Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

A Decision by the Deputy Health and Disability Commissioner

(Case 21HDC00367)

Introduction

1. This report is the opinion of Rose Wall, Deputy Health and Disability Commissioner, and is made in accordance with the power delegated to her by the Commissioner.

2. The report discusses the care provided to Mrs A and Baby A during Mrs A's pregnancy and labour, by Registered Midwife (RM) B and Christchurch Women's Hospital (Health New Zealand|Te Whatu Ora (Health NZ) Waitaha Canterbury (formerly Canterbury District Health Board)[1]).

3. Mrs A was admitted to Christchurch Women's Hospital for induction of labour. Following a prolonged labour, Baby A was delivered but, sadly, he passed away.

4. Following the events, the matter was referred to HDC by the Coroner.

[1] On 1 July 2022, the Pae Ora (Healthy Futures) Act 2022 came into force, which disestablished all district health boards. Their functions and liabilities were merged into Health New Zealand|Te Whatu Ora. All references in this report to Canterbury District Health Board now refer to Health New Zealand|Te Whatu Ora Waitaha Canterbury.

Names have been removed (except Health NZ Waitaha Canterbury, Christchurch Women's Hospital, and the advisor) to protect privacy. Identifying letters are assigned in alphabetical order and bear no relationship to the person's actual name.

5. The following issues were identified for investigation:

- *Whether Canterbury District Health Board provided Mrs A and Master Baby A with an appropriate standard of care in 2018.*
- *Whether RM B provided Mrs A with an appropriate standard of care in 2018.*

6. The parties directly involved in the investigation were:

Mrs A	Consumer
Health NZ	Provider
RM B	Provider

7. Also mentioned in this report:

Dr C	Consultant obstetrician and gynaecologist
Dr D	Registrar
Dr E	Junior registrar
Dr F	Senior registrar
Dr G	Consultant obstetrician/maternal fetal medicine sub-specialist
Dr H	Obstetrician and gynaecologist
RM I	Registered midwife

8. Further information was received from:

The Coroner
Accident Compensation Corporation (ACC)

9. Independent advice was obtained from an obstetrician and gynaecologist, Dr Sikhar Sircar (Appendix A).

How matter arose

Medical history and pregnancy

10. Mrs A had a medical history of diet-controlled type 2 diabetes,[2] which had regressed following weight loss. Mrs A also had systemic lupus erythematosus[3] (lupus) but had been in remission for over 10 years. She also had asthma[4] and Raynaud's syndrome.[5]

[2] The result of the body either not producing enough insulin, or not recognising the insulin that is present, to keep blood glucose (sugar) levels within the normal range.
[3] A long-term autoimmune disease in which the body's immune system attacks its own healthy tissue.
[4] A long-term condition that affects the airways in the lungs, making it hard to breathe.
[5] A circulatory disorder in which arteries in the fingers and toes spasm, restricting blood flow and causing pain and marked colour changes of the skin.

11. In 2017, Mrs A became pregnant with her first baby following in vitro fertilisation[6] (IVF).

12. Mrs A registered with RM B, a private midwife, as her lead maternity carer (LMC). At the time of booking, Mrs A's weight was 78kg, and she had a BMI[7] of 23.5.[8]

13. RM B referred Mrs A to Christchurch Women's Hospital for obstetric input due to her medical history of type 2 diabetes and lupus, and an IVF pregnancy.

Antenatal care

Admission to hospital

14. RM B told HDC that extensive monitoring and investigations were undertaken during Mrs A's pregnancy, largely due to the high-risk nature of the pregnancy (advanced maternal age, IVF pregnancy, and Mrs A's medical history of diabetes, lupus, and asthma).

15. Mrs A was under primary care (LMC care) with obstetric input until 31 weeks' gestation. At 31 + 2 weeks' gestation, Mrs A called RM B to advise that she had a small amount of brown spotting, which later became a pink discharge.

16. RM B made an immediate plan to meet Mrs A at Christchurch Women's Hospital for a primary assessment. On the same day, Mrs A was admitted as an inpatient for antepartum haemorrhage[9] with reduced fetal movements.

17. An ultrasound scan with Dopplers[10] showed a 'large baby' with an estimated fetal weight above the 95th centile. The scan showed a normal umbilical artery pulsatility index[11] (PI) and normal amniotic fluid index[12] (AFI). Fetal movement was visible on the scan and no cause for the bleeding was seen. A CTG[13] was normal.[14]

18. As an inpatient, Mrs A had CTGs twice daily, all of which were normal.

19. Mrs A was discharged two days later. The plan following discharge was for Mrs A to have CTGs and ultrasound scans with Dopplers twice weekly.

[6] Fertilisation outside the body.
[7] Body mass index.
[8] A BMI between 18.5 and 24.9 is within the normal range.
[9] Bleeding from, or into, the genital tract, occurring from 24 weeks of pregnancy and prior to the birth of the baby.
[10] A Doppler ultrasound uses sound waves to produce images of blood moving through the circulatory system.
[11] Measurements of fetal blood flow to monitor the wellbeing of the fetus.
[12] A quantitative estimate of amniotic fluid and an indicator of fetal wellbeing.
[13] Cardiotocograph. CTGs are used during pregnancy to monitor the fetal heart rate and uterine contractions.
[14] A normal CTG is associated with a low probability of fetal compromise and has the following features: baseline rate of 110–160 beats per minute (bpm), baseline variability of 6–25bpm, accelerations of 15bpm for 15 seconds, and no decelerations. All other CTGs are abnormal and require further evaluation, taking into account the full clinical picture.

Ultrasound scan at 32 weeks' gestation

20. Following Mrs A's discharge, for several weeks she underwent numerous ultrasound scans and CTGs, all of which were normal.

21. At 32 + 3 weeks' gestation, an ultrasound scan showed that the middle cerebral artery PI was abnormally low, but the umbilical artery PI remained normal. The CTG was normal.

22. Another ultrasound scan was performed two days later. All values were normal, and the CTG was normal. Subsequently, all other ultrasound scans and CTGs were normal, and Mrs A had no further bleeding.

Plan for induction of labour

23. Mrs A met with RM B in the clinic. RM B noted that Mrs A and the baby were well, and that the baby was 'very active'. RM B recorded that Mrs A had seen the doctors in the previous week and they were 'happy' with how things were going.

24. A plan was made for Mrs A to be induced at 39 weeks' gestation due to advanced maternal age and an IVF pregnancy with a donor egg.

Labour and delivery

25. At 4.00pm at 39 weeks' gestation, Mrs A was admitted to the Birthing Suite at Christchurch Women's Hospital for induction of labour, as planned. From this point onwards, Mrs A was under secondary care services, and her care was managed by the obstetrics team.

26. In the 48 hours following Mrs A's admission, she received two doses of Cervidil.[15]

Day 4[16]

27. Mrs A entered the first stage of labour[17] on Day 4 (three days following her admission).

28. At 4.45am on Day 4, Mrs A was noted to be distressed with uterine contractions. Her cervix was 3cm dilated. She was transferred to a birthing room and given morphine at 5.35am. Following the administration of morphine, the CTG showed reduced variability of the fetal heart rate.

29. At 7.12am, a midwife performed a vaginal examination, which showed that Mrs A's cervix was fully effaced[18] and 6 to 7cm dilated. The midwife contacted RM B by phone and asked her to attend the hospital to provide labour cares for Mrs A.

[15] Used to prepare the birth canal in women who require, and have favourable features for, induction of labour, after 37 weeks of pregnancy have been completed. It helps the cervix to soften and open to allow the baby through.
[16] Relevant dates are referred to as Days 1–7 to protect privacy.
[17] Also known as established labour, which happens when the cervix stretches to let the baby out. Contractions start and the cervix slowly opens until it is 10cm wide (fully dilated), ready for the baby to pass through.
[18] The thinning of the cervix during labour.

30. At 8.01am, Mrs A's membranes ruptured spontaneously, and clear liquor[19] was noted.

31. At 8.30am, RM B performed a CTG, which still showed reduced variability.[20] RM B noted in the clinical records: 'CTG trace looking "sleepy" but with good peaks of normal variability and decelerations with a bit of reduced variability in between.'

32. At 9.15am, Mrs A was reviewed by Dr C,[21] a consultant obstetrician and gynaecologist and the Senior Medical Officer (SMO) on call.

33. Dr C noted in the clinical records that the fetal heart rate variability was slightly reduced at times, and that there was reasonable progress. Dr C's plan was for Mrs A to be reviewed at 11.00am (which was approximately four hours from the last vaginal examination at 7.12am), and for Mrs A to be reviewed 'urgently as required'.

34. Between 10.00am to 10.50am, the CTG was normal.

35. At 10.54am, RM B noted in the clinical records that the CTG trace appeared 'sleepy', and that she had paged the obstetrics and gynaecology registrar to discuss an increase in Mrs A's systolic blood pressure.[22]

36. At 11.11am, in accordance with Dr C's plan, RM B performed a vaginal examination to assess progress. RM B noted that Mrs A's cervix was 6cm dilated, and the baby's head was well applied to the cervix. RM B documented that the baby's head was possibly deflexed,[23] there was 'caput++[24]', and the fetal station[25] was -2.[26] RM B recorded that the CTG still showed 'reduced variability but good response from baby on exam'.

37. At 11.30am, RM B discussed Mrs A's progress with Dr C. The plan was for Mrs A to be given an epidural and to commence oxytocin.[27] Mrs A was to be reassessed in four hours' time (at 3.30pm).

38. RM B paged the anaesthetist three times (at 11.53am, at 12.00pm, and again at 12.09pm) for the epidural to be given. RM B noted in the clinical records: '[The anaesthetic registrar has] a few epidural requests so will come when he can.'

