case on the causation issue which is an integral part of the cause of action.

Counsel: Yes. It is our submission that is when the damage occurred.

The Court: Right, thank you.

[Emphasis added.]

[296] There was then the afternoon recess, following which counsel stated that the injury occurred at or about 15:09, and he "stood by" what he had submitted just before the afternoon recess.

[297] The doctor defendants' position is that the plaintiffs' theory of causation is not supported by the evidence. Cesar did not cross the threshold into his reserves or buffer zone even in the few minutes before delivery. There was also no evidence of a sentinel event.

[298] Furthermore, they submit there was objective evidence refuting the plaintiffs' theory including the variability shown on Tracing #4, the blood gases which normalized over time and the lack of multisystem failure.

[299] They also argue that the plaintiffs' theory that an injury occurred in the last 30 or so minutes before delivery is also not supported on the evidence. There were also other theories that were at least equally probable including the presence of chorioamnionitis and a resulting impairment of placental blood flow and gas exchange in the 12-36 hours leading up to delivery.

[300] While generally, but not entirely, supporting the defendant doctors on this issue, the defendant Hospital submits that in large part due to plaintiffs' counsel's submission referred to at paragraph 295 above, by the time of oral submissions the plaintiffs' theory of the case had changed.

[301] The Hospital argues that:

the original theory of the case [had been] that there was developing hypoxia as evidenced on the fetal heart strip and that it was causing injury for up to an hour prior to delivery. Their new theory appears to be that there was a sudden acute event.

[302] It says that the plaintiffs' experts had expressly or by implication relied heavily on Dr. Barrett's interpretation of the fetal heart strip as demonstrating developing signs of hypoxic-ischemic injury to support their evidence on the issue of the timing of the injury in relation to the delivery.

[303] It submits that not one of the plaintiffs' causation experts had suggested in their reports or testimony that the cause of the brain injury was a sudden acute asphyxial event while Ms. Stanley-Clarke was delivering the baby by caesarean section, that is after the monitor was removed around 15:10, adding:

It is nothing but mere conjecture and conjecture [and] is not remotely enough to establish causation. The Court may never be able to truly understand what happened here, and certainly the defence experts are not offering definitive explanations but persuasive alternate explanations that have much more to do with the baby's severe acute chorioamnionitis than with any speculation about an acute event during labour.

[304] I have referred to the plaintiffs' reply submission above.

[305] I have concluded that whether the plaintiffs' theory on causation did change during the course of the trial or not, causation has not been established on a balance of probabilities.

[306] That is because, in my view, there are two significant difficulties with the plaintiffs' ability to prove its theory.

[307] The first is that Dr. Marrin, amongst others, relied on Dr. Barrett's interpretation of the fetal heart rate monitoring strips. However, Dr. Barrett did not comment on Tracing #4, which commences at 15:01 after Ms. Stanley-Clarke arrived in the OR and terminates at 15:10 when the monitor was removed in preparation for surgery. Appendix C indicates the interpretations of those experts who did comment on this strip. All refer to "average", "moderate" or "normal" variability. All but one refer to "variable decels".

[308] At page 3 of his report of July 19, 2017, Dr. Marrin states:

According to Dr. J. Barrett's analysis of the fetal heart tracing a pattern of "persistent < fetal tachycardia, and of repetitive decelerations" appeared around 1215 to 1220 hours. A scalp electrode was applied by Dr. Wong at about 1310 hours. Ms. Stanley-Clarke was given morphine for pain and an epidural anesthetic was requested. Between 1300 and 1400 hours the Labour Partogram notes an "atypical" FHR of 160 bpm with variable decelerations. Dr. Barrett's opinion is that, by 1340 hours, the "situation had obviously progressed and worsened with a more "chaotic" FHR tracing with "more frequent and deeper" FHR decelerations. At 1400 hours the FHR was described in the Partogram as "abnormal".

An epidural anesthetic was established by about 1410 hours.

[309] While Dr. Marrin also stated that he would have reached the same conclusions on causation if he were not to consider the fetal heart rate monitoring, he was clearly referring to Dr. Barrett's summary, which did not include Tracing #4.