[19] Amniotic fluid surrounding the fetus during pregnancy.
[20] Reduced to 3–5bpm.
[21] Dr C started the shift at 8.00am on Day 4 and finished the shift at 8.30am on Day 5.
[22] 152/62mmHg. The normal range for systolic pressure is between 110–130mmHg.
[23] Extended backward.
[24] Caput succedaneum refers to swelling of a baby's scalp, which can be caused by prolonged pressure from the dilated cervix or vaginal walls on the baby's head.
[25] A measurement of how far the baby has descended in the pelvis, measured by the relationship of the fetal head to the ischial spine.
[26] The baby is still trying to enter the pelvis. The scale ranges from a -5 to +5. Generally, at -5 station, a baby is not engaged at all, and at +5 station, a baby is engaged and preparing for delivery.
[27] A natural hormone that stimulates the muscles of the uterus to contract.

39. At 12.16pm, the anaesthetist was present but unable to site the epidural 'due to workload'.

40. At 12.28pm, the CTG still showed that the fetal heart rate had reduced variability. At 12.30pm, it was noted that the CTG had 'improved variability', and at 12.40pm, it had 'improved a lot'.

41. At 1.18pm, the anaesthetist presented to give the epidural, which was sited at 1.49pm. Oxytocin was commenced at 2.16pm.

42. At 3.00pm, Mrs A was reviewed by registrar Dr D, who noted that Mrs A was contracting only two to three times in 10 minutes.

43. Dr D performed a vaginal examination, which showed that Mrs A was 7 to 8cm dilated. Dr D documented that there was 'significant moulding[28]' of the baby's head, the baby's head was deflexed, the baby was in the right occiput anterior[29] (ROA) position, and the fetal station was still -2. Dr D noted that 2/5ths of the baby's head was palpable[30] abdominally, which meant that 3/5ths of the baby's head was descending into the pelvis.

44. Given that the oxytocin had commenced only about 45 minutes earlier (at 2.16pm), Dr D's plan was to increase the oxytocin in order to increase the frequency of the contractions. Dr D planned to reassess Mrs A within two to four hours' time (between 5.00pm and 7.00pm).

45. Dr D documented that a discussion about Mrs A was had with Dr C. Dr C does not recall being informed about any moulding or that the baby's head was deflexed, only that there was a delay in labour and a delay in the oxytocin being commenced. Dr C recalls questioning 'the small amount of change' in the vaginal assessments that were recorded on the board in the Handover Room. Dr C explained:

> 'By this, I mean that [Mrs A] had been reported as six centimetres at 7:00am, 11:00am and then was only seven–eight centimetres at 15:00pm. Once Oxytocin is administered and good contractions of three–four per 10 minutes are established, one would expect a change at the rate of at least one centimetre per hour. We discussed the short duration of oxytocin, commencing just over an hour prior, and that the contractions were only just starting to achieve a good regular pattern of three–four contractions per 10 minutes.'

46. At 5.00pm, RM B noted that the contractions were 'picking up well now'. She noted two abnormal features on the CTG and documented on the CTG assessment tool that accelerations were absent, and that the CTG showed variable decelerations without complicating features. RM B noted that no action was required, and that the plan was to continue.

[28] The change in shape of the fetal head due to forces of labour.
[29] The baby enters the mother's pelvis with the baby's back towards the front right side of the mother's pelvis.
[30] Examine by touching and feeling.

47. At 5.22pm, RM B performed a vaginal examination. The findings were similar to those of the earlier examination (at 3.00pm). Mrs A's cervix was still 7 to 8cm dilated, the baby's head was deflexed, there was 'caput++', and the fetal station was still -2. RM B also noted that there was 'moulding'.

48. RM B said that at 5.22pm advice regarding the lack of progress was sought from Dr C and Dr D, but neither were able to review Mrs A at that time, as they were reviewing two other women who potentially required a Caesarean[31] section (C-section). RM B said that 'given the CTG was overall normal, we were to continue and one of the doctors would come in when they could'.

49. Health NZ said that no employee of Health NZ assessed Mrs A at 5.22pm.

50. At 5.44pm, RM B discussed her findings with both Dr C and Dr D. Health NZ said that at this point, Dr C and Dr D were outside the birthing room about to take another woman to theatre, and their consideration at that time needs to be considered in the context of the other matters they were having to deal with, and 'their inability to actually go and assess [Mrs A] themselves, and what information they were actually told'.

51. Dr C said that they had discussed that the findings of the next vaginal examination would be decisive as to whether the baby needed to be delivered by C-section.

52. Dr C said that as Mrs A had received only three hours of oxytocin at this point, there was a possibility that she could still progress. Dr C stated that at this point there was no indication of fetal compromise requiring a C-section, but a C-section would be required if there was no 'significant progress'.

53. In accordance with her discussion with Dr C and Dr D, RM B noted in the clinical records that the next assessment would be 'the decider', and that it was 'depend[e]nt on theatre' as there were two other women potentially waiting to have a C-section.

54. At 8.00pm, RM B was still waiting on Mrs A to be reviewed by Dr C. RM B noted in the clinical records that 'all [doctors]' were 'busy in [operating theatre]'. The CTG assessment at 8.00pm suggested variable decelerations with a period of reduced variability and normal variability. RM B noted that no action was required.

55. Dr C told HDC that no CTG concerns were brought for attention at any stage. Dr C said:

> '[T]he very regular use of CTG stickers by [RM B] highlights that while at times there were some variable decelerations, these were always without complicating features and that overall the CTG was reassuring with no concerns.'

56. At 8.42pm, RM B noted that it had been almost four hours since Mrs A's last vaginal examination (at 5.22pm). RM B went to the Handover Room to get an update as to when

[31] A surgical procedure in which a baby is delivered through incisions in the abdomen and uterus.

the doctors would be available. RM B discussed a plan for Mrs A with Dr C, and it was noted that Dr D would be doing the next vaginal examination at 9.00pm.

57. RM B told HDC that she was expecting to have discussions about Mrs A's transfer to the operating theatre at 5.44pm and 9.00pm, but at that point, she was still looking after Mrs A in labour as her LMC. RM B said: 'I feel that [Mrs A's] labour became too complex for primary care and [I was] reliant on the obstetric team to review and forward plan (which they did).'

58. At 9.17pm (approximately four hours after the last vaginal examination at 5.22pm), Mrs A was reviewed by both Dr C and Dr D. At this point, Mrs A was contracting three to four times in every 10 minutes. The CTG was noted to be 'reassuring', given that there were 'some variables earlier on'.

59. Health NZ said that the fact of a reassuring CTG was a significant factor that was considered by the staff reviewing Mrs A at that time. In response to the provisional opinion, Health NZ said that the review team found the following:

> 'The CTG overall did not have the typical features associated with fetal hypoxia and therefore the level of concern about [Mrs A's] labour continuing was not high.'

60. Health NZ said that prior to 9.17pm, the CTG was not brought to the attention of Health NZ staff, other than at 3.00pm, when the CTG did not suggest any need for action.

61. Dr D performed a vaginal examination and considered that there had been progress since the last examination at 3.00pm. Dr D noted that Mrs A's cervix was 8 to 9cm dilated, and that the cervix was 'slightly oedematous[32]'.

62. Dr D initially thought that the baby was in the OA position (as at Dr D's previous assessment at 3.00pm), but then noted that the baby could be in the OP[33] position. As the position of the baby was uncertain, Dr C also performed a vaginal examination. Dr C indicated that 'it was important to clarify the baby's position now'.

63. Dr C found the baby to be in the DOP[34] position, 'somewhat deflexed'. Dr C 'specifically checked and commented' to Dr D that no brow or nasal bone could be felt at this assessment, 'meaning the baby was not a brow presentation'.

64. An ultrasound scan was undertaken to check the baby's position. The scan confirmed that the baby's spine was to the right, and the head was in the DOP position.

65. Dr C recollects discussing with Mrs A that there had been progress, but that the baby 'was in a somewhat awkward position, being posterior and somewhat deflexed'. Dr C explained to Mrs A that the baby 'hopefully would rotate and descend, but that in some cases this

[32] Swollen.
[33] Occiput posterior position.
[34] Direct occiput posterior position.

does not happen and the baby can become obstructed and that a Caesarean may be required'.

66. Dr C documented in the clinical records that it was discussed with Mrs A that the baby 'may come — can sometimes get wedged [and] not come down/progress further but baby [and] mum both well currently'.

67. Dr C considered that both Mrs A and the baby were clinically well (clear liquor, normal maternal observations, and overall reassuring CTG of the fetal heart). Dr C's plan was to review Mrs A in two hours' time (at around 11.20pm) and, if Mrs A was not fully dilated at that stage, a C-section would be required and recommended.

68. Health NZ said that at the 9.17pm assessment, there was a 'relatively comprehensive' discussion between Dr C and Mrs A about the decision to be made at that time, including the possibility of a C-section. Health NZ said that a decision was made, with Mrs A's informed consent, to continue augmenting the labour with oxytocin for a further two hours. Health NZ said that during the discussion between Dr C and Mrs A, all the options and possible consequences were discussed, and Mrs A expressed her preference to continue to try for a vaginal birth.

69. There is no detailed record of the discussion that occurred between Dr C and Mrs A at 9.17pm, or whether there was a discussion about the risks involved in continuing to try for a vaginal birth at that point.

70. At 11.00pm, RM B performed a CTG, which was normal.

71. At 11.15pm, Mrs A was reviewed by Dr E, a junior registrar. Dr E was on duty on the night shift[35] with Dr F, a senior registrar. Dr E noted that the observations were satisfactory and the CTG was normal. A vaginal examination showed that Mrs A's cervix was 8cm dilated and the fetal head was 2/5ths palpable. Dr E noted: '[T]hick anterior crescent of cervix … poorly applied', with the fetal station at -3.

72. Dr E explained to Mrs A that there was 'no progress despite good uterine activity'. Dr E recommended a C-section, which was categorised as a category 2.[36] Dr E obtained Mrs A's informed consent for the C-section, and the oxytocin was discontinued.

73. Dr E made an entry in the clinical records at 11.25pm, post-review. Dr E noted that there was a delay in Mrs A being transferred to the operating theatre as there was another 'case already in theatre' and they 'needed to then wait for [the] theatre to be cleaned'.

74. Dr C said that while there was a delay in Mrs A being transferred to the operating theatre, the CTG of the fetal heart rate was 'still reassuring and maternal observations were satisfactory'. Dr C stated:

[35] From 10.00am on Day 4 until 8.00am on Day 5.
[36] Maternal or fetal compromise requiring rapid delivery.

> 'It was a particularly busy shift that day, with an almost constant flow of women into theatre for either attempted vaginal deliveries by forceps or suction, with a backup plan for a Caesarean, or Caesareans. I had asked the staff at one point during the shift if we could open another theatre, but was told by the gynaecology nurse in theatre that unless it was a category one indication (which is a case of significant fetal compromise) then this was not possible. [Mrs A's] case was not a category one.'

75. Dr C said that it was discussed with Dr E that the plan was to do the C-section with Dr E, as Dr C was aware that a DOP baby could sometimes be in a difficult position 'requiring disimpaction' during the C-section. Dr C said that for this reason, a senior presence in theatre was considered necessary.

Day 5

76. Dr C said that while waiting for the operating theatre to be ready, another patient who was bleeding had to be treated. At 12.20am, Mrs A was transferred to the operating theatre, but at that time, Dr E called Dr C to say that there was another woman in labour with a concerning CTG who required fetal blood sampling. Dr C stated:

> 'I sent [Dr F] back to the birth suite to help [Dr E]. I instructed [Dr F] to start [Mrs A's] Caesarean with [Dr E], and I quickly completed what I was doing on [the] gynaecology ward and returned to the birthing suite before the case had commenced.'

77. At 12.55am, the medical staff arrived in the operating theatre and both Dr E and Dr F were 'scrubbed and ready'. Dr F did not meet Mrs A until they were in the operating theatre, prior to commencing the C-section. Dr F was aware that there was a delay in commencing the C-section, secondary to an acute review that required fetal blood sampling in order to prioritise theatre cases. Dr F said that this amounted to a delay of 30 minutes, once Mrs A was in the operating theatre.

78. Dr E noted that a CTG performed in the operating theatre prior to the C-section commencing was normal. Dr E said that the CTG 'had been running the entire time [Mrs A] was waiting in theatre and was normal and not concerning for hypoxia'.

79. The C-section commenced at 1.11am. Dr E and Dr F performed the C-section while Dr C observed. Dr E made the incision and placed a hand down to deliver the baby's head. Dr E felt that the baby's head was 'very deflexed'. Dr E realised that the baby's head was 'too deflexed for [Dr E's] skill level', so delivery was not attempted, and Dr F, the senior registrar, was asked to take over.

80. Dr F attempted to 'disimpact' the baby's head with the left hand, and then the right hand, but had difficulty getting a hand into the uterus and over the baby's head.

81. Dr C performed a vaginal examination to assist with disimpacting the baby's head. Dr C noted that the baby's head was 'deflexed tightly into [the] sacral hollow', and Dr C was unable to flex it and achieve disimpaction from below. Dr C verbally told the Neonatal

Intensive Care Unit (NICU) registrar that the C-section had been upgraded from a category 2 to a category 1.[37]

82. Dr C quickly put on a sterile gown and gloves (without scrubbing) and attempted to disimpact the baby's head from above using a hand. This was also unsuccessful.

83. Dr C made the decision for a midline upward extension of the uterine incision ('T'-incision) and breech[38] extraction and performed this with Dr F. Dr C said that while the OP position and difficulty in disimpacting babies at C-section are common, an 'abdominal delivery breech and extension of uterine incision up and down is rare'. Dr C recorded in the clinical records:

> '[L]egs delivered with flexion without difficulty and brought up. Head still held tightly within thick lower segment — further cut to lower segment (midline) to make space for delivery of head, still tight, finger into mouth to assist with head delivery. Baby floppy [and] pale at delivery. Cord clamped [and] straight to neonatal …'

84. It is noted in the clinical records that Baby A was delivered at 01.13am, only two minutes after the recorded start of the C-section. Dr C said that the procedure, from first incision to delivery, took three to four minutes, although the nurses have documented that it took two minutes.

85. Dr C recalls that they moved through each step 'quite quickly in sequence' and no prolonged attempts at disimpaction were undertaken. Dr C said that they considered that continuing to try to disimpact 'from above or below' would be futile, hence the decision to move to the breech extraction.

86. Baby A required CPR[39] up to 36 minutes of age and was transferred to NICU and intubated and ventilated. Dr C said that given the reassuring CTG prior to delivery and the timely delivery process, 'in the circumstances of his actual fetal position', it was expected that Baby A would respond after brief stimulation and resuscitation, and Dr C was 'devastated' to see that he required CPR. RM B told HDC:

> 'I was not expecting to see [Baby A] to be born in bad condition on any level, so when he was, it completely shocked me. It made me question what went wrong and how we could not foresee such an unwell fetus. With time, de-briefing (with the obstetric team and [Mr and Mrs A]), review of notes and CTG I can absolutely see that he appeared well whilst [Mrs A] was in labour.'

87. Baby A was diagnosed with severe hypoxic ischaemic encephalopathy[40] (HIE) and received treatment to correct abnormal blood clotting and a low haemoglobin.[41] He developed

[37] Urgent delivery with immediate threat to life of the woman or fetus.
[38] Delivery of the baby's bottom or feet first, and not the baby's head.
[39] Cardiopulmonary resuscitation.
[40] Brain injury secondary to inadequate oxygen delivery.
[41] A protein in the red blood cells that carries oxygen to the rest of the body.

cerebral oedema[42] and, due to the extent of his brain injury and deteriorating condition, the decision was made to withdraw intensive care. Sadly, Baby A passed away on Day 7.

Health NZ

88. Following the events, Health NZ undertook a review and completed a comprehensive serious event review report (SER).

89. The SER states that it appears that the antenatal event that occurred just prior to 32 weeks' gestation, which resulted in antepartum haemorrhage and a period of fetal hypoxia (presenting as vaginal bleeding and reduced fetal movements), may have affected Baby A's brain. The SER states that the hypoxia led to the passage of meconium in utero and to Baby A inhaling this into his lungs. This contributed to the difficulty in resuscitating Baby A and maintaining oxygen saturations following birth, which likely contributed to his hypoxic brain injury.

90. The SER also states that the deflexed position of Baby A's head in utero during labour appears to have caused restriction in the ability for blood to flow to and from his head, possibly due to constriction of the blood vessels in his neck. This led to a reduction in the amount of oxygen Baby A's brain received and likely contributed to his hypoxic brain injury.

91. The SER states that the following were also contributory factors:

- A method of communicating that prompts/facilitates the transfer of all relevant information was not in widespread use by obstetrics or midwifery staff. This resulted in information not being shared effectively with Dr C, who was not aware of the full findings of the vaginal examinations, or of the need to attend to check these findings. The SER states that this resulted in a delay in detecting risk factors for obstructed labour, which contributed to labour being prolonged and to Baby A's condition at birth.
- The format of the CTG assessment tool did not make it clear to staff how they were to select the action to be taken when abnormal features of the CTG had been circled, which led to the option of 'no action required' being chosen when abnormal features had been identified. The SER states that this resulted in a second opinion or obstetrics staff review not being requested, concern about Mrs A's labour not being raised, and to missed opportunities to further assess or confirm fetal wellbeing.
- There was no system or process in place to assist the staff in recognising that the workload had increased to the point where the second on-call specialist obstetrician needed to be called to assist. The SER states that this resulted in Dr C actively continuing to participate in providing care to many women due to the high workload and limitations of the staff skill mix, a delay in Dr C examining Mrs A in labour and reviewing her progress, and a delay in proceeding with the category 2 C-section. The SER states that this added to the length of time that Mrs A was in labour and contributed to the outcome for Baby A.

[42] Brain swelling.

- The absence of a clearly defined time frame in the Communication and Classification for Caesarean Section Guideline within which a category 2 C-section needs to be achieved. The SER states that this resulted in there being a reduced sense of urgency around performing the category 2 C-section, and in Mrs A's C-section being delayed while other cases were completed and assessed. The SER states that this contributed to the length of time that Mrs A was in labour and may have contributed to the outcome for Baby A.
- There was no local, documented clinical guideline (or reference to other guidelines, eg, NICE[43]) regarding diagnosing the reason for labour dystocia,[44] the use of a partogram,[45] the management of labour dystocia, or the timing of examinations and review of action plans. The SER states that this, combined with the unit being busy, resulted in the full clinical picture not being appreciated or communicated. The SER states that this contributed to the overall length of Mrs A's labour and the outcome for Baby A.