[310] While the interpretations of Tracing #4 on Appendix C refer to variability and decelerations, it was incumbent on the plaintiffs, in my view, to have their experts on causation comment on the significance of this strip and the presence of variability for the entire time the monitor was in place while Ms. Stanley-Clarke was in the OR prior to it being removed in preparation for the surgery. This was particularly the case in light of counsel's statement that "up to 15:09 there is still fetal variability which only tells you there is not yet neurologic compromise/damage". And there is also Dr. Barrett's evidence regarding the relationship between fetal heart health and variability on the strip as outlined at paragraph 189 above, but no mention made by him in his evidence of variability on Tracing #4 being when Ms. Stanley-Clarke was in the OR waiting for the surgery to commence.

[311] As the defendant doctors submit in their written argument:

95. Each of Drs. Marrin, Hill and Armstrong rely, in part or in whole, on Dr. Barrett's opinion and as a result their opinions must be considered in light of the fact Dr. Barrett's opinion is not supported on the evidence. One must particularly wonder if Dr. Marrin might have come to an entirely different conclusion if he had known about the variability on tracing #4 given his reference to the significance of variability in his report.

[312] None of the plaintiffs' experts on causation opine, taking into account Tracing #4, that the baby was "at the edge of the cliff" and/or moments away from falling off that cliff immediately prior to the commencement of the surgery.

[313] In fact, none of the plaintiffs' experts express the opinion that the baby was at the edge of the cliff or minutes or even seconds from falling off at 14:30-14:40 when Dr. Neapole was assessing Ms. Stanley-Clarke and recommending an emergency as opposed to a STAT caesarean section.

[314] The most Dr. Marrin was prepared to say was that:

Taking into account of all the available information, however, it is more likely than not that the threshold of injury was crossed in the last half hour or so of labour.

[315] Finally, on this point, to the extent that Dr. Marrin's comments to which I refer above can be interpreted, as the plaintiffs submit, as his agreement with their "edge of the cliff" argument, it should be noted that this submission was made in the context of the baby being in this condition immediately prior to the surgery commencing, not at approximately 14:30, being the last timeframe referred to by Dr. Barrett in his fetal heart rate interpretation analysis and without any apparent knowledge or recognition of Tracing #4.

[316] While the factual circumstances were different, the comments in Smith at para. 59 apply in this case:

The existence of hypoxia alone is insufficient to cause brain damage unless the fetus is unable to cope with it. The experts agree that all babies suffer some hypoxia during birth but most are able to survive without injury. I find that in this case Luke was compensating for hypoxia until around 3:30 a.m. on May 13.

[317] Based on Tracing #4, the plaintiffs have not established that the baby in this case was not compensating for hypoxia in the timeframe immediately prior to the delivery.

[318] This then leads me to the second difficulty with the plaintiffs' theory.

[319] From the exchange between counsel and the court to which I refer at para. 295 above, it appears that the plaintiffs accept that the baby was in fact still compensating for hypoxia as at 15:10 when the monitor was removed.

[320] The logical conclusion to be drawn from the evidence is that the baby was not at the edge of the cliff or within moments of falling off it in the 14:30-14:40 timeframe, and I make that finding of fact.

[321] To repeat what plaintiffs' counsel stated regarding Dr. Neapole's recommendation for an emergency caesarean:

And as soon as possible means that you get in there and you get it done, you don't slash and cut in a Stat but you act expeditiously you act quickly and that didn't happen in this case.

[322] But, as I have concluded above at paragraph 282, Dr. Neapole did in fact "get in there and get it done", as soon as possible after she was consulted by Dr. Wong.

[323] As was stated by Justices Rothstein and Moldaver in Ediger - SCC at para 28, referring to Clements:

... the plaintiff must show on a balance of probabilities that "but for" the defendant's negligent act the injury would not have occurred...." inherent in the phrase "but for" is the requirement that the defendant's negligence was necessary to bring about the injury-in other words that that the injury would not have occurred without the defendant's negligence"

[324] The plaintiffs apparently accept that Dr. Neapole, between 14:30 and 14:40, was correct to recommend an emergency caesarean section, that is, an "as soon as possible caesarean", as opposed to a STAT operation which would have placed the mother's health in jeopardy. This recommendation is validated by the variability shown on Tracing #4. This acknowledgment by the plaintiffs is, in my view, inherently contradictory to their theory on causation, which must be that it was or ought to have been reasonably foreseeable to the defendants, in particular Dr. Neapole by 14:30 to 14:40 at the latest, that the baby was likely at the edge of the cliff immediately prior to the operation commencing, assuming the operation was proceeded with as soon as possible.