92. Health NZ made the following recommendations for change, which arose from the contributory factors:

- Development of a communication tool for use between and by obstetrics and midwifery staff that prompts staff to cover all essential information when discussing assessment findings and plans of care. The communication tool is to be introduced as the standard for all communication in maternity services and is to be taught and reinforced as part of simulation exercises.
- Review of the CTG assessment tool and revision of the layout to make it clearer that when an abnormal feature is circled, the action to be taken is the action noted in the same column as the abnormal feature. Provision of education to staff on release of the revised CTG assessment tool.
- Review of the on-call roster and the criteria for calling the second specialist obstetrician on call. A simple escalation tool was to be developed to assist staff in identifying the instances when calling the second specialist obstetrician on call is advisable, or required, to maintain patient and staff safety. However, following this recommendation, Health NZ found this tool to be impractical, although it said that it recognises the value of monitoring tools.
- Amendment of the Communication and Classification for Caesarean Section Guideline so that it clearly reflects agreement on the maximum timeframe in which a category 2 C-section 'rapid delivery' needs to be achieved.
- Development and release of a local maternity clinical guideline that guides staff in the expected progress in labour and addresses the diagnosis and management of labour dystocia, the use of the partogram, and the timing of assessments and actions, and

[43] National Institute for Health and Care Excellence in Britain.
[44] Difficult or obstructed labour.
[45] A tool to monitor the progress of labour.

includes examples of fetal positions that are more susceptible to obstructed labour, eg, OP and deflexed head.

93. In addition, Health NZ made the following recommendations, which arose from other findings:

- Review and revision of the process for opening a second theatre on the Birthing Suite to accommodate category 2 C-sections when the timeframe for 'rapid birth' would otherwise not be met.
- Communication to the obstetrics, midwifery, and theatre team of the need for the neonatal team to be present at the 'time-out' pre-surgery huddle, and agreement of a revised process by all parties as part of the review of the Classification and Communication of Caesarean Section Guideline.
- Amendment of the Classification and Communication of Caesarean Section Guideline to reflect the need for the emergency bell to be activated in theatre when a C-section is upgraded to a category 1.
- Development of, and access to, guidance on the technique for disimpacting a fetal head vaginally.
- Purchase of a fetal pillow product for use in the Birthing Suite to disimpact the fetal head at C-section, and provision of education to medical staff following introduction of the product.
- Amendment of the Operative Delivery Record to include a place to document the colour of liquor at birth.
- Exploration of whether an additional alert message (Point of care (POCT) testing alerts) can be added to the machines when results are missing, alerting users to the need to repeat the test or send a sample to the laboratory.

CTG assessment tool

94. The SER states that there were periods throughout the CTG trace where the variability of the fetal heart rate was less than 5bpm, for a period of between 30 to 50 minutes on each occasion. Between these periods of reduced variability, there were periods where the CTG had good variability and appeared normal, and where the CTG had responded to maternal position changes, as recommended by RM B.

95. At 5.00pm on Day 4, RM B identified two abnormal features of absent accelerations and variable decelerations.

96. The SER states that because the CTG assessment tool (the CTG sticker) in place at the time of the events was unclear, 'no action required', and for the plan to 'continue', were selected on the assessment tool, even when there were abnormal features. The SER states that the same conclusion was reached at subsequent reviews of the CTG at 6.00pm, 7.00pm, and 8.00pm on Day 4. The SER states:

> 'Had the CTG been reviewed by either the CCO Midwife or the obstetric staff it is possible that fetal blood sampling may have been performed which would have either been reassuring or indicated a need to monitor more closely or expedite delivery …
>
> While there was not the typical indication from the CTG that there was fetal hypoxia (deep decelerations of the fetal heart rate or rising baseline) and a need for action, there were a number of instances where the reduced variability and variable decelerations warranted fetal blood sampling to check the fetal wellbeing. This was particularly in the light of the length of labour and the plan to continue to augment labour with oxytocin. As no requests were made to the obstetric staff for the CTG to be reviewed, the level of concern the obstetric staff had about [Mrs A's] labour continuing would not have been raised.'

97. RM B told HDC that she attempted to complete a CTG 'sticker' every one to two hours throughout Mrs A's labour to document the monitoring of the fetal heart. RM B explained how she used the CTG assessment tool:

> 'The CTG stickers are a simple and quick way to document features of the heart tracing and to identify abnormalities with guidance on escalation. These stickers are great for features that are all normal. However, not easy to follow when there are some abnormal features (abnormal but not hypoxic). For example, the CTG sticker I documented on at 0847 had periods of reduced variability (abnormal feature) and periods of good variability, with accelerations and the absence of decelerations (normal features). The CTG sticker is not designed to document this as a whole story, therefore I documented underneath the sticker that the CTG had normal features around periods of reduced variability — suggestive of fetal sleep, not a compromised fetus. I feel like this was an appropriate explanation of an overall normal fetal heart trace. There have since been amendments to the CTG stickers because of the serious review of this case. It was identified that there was a need for more clarity on abnormal features. These are now colour coded to follow escalation.'

Advice to Coroner

98. The Coroner obtained advice from a consultant obstetrician and maternal fetal medicine sub-specialist, Dr G. Dr G reviewed the clinical note entries but was not provided with the CTGs. In relation to the overall cause of Baby A's death, Dr G advised:

> 'A prolonged augmented labour in baby that was malpositioned (deflexed OP) with a delay in delivery caused severe fetal impaction into the maternal pelvis, which ultimately resulted in [Baby A's] life-threatening injuries. [Baby A's] primary injury was severe cerebral oedema and global hypoxic injury likely caused by prolonged fetal malposition with an extensively augmented labour which interrupted the cerebral blood supply … It is uncertain whether the antenatal APH caused [Baby A] to be compromised leading [into] labour [b]ut was not causal and at the most may have had an additional additive effect.'

99. Health NZ disagrees with some aspects of Dr G's advice. A summary of Dr G's advice and Health NZ's response is discussed below.

Persisting with labour and timeliness of C-section

100. Dr G advised that the decision for a C-section was delayed and that this was the primary cause for the adverse outcomes for both Mrs A and Baby A.

101. Dr G advised that the fetus was not descending into the pelvis, as was demonstrated by the minimal change in fetal station. Dr G said that this was likely due to the persistent fetal position (OP), resulting in a failure to progress. Dr G advised that this was a sign of cephalopelvic disproportion.[46]

102. Dr G advised that while the interventions (including maternal positioning, epidural, and oxytocin to increase the strength of the contractions) were instigated appropriately in the hope that fetal rotation would be achieved, these were unsuccessful. Dr G stated:

> '[T]he threshold for a decision for delivery had been met at the 2100 hrs assessment, although a more conservative practitioner may have delivered at the 1720hrs assessment given the maternal risk factors.'

103. Dr G advised that the decision to perform the C-section should have been made by 9.00pm on Day 4 at the very latest, and that persisting with labour in the hope of achieving rotation after the 9.00pm assessment was unnecessary prolongation. Dr G stated:

> 'Further oxytocin use only serves to impact the fetus more, and at this point, it was unlikely fetal rotation will be achieved … It is unknown if an earlier delivery would have changed the outcome, but less impaction is likely.'

104. Dr G also advised:

> '[Mrs A] had significant risk factors leading into the [induction of labour] which put her at risk of a [C-section], but the [C-section] was eventually justified by the lack of fetal descent (station) into the pelvis and failure to progress in labour despite an epidural and adequate trial of oxytocin. It was clear that [Mrs A] was unable to achieve a vaginal delivery and a timely [C-section] should have been performed.'

105. Health NZ is of the view that based on the information available and the clinical picture at the time, the plan agreed after the 9.00pm assessment was reasonable and did not amount to unnecessary prolongation of labour.

106. Health NZ said that the clinical threshold for deciding that the augmentation of labour had failed had not been met by 5.00pm on Day 4, 'even by a conservative standard'. Health NZ explained that at 5.20pm, the oxytocin (which had commenced at 2.16pm) had not been infusing long enough 'to be given a fair trial to augment the labour' and to see an increase in uterine activity. Health NZ said that in the context of no maternal or fetal concerns, it was

[46] When the capacity of the pelvis is inadequate to allow the fetus to negotiate the birth canal.

reasonable to continue with the oxytocin infusion and to gradually increase the dosage, as per protocol, to achieve regular, strong contractions at a rate of three to four in every 10 minutes.

107. Health NZ said that at 9.17pm on Day 4, Mrs A had received seven hours of oxytocin infusion to augment labour and had been contracting four times in 10 minutes for less than two hours (since 7.33pm). Health NZ said that Dr C undertook a vaginal examination and considered that there had been some progress. The CTG was reassuring. Health NZ stated that the baby was in the OP position, 'which was known could lead to a longer labour'. Health NZ said that on the basis of these observations, and as there were no maternal or fetal concerns present, it was a reasonable plan for labour to proceed for a further two hours (until approximately 11.00pm), after which Mrs A needed to be fully dilated, or the delivery would proceed to a C-section.

108. Health NZ stated that given that this was a high-risk pregnancy, and labour was augmented with oxytocin, continuous fetal monitoring with a CTG was undertaken appropriately. Health NZ said that when the diagnosis of 'unacceptable progress in labour' was made, the oxytocin infusion was stopped and the risk of further impaction was reduced, while awaiting transfer to theatre.

109. Health NZ said that neither the CTG nor the cord gases gave an indication of intrapartum hypoxia. Health NZ stated:

> 'It is extremely rare even with a difficult delivery to have this devastating outcome. Again, we emphasise that the outcome of cardiovascular collapse was extremely unexpected to the senior clinical staff who were present in the room during [Baby A's] delivery.'

Lack of situational awareness and staffing levels

110. Dr G advised that significant compounding institutional factors were identified in the SER. Dr G said that there was no system in place to recognise acuity and 'trigger' additional staff. There were numerous interventional deliveries on that day, but the back-up SMO was not called.

111. Dr G also advised that there was 'a lack of situational awareness' due to the acuity of the Delivery Suite, and that additional help may have provided some relief. Dr G stated:

> 'It is unknown upon review if [Mrs A's] labour was triaged as "lower risk" compared to the other patients on Delivery Suite at the time. Alternatively, it was simply too busy. This results in the team going from emergency to emergency which leads to a lack of situational awareness as [the] Delivery Suite starts to work in "survival mode".'

112. Dr G advised that there were clear warning signs of obstruction with a vaginal delivery not likely to be achieved. Dr G said that the labour was unnecessarily prolonged, and that this prolongation was contributed to by a lack of situational awareness, with a Delivery Suite of high acuity and also 'a concurrent DHB ethos' of reducing the institutional C-section rate.

113. Health NZ considers that 'good situational awareness' was demonstrated when Dr E reviewed Mrs A at 11.15pm on Day 4. As a result of this examination, Dr E made the decision to stop the oxytocin and assessed that there were no CTG concerns. Health NZ said that Dr E assessed that it was not necessary to call for a second team to staff the second operating theatre as there was not enough clinical urgency to warrant this at the time. Health NZ stated that it should be noted that the anaesthetist would have had to be called in from home to facilitate opening a second operating theatre, which would have taken time in any event.

114. Health NZ said that the decision for a C-section was made at 11.25pm on Day 4, and the incision time in the operating theatre was 1.11am on Day 5. Health NZ stated that this time period was longer than it would have preferred because of the need to take a fetal blood sample from another woman's baby to prioritise access to theatre. Health NZ said that the other woman required further clinical assessment due to a non-reassuring CTG, to determine whether the delivery of her baby needed to be expedited ahead of Mrs A. Health NZ said that at that time, Mrs A's CTG raised no concerns to revise the prioritisation. Health NZ stated:

> 'Triaging and prioritisations such as this are ongoing and an everyday situation on Birthing Suite. These circumstances can have a material impact on clinical decisions for every woman on Birthing Suite at any one time because staff are caring for multiple women and there is a limit to the number of theatres available. [Dr C] had raised earlier in the shift with the nursing theatre team the possibility of opening a 2nd theatre but at that stage the policy was only to action this for a category 1 obstetric delivery.'

115. Since the events, Health NZ has expanded the category indications for obstetric deliveries to facilitate the opening of a second operating theatre for category 2 C-sections, or for general workload/capacity issues.

Culture of reducing C-section rates

116. Dr G advised that at the time of the events, there was a culture of reducing C-section rates at Health NZ. Dr G said that individualised care should be supported within an institution and there should be consideration about what is best for that individual and her family, not unit statistics.

117. Health NZ stated that reducing the C-section rate was 'not in any way a factor that impacted on the care of Mrs A and Baby A'. Health NZ said that each woman is treated as an individual, but that it is fully in agreement with reviewing its practices to support vaginal birth when it is safe to do so.

Dr G's recommendations

118. Dr G recommended that there should be appropriate staffing of the Delivery Suite to ensure clinical safety, and Health NZ should ensure that it has an 'inbuilt safety mechanism' in which to call in additional staff. Dr G stated: 'This is an institutional responsibility to maintain safe levels of staffing and should not be left to the individuals currently working.'

119. Health NZ agrees with this recommendation, and that maintaining safe levels of staffing is an institutional responsibility of Health NZ.

120. Dr G also recommended that if there is a culture of reducing the C-section rate, the appropriateness of this should be considered, with assessment and review of the clinical impact it has caused. Dr G advised that any such focus should be a systemic approach with regular reviews to ensure that it is being done safely and not to the detriment of the local birthing population.

121. Health NZ stated that nationally, there is an agreed focus on ensuring that all C-sections are clinically indicated, which is likely to reduce C-section rates. Health NZ said that this plan came about through the National Maternity Monitoring Group, following analysis of both the New Zealand Maternity National Clinical Indicators and Health NZ's local data.

122. Health NZ stated that both Dr C and the wider group of obstetrics consultants are fully in agreement with reviewing practices to support vaginal birth when safe to do so.

ACC

123. ACC approved a treatment injury claim for the extension of the C-section incision to that of a 'T-incision'. ACC obtained advice from an obstetrician and gynaecologist, Dr H, and from a registered midwife, RM I, which is discussed below.

ACC obstetric advice

124. As discussed above, the SER states that it appears that the antenatal event that occurred just prior to 32 weeks' gestation (which presented as vaginal bleeding and reduced fetal movements) may have contributed to Baby A's hypoxic brain injury. The SER states that the hypoxia led to the passage of meconium in utero and to Baby A inhaling this into his lungs, which may have contributed to the difficulty in resuscitating Baby A and maintaining oxygen saturations following birth, which likely contributed to his hypoxic brain injury.

125. Dr H considers that the issue with Baby A's resuscitation was not primarily related to pre-existing lung damage; rather, Dr H believes that it was due to cerebral damage sustained during the delivery process. Dr H believes that if Baby A had been born earlier and without a significant acute injury, any meconium aspiration related to an event at 31 weeks' gestation would not have affected his condition at birth.

126. Dr H agreed with Health NZ that the overall length of labour likely contributed to the outcome for Baby A. Dr H advised:

> 'So many contractions over so many hours are likely to have wedged the head into the pelvis more and more as time progressed. This in turn caused the great difficulty in delivery … My view is that the delay in the [C-section] delivery has caused [Baby A's] head to become impacted (jammed) into the pelvis and therefore very difficult to deliver. If [Mrs A] had been delivered hours earlier, the degree of impaction of the fetal head would have been less. Therefore, it would be unlikely that an inverted T incision would have been required to assist [Baby A's] delivery.'

127. Dr H noted that at 9.17pm, the SMO did have a discussion with Mrs A about the option of having a C-section or continuing with labour. Dr H advised that by 9.17pm on Day 4, 'the writing was very much on the wall that a vaginal delivery was very, very unlikely'. Dr H said that a C-section would have been advised at that point and Dr H would have agreed to a further two hours of labour only if Mrs A had clearly indicated that this was her 'strong preference'. In summary, Dr H advised:

> '… I believe that it would have been possible to diagnose failure to progress in [Mrs A's] labour by 1500 or 1722 at the latest. [Mrs A] could have been advised that the likelihood of vaginal delivery was low and [C-section] delivery recommended. I wonder if it is possible that a heavy workload in the Delivery Unit that day influenced the decision to continue with attempts at vaginal delivery.'

128. Dr H believes it is possible that an earlier delivery (some five to seven hours earlier) would have reduced the likelihood of the factors that may have been responsible for the difficult delivery of Baby A's head. These include the amount of moulding and the degree of extension of the head.

129. Dr H noted that in the postnatal period, Mrs A expressed regret that she did not accept an offer of a C-section at some point in her labour, but that it is unclear whether Mrs A was referring to the episode of care at 9.17pm, or whether she was referring to the evening of Day 4.

ACC midwifery advice

130. RM I advised that overall, the antenatal care provided to Mrs A was reasonable, with over 20 antenatal assessments and all expected screening, follow-up, and education completed.

131. Regarding the labour cares, RM I advised that a C-section should have been recommended at 9.17pm on Day 4 as, at that point, Mrs A had exceeded the 12-hour time frame recommended by the World Health Organization. RM I stated:

> 'In my opinion, it would have been prudent to recommend a caesarean section at this examination as [Mrs A] had been in active labour for 14 hours, with no fetal descent and increasing evidence of cephalo-pelvic disproportion — oedematous cervix, moulding, and caput succedaneum. Continuing the plan for a vaginal delivery risked further impacting of the fetus into the pelvis. The decision to continue was made by the obstetric team; although [RM B] was part of the care team, this was not a midwifery decision … All management decisions for this case were made by the obstetric team, Midwifery care provided was in keeping with the obstetric decisions.'

132. RM I advised that the decision for surgical intervention is an obstetric decision and not made by midwives, 'who are experts in normal pregnancy and childbirth'.

Further information

Health NZ

133. Health NZ has extended its sincere condolences to Mr and Mrs A for the loss of their precious son, Baby A. Health NZ said: 'We can reassure [Baby A's] family that improvements have been made to the way we care for women and babies.'

Dr C

134. Dr C expressed sincere condolences to Mr and Mrs A for the loss of Baby A.

Dr F

135. Dr F expressed sincere condolences to Mr and Mrs A. Dr F said that considerable reflection on the events that occurred has been undertaken, and this has informed how Dr F practises today.

Dr E

136. Dr E expressed sincere condolences to Mr and Mrs A for the loss of Baby A. Dr E said:

> 'This case is truly one that has impacted all of those involved. The passing of [Baby A] is incredibly sad and again I extend my heartfelt condolences to [Mr and Mrs A] and their families on the loss of precious [Baby A].'

Responses to provisional opinion

Mrs A

137. Mrs A was given an opportunity to respond to the 'information gathered' sections of my provisional opinion.

138. Mrs A did not provide any comment.

RM B

139. RM B was given an opportunity to respond to the sections of my provisional opinion that relate to the care she provided.

140. RM B advised that she accepts the provisional opinion in its entirety and she has no further comment to make.

Health NZ

141. Health NZ was given an opportunity to respond to the sections of my provisional opinion that relate to the care it provided. Health NZ's comments have been incorporated into this opinion where relevant and appropriate.

142. Health NZ said:

> '[T]he staff of HNZ Waitaha have considerable sympathy with [the family] at their loss and particularly the circumstances in which the death of [Baby A] occurred. That event has been devastating for all the staff involved, and there is no doubt that the feelings of [Mrs A] and her husband would be even more extreme.'

143. Health NZ disagrees that a decision should have been made to deliver the baby by C-section at 5.22pm. Health NZ said that Mrs A's contractions did not reach a frequency of 3–4 every 10 minutes until 7.00pm, when her oxytocin was increased.

144. Health NZ said that the British National Institute for Health and Care Excellence (NICE) guideline on Intrapartum Care for Healthy Women and Babies[47] (the NICE guideline) recommends that a vaginal examination is advised four hours after the oxytocin infusion has led to regular contractions in established labour. Health NZ said that this means that Mrs A should have been assessed four hours after 7.00pm, being at 11.00pm, not at 7.22pm or 9.17pm.