- [325] In their reply, the plaintiffs suggest that because the hypoxic-ischemic injury was progressing exponentially at the time of delivery, every minute mattered and contributed with greater intensity to Cesar's overall injury. For this proposition they cite, in part, the testimony of Dr. Boucher. But in my view this timing cannot be extrapolated with any accuracy to the circumstances of this case. Dr. Boucher's evidence on this point was made in reference to an acute asphyxial event induced in animal studies by tying off the umbilical cord. However, as I have determined, the plaintiffs have not established it is more likely than not that this type of acute hypoxic-ischemic injury occurred, or the infant plaintiff was failing to compensate for hypoxia immediately prior to delivery. I would add that I do not accept Dr. Barrett's theory that there was sufficient oxygen deprivation caused by cord occlusion since it appears to be contrary to the majority of the other expert evidence on this issue. There is also Dr. Boulton's evidence that delivering a baby through uterine incision will sometimes result in an acute bradycardia.
- [326] The plaintiffs have also argued that the infant plaintiff had a "thin skull" due to two pre-existing vulnerabilities: intrapartum infection and postpartum hypoglycemia. Accordingly, they argue the infant plaintiff had a pre-existing vulnerability to hypoxic-ischemic injury. For the following reasons, taking into account the legal framework set out at paragraph 117 above, this submission does not affect my conclusions on causation.
- [327] With respect to intrapartum infection, the evidence indicates it was likely the case that chorioamnionitis had resulted in a fetal inflammatory response, which in the usual course, compromises placental blood flow and gas exchange. This existed prior to delivery, and based on the available expert evidence I agree that it may have rendered the infant plaintiff more susceptible to hypoxic-ischemic injury.
- [328] However, the same evidence indicates that this inflammatory response was likely initiated 12-36 hours prior to delivery. Tracing #4 indicates that the infant plaintiff was tolerating the effects of hypoxia immediately prior to delivery. For these reasons, even if the infant plaintiff had a thin skull as a result of the infection, I cannot conclude with any confidence that any damage flowing from this vulnerability would have been avoided if the defendants had delivered the infant plaintiff even an hour earlier, and my conclusions on causation are unaffected. I also note that the plaintiffs' thin skull argument parallels the alternative theory of injury put forward by the defendants, and what is described by the plaintiffs as a pre-existing vulnerability may actually be the primary injury.
- [329] With respect to postpartum hypoglycemia, although there is evidence that suggests the infant plaintiff was hypoglycemic following delivery, this is not a pre-existing vulnerability as contemplated by the thin skull rule. The plaintiffs state in their written argument that the postpartum hypoglycemia was "likely caused by the hypoxia/ischemia which the infant plaintiff suffered". Based on their theory of causation, this argument appears to be that the defendants' failure to deliver Cesar quickly enough allowed the acute hypoxic-ischemic injury to occur, which in turn led to postpartum hypoglycemia. This resulting hypoglycemia magnified the severity of Cesar's brain injury. Whether or not post-natal

hypoglycemia contributed to the final severity of Cesar's brain injury, this was not a pre-existing vulnerability and does not affect the causation analysis.

- [330] Although it was not expressed this way in final argument, if the plaintiffs' position regarding the effect of hypoglycemia is more accurately described as pre-delivery hypoglycemia resulting from chorioamnionitis and impaired placental blood flow, it has no effect on the causation analysis for the same reason as the thin skull argument related to intrapartum infection. The evidence simply does not indicate it is more likely than not that these vulnerabilities caused the infant plaintiff to "fall off the cliff" in the minutes leading up to delivery, and the requisite link between the defendants' alleged negligence and the infant plaintiff's injury is not established.
- [331] While it is not for the defendants to prove the cause of the infant plaintiff's injury, there is at least one other plausible explanation for what occurred apart from the plaintiffs' theory.
- [332] It is clear from the evidence that a cause or underlying contributing cause was chorioamnionitis, which had established itself in the placenta 12-36 hours before delivery. This condition and the possibly related brain edema were unbeknownst to the defendants.
- [333] While Dr. Marrin was of the view that there was an acute event during the delivery, he, unlike Dr. Hill, acknowledged the important role infection played in this case. He agreed that there was a serious infection of the placenta with an acute inflammatory response from the fetus. He acknowledged that there was heavy acute inflammation of the membranes and heavy acute chorioamnionitis and chorionic vasculitis. He stated that when bacteria has been present for a long enough time and found in great enough concentrations, the fetus will launch an immune response. This kind of infection is more often to occur after the membranes have ruptured and in the presence of GBS. In that situation the infection can ascend up to the cervical opening into the amnion, and in the context of Ms. Stanley-Clarke being GBS positive, that could be the source of the infection. On cross-examination he said:

Q Now, would you agree that an infection that is severe enough and advanced enough to cause a fetal inflammatory response, it can cause impairment in the blood flow and the gas exchange through the placenta into the fetus?

A Yes.

Q That impairment of oxygen and blood flow can in turn cause hypoxic -ischemic brain damage to the fetus?

A If the placental inflammation is severe enough as to interfere with gas exchange and render the baby sufficiently hypoxic for a sufficient period of time then yes, that could result in brain injury.

- [334] Dr. Sarah Keating testified there was heavy acute chorioamnionitis and a well-established fetal inflammatory response that was compatible with a duration of infection of 12-36 hours prior to delivery. In her report she also stated that cerebral palsy is associated with chorioamnionitis with fetal inflammatory response and accounts for 6% of cerebral palsy cases. Dr. Keating's evidence was essentially unchallenged on cross-examination.
- [335] Dr. Boucher's evidence that the bulk of the injury was attributable to severe chorioamnionitis and that the causal event or combination of events took place in the 24-48 hours preceding Ms. Stanley-Clarke's admission was also largely unchallenged. And there was also the evidence of Dr. Decarie, also essentially unchallenged, that the pattern of brain edema or swelling in this case suggests that the causative event could have occurred a few days before birth.
- [336] I have concluded that, at most, the plaintiffs have established that there was mild to moderate hypoxia in the timeframe immediately prior to the surgery which the baby was still tolerating, and that this hypoxia, when taken into conjunction with the acute chorioamnionitis, may have been the reason he "fell off the cliff" in the minutes after the operation commenced, as postulated by the plaintiffs. But they have not established it was probably the reason, which is insufficient to meet the standard of proof on a balance of probabilities. Repeating the comments of the Court in Seattle at para. 145: "[T]he plaintiffs have proven only that the outcome might have been better not that it probably would have been better." [emphasis added]
- [337] It bears remembering that Dr. Boucher's evidence indicated there was no reason for the defendants to have suspected the early presence of chorioamnionitis, and none of the plaintiffs' experts suggested it should have been anticipated. Furthermore, it was his opinion that the test results obtained after delivery "do not reflect a hypoxic-ischemic event of such magnitude to explain the unfortunate evolution of the infant".
- [338] At paragraph 199 above, I referred to Dr. Marrin's analogy on causation and the reference to assembling a puzzle.
- [339] For the reasons I have outlined, I have concluded that the plaintiffs have not satisfactorily, on a balance of probabilities, assembled the pieces of this puzzle. On their theory of causation, some pieces do not fit, some are missing and some are inherently contradictory.
- [340] I would dismiss the action on the basis that causation has not been established.

VIII: CONCLUSION

- [341] As I noted in the introduction to these reasons, this is a tragic case involving, as it does, an innocent and catastrophically injured child.

- [342] But the defendants were a highly skilled, both academically and professionally, obstetrical team. Some of them have little independent recollection of what occurred that day with the attending obstetrical surgeon, Dr. Neapole, having no actual recollection at all. If anything, this could be seen to confirm the evidence that what occurred was not an unusual event at least in so far as the events up to and including delivery were concerned.
- [343] One or more of the defendants can only be found liable if the plaintiffs have established their fault, and the Court can only award damages if causation is also proven.
- [344] For the reasons I have outlined, the action is dismissed. The defendants are entitled to their costs at Scale B should they pursue them.
- [345] The parties have leave to make additional submissions regarding costs if there are any factors relating to this issue of which I am unaware.

"Abrioux J."