145. Health NZ said that Dr Sircar's advice does not allow sufficient time with the oxytocin at an effective dosage to know whether the oxytocin was having the desired effect, which was to rule out uterine atony (or lack of effective contractions) as a cause for the delay in progress.

146. Health NZ stated that when the NICE guideline is considered, the reassessment at 9.17pm and the decision made at that time to allow for two more hours until the oxytocin had been administered at an effective level for four hours was reasonable. Health NZ said that that is particularly so because the vaginal examination findings indicated that the cervix had progressed from the earlier examination, the CTG was reassuring (the variable decelerations evident earlier had been resolved), and an ultrasound scan showed the baby's spine to be to the right anteriorly, not directly posterior.

147. Health NZ said that it is not clear when established labour started, which affects any assessment as to whether established labour continued for longer than the guidelines suggest is appropriate.

148. Health NZ stated that the Ministry of Health 'guidance', which indicates that established labour is from 3–4cm dilation, is in fact an information sheet for the public in the context of spontaneous births, not an induction of labour. Health NZ said that more authoritative guidance uses dilation of 5cm to indicate the commencement of the active first stage of labour. Health NZ referred to recommendation six of the World Health Organization recommendations on intrapartum care, which states:

> 'Women should be informed that a standard duration of the latent first stage has not been established and can vary widely from one woman to another. However, the duration of active first stage (from 5cm until full cervical dilatation) usually does not extend beyond 12 hours in first labours, and usually does not extend beyond 10 hours in subsequent labours.'

149. Health NZ said that while the World Health Organization recommendations refer to 12 hours being the usual length for the active first stage of labour, it is referring to spontaneous labour and not induced labour.

[47] Published on 3 December 2014.

150. Health NZ stated that when a starting point of 5cm dilation is taken, the time frame for Mrs A to deliver by C-section, even taking into account the delay with the C-section unable to be started, would have been less than 18 hours, and within typically expected time frames.

151. Health NZ said that any delays in assessment were due to the resources available (including staffing) and the demands that were placed on the staff because of the busyness of the department at that time.

152. Health NZ stated that resource constraints prevented the staff from calling a second on-call SMO at 7.22pm on Day 4. Health NZ said that the events occurred on a Sunday, and the second on-call SMO was also the person who had been on call for the preceding 24 hours and was at home resting. Health NZ said that this SMO would have been fatigued from their own shift over the previous 24 hours and was not likely to be a 'fresh set of eyes'. This SMO was also due to work the following day. Health NZ said that if Health NZ Waitaha Canterbury had had greater funding to allow for the employment of more SMO FTEs, there could have been greater availability of a second on-call SMO.

153. Health NZ said that the second on-call system is for the purpose of providing additional SMO capacity across the department, rather than escalating the care of an individual consumer when another SMO is already involved.

154. Health NZ also said that most birthing facilities in New Zealand do not have a second on-call SMO available as a back-up or system in place for additional obstetric capacity in the event of acuity or busyness and that this is generally only available at tertiary centres. Health NZ said that while it did have this system in place, albeit with the limited available staff and rostering (which means that there was necessarily a high threshold for calling in the second on-call SMO), it still had more cover available than occurs in many other settings.

155. Health NZ stated that the same situation applies in relation to the delay in delivery by C-section. It said that the available resources meant that Mrs A, with the reassuring CTG at that time, was overtaken in terms of priority by other consumers. Health NZ said that the main delays were for the theatre to be cleaned from a prior case and for further obstetric assessment of another woman whose baby had an abnormal CTG and needed a fetal blood gas to determine priority for access to theatre (noting that Baby A's CTG was normal at that stage). Health NZ said that opening another theatre also required calling in an on-call anaesthetist, additional nursing staff, and a technician. Health NZ stated that the requirement for these staff to be called in meant that it would not have significantly shortened the time before Mrs A's C-section could be started.

156. Health NZ agreed that when applying a hindsight lens to the events that occurred, Baby A's delivery should have occurred earlier, but when considering the actions of Health NZ and its staff, and whether those were reasonable or not, it is necessary to consider what they knew at the time, what information was available to them at that time, along with the resources available. Health NZ said that '[r]egrettably, the experts' views and the [d]ecision fail to do that, and are inconsistent with relevant evidence based guidelines'.

Opinion: Health NZ — breach

Introduction

157. First, I express my sincere condolences to Mr and Mrs A and their family for the loss of Baby A. This was a traumatic experience for Mr and Mrs A, and understandably the events have had a profound impact on their lives.

158. To determine whether the care provided by Health NZ was reasonable and appropriate, I have considered the independent advice of an obstetrician and gynaecologist, Dr Sircar.

159. Regarding the antenatal care provided to Mrs A by Health NZ, Dr Sircar advised that Mrs A was managed adequately and had due consultation and investigations based on the risk factors. Dr Sircar also advised that the plan to induce Mrs A at 39 weeks' gestation was reasonable, given the risk factors. I accept Dr Sircar's advice that the antenatal care provided to Mrs A was appropriate. However, I have concerns about the care provided to Mrs A during labour.

160. I have undertaken a thorough assessment of the information gathered, and I consider that Health NZ breached Right 4(1)[48] of the Code of Health and Disability Services Consumers' Rights (the Code). The reasons for my decision are set out below.

First stage of labour

161. Mrs A entered the first stage of labour on Day 4 and Baby A was delivered at 1.13am on Day 5.

162. Given that Mrs A's cervix was 3cm dilated at 4.45am on Day 4, and 6 to 7cm dilated at 7.12am, Dr Sircar advised that he conservatively estimated dilatation of 4cm at 6.00am on Day 4.

163. Health NZ said that it is not clear when established labour started, which affects any assessment as to whether established labour continued for longer than the guidelines suggest is appropriate. Health NZ said that more authoritative guidance uses dilation of 5cm to indicate the commencement of the active first stage of labour, which means that the first stage of labour would have commenced at 7.12am on Day 4. Health NZ said that while the World Health Organization recommendations refer to 12 hours being the usual length for the active first stage of labour, it is referring to spontaneous labour and not induced labour.

164. Dr Sircar advised that the length of labour was more than would be expected for a woman labouring for the first time. Dr Sircar considers this to be a minor departure from accepted practice.

165. I accept Dr Sircar's advice. I acknowledge that every labour and birth is unique and that the duration of the first stage of labour varies from one woman to another. Dr Sircar referred to the NICE guideline, which states: '[W]hile the length of established first stage of labour

[48] Every consumer has the right to have services provided with reasonable care and skill.

varies between women: first labours last on average 8 hours and are unlikely to last over 18 hours.'

166. As commented on by RM I, the World Health Organization guideline states that for women who are labouring for the first time, the first stage of labour does not usually extend beyond 12 hours. According to the Ministry of Health, for first-time mothers, the first stage of labour can last between 6 and 36 hours.

167. While I am concerned about the duration of the first stage of labour, in my view the key issue in this case is the delay in diagnosing the failure to progress in labour, and the delay in recommending a delivery by C-section. This is discussed further below.

Assessment of progress in labour

Decision not to recommend delivery by C-section at 5.22pm

168. At 5.22pm on Day 4, the vaginal examination findings were similar to those of the 3.00pm examination. Mrs A's cervix was still 7 to 8cm dilated, the baby's head was deflexed, there was 'caput++', moulding was noted, and the fetal station remained at -2. Dr C said that because at that point Mrs A had had only three hours of oxytocin (which had commenced at 2.16pm), there was a possibility that she could still progress. The plan was to continue, and for a decision about delivery by C-section to be made at the next vaginal examination.

169. Over a period of approximately 10 hours (from 7.12am on Day 4, when Mrs A's cervix was 6 to 7cm dilated, to 5.22pm, when Mrs A's cervix was 7 to 8cm dilated), the change in dilation of Mrs A's cervix was only 1 to 2cm. This was despite having received oxytocin for three hours.

170. Dr Sircar advised that either Mrs A should have been examined four hours after the commencement of the oxytocin (at 6.16pm), or the decision to deliver the baby by C-section should have been considered based on the findings of RM B's assessment (for which she sought advice from Dr C and Dr D) at 5.22pm, which was three hours after the commencement of oxytocin. Dr Sircar advised that considering the overall clinical picture, on balance it was unlikely that there would have been satisfactory progress (ie, dilation of 9 or 10cm) in the following hour (at 6.16pm, four hours from the time when the oxytocin had commenced).

171. I accept Dr Sircar's advice. I acknowledge that the staff did consider a C-section at 5.22pm but that it was decided that the findings of the next vaginal examination would be decisive as to whether the baby needed to be delivered by C-section. I also acknowledge that, at that time, Mrs A had received oxytocin for only three hours, and the plan was to continue oxytocin for longer in order to increase the rate of progress. I am therefore not critical about the care at this point because a C-section was considered. I am critical, however, that Mrs A was not assessed until approximately four hours later (which is discussed further below).

Delayed assessment

172. Dr Sircar advised that given that the decision had been made to continue with oxytocin at 5.22pm, it was imperative that Mrs A be assessed within two hours, at 7.22pm. However,

Mrs A was not assessed until 9.17pm (approximately four hours later). Dr Sircar considers that the failure to assess Mrs A by 7.22pm was a major departure from the accepted standard of care.

173. Health NZ disagrees with Dr Sircar's advice and said that the NICE guideline recommends that a vaginal examination is undertaken four hours after the oxytocin infusion has led to regular contractions in established labour. Health NZ said that this means that Mrs A should have been assessed four hours after 7.00pm, being at 11.00pm, not at 7.22pm or 9.17pm.

174. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) guideline 'Provision of routine intrapartum care in the absence of pregnancy complications'[49] (the RANZCOG guideline) states:

> 'The purpose of labour augmentation with a syntocinon infusion is to increase the rate of progress in labour when it is considered slower than normal progress. However, assessment of the cause for abnormally slow progress is critical, particularly in parous women, or in those with a uterine scar …
>
> Where full dilatation is not apparent clinically 2 hours after a woman is 9cm dilated, a further vaginal examination is beneficial to confirm full dilatation or allow the diagnosis of "failure to progress" if full dilatation has not occurred.'

175. The NICE guideline states:

> 'Advise the woman to have a vaginal examination 4 hours after starting oxytocin in established labour: if cervical dilatation has increased by less than 2 cm after 4 hours of oxytocin, further obstetric review is required to assess the need for caesarean section …
>
> [A]dvise all women with suspected delay in the established first stage of labour to have a vaginal examination 2 hours later, and diagnose delay if progress is less than 1 cm.'

176. As set out in the NICE guideline, a vaginal examination should have been performed at 6.16pm on Day 4 (four hours after the commencement of oxytocin) to assess dilation. In addition, as set out in the RANZCOG guideline and the NICE guideline, Mrs A should have been assessed at 7.22pm on Day 4 (two hours after the earlier vaginal examination).

177. Because full dilation had not occurred by 7.22pm, this would have allowed the diagnosis of 'failure to progress' to be made, and a plan for delivery by C-section to be made earlier. This view is supported by Dr H, who advised:

> 'The NICE Guidelines (2014) define failure to progress in first stage as <2cm increase in cervical dilatation after 4 hours of syntocinon augmentation. Based on this definition,

[49] First endorsed by RANZCOG in March 2010 and reviewed in July 2020.

> failure to progress could have been diagnosed by 1900hours had an examination been done at this time.'

178. Having carefully considered the information available to me, I accept Dr Sircar's interpretation of the relevant guidelines and his advice that there was a delay in assessing Mrs A and that it should have occurred earlier than 9.17pm. Furthermore, in my view, given Mrs A's high-risk pregnancy due to an advanced maternal age, IVF pregnancy, and Mrs A's medical history of diabetes, lupus, and asthma, it would have been reasonable to take a more conservative approach and to assess earlier.

Decision not to recommend delivery by C-section at 9.17pm

179. When Mrs A was assessed by Dr C and Dr D at 9.17pm, Mrs A's cervix was 8 to 9cm dilated. Dr C's plan was to review Mrs A in two hours' time (at around 11.20pm), and to recommend a C-section if Mrs A was then not fully dilated.

180. Over a period of approximately 14 hours, Mrs A's cervix had dilated only 2 or 3cm. At 7.12am on Day 4, Mrs A's cervix was 6 to 7cm dilated, and 14 hours later, at 9.17pm, only 8 to 9cm dilated. This was despite having received oxytocin for seven hours.

181. Dr Sircar advised that at that point, the lack of progress, even after seven hours of oxytocin, was clearly demonstrated. Dr Sircar advised that given the lack of progress, it would have been reasonable to consider a decision to deliver the baby by C-section at 9.17pm. He considers that the failure to do so was a major departure from the accepted standard of care.

182. I accept Dr Sircar's advice.

183. When Mrs A was finally assessed at 9.17pm, considering the overall clinical picture, it was clear that there was a failure to progress in labour. In my view, the decision to recommend delivery of the baby by C-section should have been made at this point at the very latest.

184. This view is supported by Dr H, who advised:

> 'The striking aspects of [Mrs A's] labour are failure of the head to descend below -2, persistent OP position, and cervical dilatation of only 1 to 2 cm after 14 hours of labour and 9 hours of syntocinon. This raises the question as to why failure to progress was not diagnosed much earlier in the day and a [C-section] offered, or perhaps even recommended.'

185. Dr H advised that it would have been possible to diagnose the failure to progress in Mrs A's labour by 5.22pm. Dr H also advised that by 9.17pm, 'the writing was very much on the wall that a vaginal delivery was very, very unlikely'. Dr H said that a C-section would have been advised at 9.17pm and Dr H would have agreed to a further two hours of labour only if [Mrs A] had clearly indicated that this was her 'strong preference'.

186. Dr G similarly advised that a more conservative practitioner may have considered delivery by C-section after the 5.22pm assessment, but that the decision to perform the C-section should have been made by 9.00pm at the very latest.

187. I acknowledge that delivery of the baby by C-section was considered and that a discussion occurred between Dr C and Mrs A at 9.17pm. Health NZ said that 'all the options and possible consequences' were discussed with Mrs A. However, because this was not documented in detail in the clinical records, it is not possible for me to determine what exactly was discussed with Mrs A in relation to the option of having a C-section, whether a C-section was recommended, and whether Mrs A was provided with details of the possible risks involved in continuing with labour.

188. If a C-section was recommended at 9.17pm, I would have expected this discussion to have been documented in detail in the clinical records and I am critical that this did not occur.

189. Overall, in my view, the delay in diagnosing failure to progress in labour, and the delay in recommending delivery by C-section, was inappropriate. In addition, I am critical that at the time of events there was no clinical guideline in place on diagnosing a delay in labour, the timing of examinations, and review of the action plan. This could have assisted the staff to recognise and act on the lack of progress in labour earlier.

Failure to contact second on-call SMO

190. Dr Sircar advised that the involvement of the second on-call SMO at 7.22pm would have ensured timely review of Mrs A. The second on-call SMO could have provided a second opinion, and possibly could have recognised and acted on the lack of progress in labour. Dr Sircar considers the failure to involve the second on-call SMO to be a moderate departure from the accepted standard of care.

191. Health NZ said that resource constraints prevented the staff from calling a second on-call SMO at 7.22pm on Day 4. Health NZ said that the events occurred on a Sunday, and the second on-call SMO was also the person who had been on call for the preceding 24 hours and was at home resting. Health NZ said that this SMO would have been fatigued from their own shift over the previous 24 hours and was not likely to be a 'fresh set of eyes'. This SMO was also due to work the following day.

192. Health NZ also said that the second on-call system is for the purpose of providing additional SMO capacity across the department, rather than escalating the care of an individual consumer when another SMO is already involved.

193. I accept Dr Sircar's advice. While I acknowledge that the delay in Mrs A being reviewed at 7.22pm was due to the acuity of the Delivery Suite, as advised by Dr Sircar, I would have expected the staff to have alerted the second on-call SMO at that point to ensure timely review. I am critical that this did not occur.

194. Health NZ's comments draw into question the effectiveness of this system in the circumstances if it was not feasible for the second on-call SMO to be called in for the reasons listed.

195. Health NZ accepts that there was no system or process in place to assist the staff in recognising that the workload had increased to the point where the second on-call SMO needed to be called to assist.

Delay in delivery by C-section

196. At 11.15pm on Day 4, Mrs A was reviewed by Dr E. Dr E noted that there was no progress and recommended that the baby be delivered by C-section.

197. Mrs A was transferred to the operating theatre at 12.20am, and the C-section commenced at 1.11am on Day 5.

198. There was a delay of approximately two hours from the time when the decision for delivery by C-section had been made, until the time of commencement of the C-section. This was due to the operating theatre having to be prepared following earlier surgeries, and to the medical staff having to attend to other women.

199. Dr Sircar advised that this was an undue delay, and he considers this to be a severe departure from accepted practice.

200. I accept Dr Sircar's advice. I am concerned about the delay in the C-section commencing, particularly as I have already established that the decision to recommend delivery by C-section should have been made earlier. I acknowledge, however, that the delay in commencing the C-section was caused by the acuity of the Birthing Suite, and the availability of the operating theatre.

201. Health NZ's guideline on Classification and Communication for Caesarean Section[50] (the C-section guideline) in place at the time of the events stated that once a decision to deliver had been made, delivery should be carried out with urgency appropriate to the situation, taking into account the safety of the woman and the wellbeing of her baby. The C-section guideline contained no prescribed time frame for Category 1 or Category 2 C-sections, but for Category 2 C-sections, the aim was to deliver as soon as possible, taking into account other priorities in the Birthing Suite. The C-section guideline stated:

> 'Whilst awaiting delivery close surveillance of mother and baby must continue. If the woman's clinical condition is stable delivery may be delayed in the event other more urgent emergencies supervene. These decisions will be the responsibility of the obstetric registrar or SMO.'

202. Health NZ accepted that the time frame from when the decision for a C-section was made until the commencement of the procedure was longer than preferred and said that this was

[50] Issued in July 2016.

due to the need to take fetal blood sampling from another baby in order to prioritise access to the operating theatre.

203. Since the events, Health NZ has revised its C-section guideline. For Category 2 C-sections, the aim is to deliver rapidly, and the categorisation may be upgraded at any time, should new concerns arise. Health NZ has also revised its process for activating the second operating theatre to accommodate Category 2 C-sections.

204. Dr Sircar advised that once the C-section had commenced, Baby A was delivered within a reasonable time, and I accept this advice.

Systemic issues

205. Multiple systemic issues affected the care provided to Mrs A.

206. The medical staff were managing many competing demands in the Delivery Suite and the gynaecology ward. Owing to the acuity, there were delays in Mrs A being reviewed because the medical staff were unavailable to assist when requested. (RM B had to page the anaesthetist three times for the epidural to be given, neither Dr C nor Dr D were available to review Mrs A at 5.22pm on Day 4, and there was no review of Mrs A at 7.22pm on Day 4.)

207. There was no system in place for the staff to recognise the acuity and to call additional staff, such as the second on-call SMO.

208. Team reviews were conducted by both Dr C and Dr D, and at times they were relying on the information provided by RM B. Some abnormal features of the CTG were not escalated to the medical staff because of ambiguities with the CTG assessment tool/sticker.

209. Owing to the acuity, there was also a delay in the C-section commencing. At the time of the events, the policy did not allow for a second operating theatre to be opened for a category 2 C-section.