Appendix A

Appendix B

STRIP & PANEL #

MAHAL

WHITE

WONG

NEAPOLE

BARETT

BUCHINSKI

FEINSTADT

BOUCHER

DANSEREAU

LAWSON

FARMER

KING

Strip #1

Baseline 160

Normal (i.e.

moderate)

variability

Moderate

variability

Normal to Atypical tracing

Baseline 155 to 170

Normal

variability

Atypical

Baseline 160

Normal

Variability

Atypical

Tachycardia

Variability

preserved

Atypical

Baseline 160 to 170

Baseline 160 to 180

Moderate

variability

Abnormal

Normal

variability

throughout

Category II (or atypical)

Moderate

Variability

Atypical

Atypical

Baseline 160 to 175

Average variability Atypical

Panel

27975

(1215 hrs)

Not

interpretable

Not

interpretable

Prolonged decel. - 414 min

Decel. - 3 to 4 min.

Variable

decel.

Decel.

Atypical

Prolonged decel - 4¼ to 5 min.

Abnormal

"Severe

deceleration"

Not interpretable (reply report)

Prolonged decel. - 4V4min (testimony)

Decel. lasting 30 sec. to less than 3 min.

Variable decel. lasting 30 sec. to 214 min.

Panels 27976 - 27978

Normal tracing - accels, no decels, normal variability

Normal tracing- uncomplicated variable decels, good variability

Reassuring

Normal tracing, accels, no decels, normal variability

Normal tracing

Panel -979 (1235 hrs)

Maternal heart rate

Maternal heart rate

Maternal tracing

Maternal heart rate

Possibly

maternal

Panel

27982

(1250 - 1253 hrs)

Not

interpretable

At times maternal

Maternal heart rate

Maternal at 1250 then decel. lasting less than 2 min. at 1253

Possibly

maternal

Prolonged

decel.

Possibly maternal at 1250 then prolonged decel. at 1253

Difficult to assess, some maternal

Maternal at 1250 then prolonged decel. at 1253

Variable

decel.

Not interpretable

Panels

27983 -

27984 (1255 to 1305 hrs)

Variable

decel.

Decels & accels

Moderate

variability

Atypical

Simple variable decels

Good variability

Variable decels.

Normal

variability

Variable

decel.

Reduced

variability

Variable

decel.

Adequate

variability

Variable decels.

Appendix C

ELECTRONIC FETAL MONITORING INTERPRETATIONS

STRIP & PANEL #

MAHAL

WHITE

WONG

NEAPOLE

BARETT

BUCHINSKI

FEINSTADT

BOUCHER

DANSEREAU

LAWSON

FARMER

KING

Strip #2

Panels 26145 - 26154

(1315 to 1400 hrs)

Baseline 160 to 165

Normal

variability

Uncomplicated variable decels

Artifact pick-up

Atypical

Uncomplicated variable decels

Normal to

marked

variability

Atypical

Baseline 160 to 165

Normal

variability

Variable decels, then unusual looking decels. with accels.

Atypical

Abnormal

(report)

Atypical

(testimony)

Normal

variability

Normal

variability

Atypical

Baseline 160 Average variability Atypical

Panels

26154-

26155

(1400 to 1410 hrs)

Atypical to Abnormal

Atypical

Preserved

variability

Abnormal

Abnormal

Variable decels becoming more severe

Atypical

Variable decels. Average variability Atypical

Panels 26156 to 26159

(1410 to 1426 hrs)

Moderate

variability

Decels.

Abnormal

More atypical

Baseline difficult to ascertain

Preserved

variability

Variable decels.

Atypical to Abnormal

Abnormal

Preserved

variability

Abnormal

Repetitive complex variable decels with no clear baseline

Baseline difficult to define

Marked

variability

Abnormal

Strip #3

(1427 to 1454 hrs)

Difficult to find baseline

Complicated variable decels

No prolonged bradycardia

Difficult to find baseline

Normal

variability

No prolonged bradycardia

Abnormal

Abnormal

"Almost a prolonged bradycardia" (testimony)

Normal

variability

Moderate

Variability

Complicated variable decels

No bradycardia

Abnormal

Abnormal

STRIP & PANEL #

MAHAL

WHITE

WONG

NEAPOLE

BARETT

BUCHINSKI

FEINSTADT

BOUCHER

DANSEREAU

LAWSON

FARMER

KING

Strip #4

(1501 to 1510 hrs)

Baseline 160

Moderate

variability

Variable decels

Baseline 160

Normal

variability

Variable decels

Variable

decels

Normal

variability

Moderate

variability

Baseline 160 Variable decels Average variability

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