210. I consider that a combination of inadequate staffing and support, and a lack of safe staffing escalation processes primarily affected the care provided to Mrs A.

Conclusion

211. In my view, Health NZ failed to provide services to Mrs A with reasonable care and skill for the following reasons:

- The prolonged duration of the first stage of labour;
- The delay in assessment during labour;
- The lack of appropriate escalation of care to the second on-call SMO;
- The delay in diagnosing failure to progress in labour, and therefore the delay with the decision to recommend delivery by C-section; and

- The delay in commencing the C-section.

212. As a healthcare provider, Health NZ is responsible for providing services in accordance with the Code. I have taken into account the resource constraints outlined by Health NZ, including inadequate staffing and support, and a lack of safe staffing escalation processes in place at the time and the implications of this. In my view, these systemic issues created an excessive workload and additional clinical responsibility for the clinicians involved, and resulted in delayed observations, a delayed diagnosis of failure to progress in labour, prolonged labour, and a delay in the C-section commencing. While I acknowledge these limitations, I remain of the view that Mrs A was entitled to receive services of an appropriate standard from supported staff.

213. Due to these factors, I consider that the above failures were service delivery failures, and, accordingly, I find that Health NZ breached Right 4(1) of the Code.

Opinion: RM B — educational comment

Fetal surveillance during labour

214. During labour, there were numerous times when the CTG results showed that the fetal heart rate had reduced variability.

215. Between 6.30am and 10.00am on Day 4, the fetal heart rate variability was mostly reduced. Normal variability was noted between 10.00am and 10.54am, with reduced variability again noted between 10.54am and 12.28pm. At 12.40pm, it was documented that the CTG had improved, but reduced variability was again noted between 2.20pm and 3.00pm.

216. At 5.00pm, two abnormal features of absent accelerations and variable decelerations were noted. RM B documented on the CTG assessment tool that no action was required and that the plan should continue. The SER states that it should have been documented that actions to 'correct reversible causes' should be taken, and a second opinion should have been obtained.

217. I acknowledge that there were periods throughout Mrs A's labour where the CTG had good variability, and where the CTG trace was normal. Dr C also noted that while there were some variable decelerations at times, these were always without complicating features and, overall, the CTG was reassuring with no concerns. Health NZ accepted that the format of the CTG assessment tool was unclear, and that it was not clear to the staff how the actions to be taken were to be selected when abnormal features were identified.

218. Notwithstanding the shortcomings in relation to the CTG, I acknowledge the challenging circumstances RM B found herself in. There were multiple times when RM B attempted to escalate the care of Mrs A, but because of the acuity, the medical staff were unavailable to assist (RM B had to page the anaesthetist three times for the epidural to be given, neither Dr C nor Dr D were available to review Mrs A at 5.22pm on Day 4, and there was no review of Mrs A at 7.22pm on Day 4).

219. I also acknowledge that while RM B was the LMC during the labour care, Mrs A was under secondary care services, and management of her care was the responsibility of the obstetrics team. In my view, these factors mitigate the shortcomings in RM B's care and, accordingly, I do not find that RM B breached the Code.

Changes made since events

Health NZ

220. Health NZ told HDC that all but two of the recommendations made in the SER have been completed.

221. Health NZ was unable to complete the recommendation for POCT alerts via its vendor but has updated POCT team training documentation to include checking for missing results and looking at messages. Health NZ said that the recommendation for 'the need for the neonatal team to be present at the "time-out" pre-surgery huddle is to be communicated to the obstetric, midwifery, and theatre team and a revised process agreed by all parties as part of the review of the Classification and Communication of Caesarean Section Guideline still in progress'.

222. In 2019, Health NZ developed a 'Delay in Labour' maternity guideline, which in 2020 was revised and re-named 'Progress in Labour'. Health NZ said that essentially the guidance for timing and management between these two guidelines is unchanged but an emphasis on holistic care and comprehensive observations has been incorporated in the updated guideline.

223. Health NZ told HDC that the Obstetrics and Gynaecology Department has put in place several systems to inform the current staff about acuity levels and enable them to obtain additional help if they consider it necessary. Health NZ said that there is now much greater awareness and recognition of fatigue and capacity issues, and this is reflected in its staffing systems.

224. Health NZ said that since the events, with additional funding and recruitment, there have been major changes to staffing within the Obstetrics and Gynaecology Department, and, since the events, the availability of a second on-call consultant is one of the areas where the most change has occurred. Health NZ explained that during the week, the day and night shifts are now separated, and the consultant who has worked during the day goes off duty to rest at night but is available if the first on-call consultant needs to discuss a case or requires clinical support. Health NZ said that during weekends, there is a separate consultant undertaking the second on-call duties. This consultant attends for the first two to three hours of each day to ensure that ward rounds are completed in a timely manner, and they then remain second on call. A separate consultant is rostered to the Birthing Suite. Health NZ said that this ensures that the Birthing Suite consultant has to focus only on acute events and remains in the Birthing Suite to attend to acute situations only.

225. Health NZ stated that effectively there are now three consultants rostered to cover the weekend, ensuring 'much more reserve in the system'. Health NZ said that an important part of its communication about this rostering change has been to emphasise that consultants on duty should have no reservations about calling for additional help, and the second on-call person can expect to be called without concerns about their potential exhaustion.

226. Health NZ told HDC that the core midwives are now using Care Capacity Demand Monitoring (Trendcare) tools to record the acuity of the Birthing Suite on a daily basis, which facilitates greater awareness across services about when critical capacity has been reached, or when there is a risk of critical capacity being reached. Health NZ said that the Trendcare tool's response plan includes discussion with SMOs, and that the Obstetrics and Gynaecology Department Management team have been very supportive of the doctors calling for additional support when required. Health NZ said that the ability to call for support extends beyond the second on-call SMO to include others who work in the service.

227. Health NZ stated that in 2019 it undertook a service sizing review of the Obstetrics Service, which has allowed it to have an additional 2 FTE consultant roles, divided as four 0.5 FTE roles with full on-call responsibilities. Health NZ said that these additional SMO staff help to reduce 'the onerous nature' of the SMO on-call roster and further reduce the extent and impact of fatigue.

228. Health NZ said that a Safe Staffing Escalation Flowchart has been widely disseminated and used by staff. Scenarios and discussions related to escalation now occur at interviews for new Associate Clinical Midwifery Managers (ACMMs) and are included in their orientation handbook.

229. Health NZ stated that practical obstetric multi-professional training (PROMPT) is rostered annually for SMOs and registrars, which teaches healthcare professionals how to respond to obstetric emergencies. Health NZ said that PROMPT has a significant emphasis on situational awareness, teamwork, and communication, and involves training in multi-disciplinary acute scenario-based opportunities.

230. Health NZ said that since the events, it has had multiple education sessions involving the whole multidisciplinary team (consultants, registrars, midwives, and neonatal team members). At least one of these has been a teaching session where the details of the case were outlined and discussed anonymously as part of the education. Health NZ said that several of these training sessions have specifically been related to the management of the impacted fetal head. Health NZ said that it has had the assistance of Professor Tim Draycott, the former Vice President of RANZCOG and the lead and co-founder of the PROMPT foundation, who has visited and run education sessions for the department in 2019, 2022, and 2024.

Dr C

231. Dr C instigated investigation into the fetal pillow, which was reported to assist in cases of possible difficult delivery at C-section. Dr C said that the hospital did not have this device at the time of the events, but it now utilises it in certain cases.

RM B

232. RM B told HDC that she has completed an updated fetal surveillance programme as part of her professional development.

233. RM B said that Health NZ's amended CTG assessment tool is much easier to read and has a clear pathway to follow. She stated that she ensures that the CTG stickers are filled in correctly, with review if abnormal, and she now asks the ACMM to check the CTG if the obstetricians are busy. She said that she believes she is competent at reading and interpreting CTGs.

234. RM B said that, unfortunately, it is a common occurrence to look after women with labour dystocia, but she is 'cautious' about obstructed labour. She said that she is now 'more vocal' with the obstetrics staff about progress in labour, and 'more assertive' when there is obstructed labour.

Recommendations

235. Taking into account the significant changes made by Health NZ since the events, I recommend that Health NZ provide a formal written apology to Mr and Mrs A for the deficiencies of care identified in this report. The apology should be sent to HDC, for forwarding to Mr and Mrs A, within three weeks of the date of this report.

236. Taking into account the changes made by RM B since the events, I do not consider that any recommendations are necessary.

Follow-up actions

237. A copy of this report will be provided to the Coroner.

238. A copy of this report with details identifying the parties removed, except Health NZ|Te Whatu Ora Waitaha Canterbury, Christchurch Women's Hospital, and the independent advisor on this case, will be sent to the Midwifery Council of New Zealand, and it will be advised of RM B's name in the cover letter.

239. A copy of this report with details identifying the parties removed, except Health NZ|Te Whatu Ora Waitaha Canterbury, Christchurch Women's Hospital, and the independent advisor on this case, will be sent to the Royal Australian and New Zealand College of Obstetricians and Gynaecologists and the New Zealand College of Midwives, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix A: Independent clinical advice to Commissioner

The following independent advice was obtained from Dr Sikhar Sircar, an obstetrician and gynaecologist:

'Matter relating to: [Mrs A] NHI … and
[Baby A] (deceased) NHI …

Your Ref: **21HDC00367**

Our Ref: …

Report of Dr Sikhar Sircar

Dated: 8th June 2023

Specialist field: Obstetrics and Gynaecology

On behalf of: Health and Disability Commissioner

Dr Sikhar Sircar
MBBS, MD, DFFP, FRCOG, FRANZCOG

…

1. Introduction

I am Dr Sikhar Sircar. My specialist field is Obstetrics and Gynaecology. Since 2009 I have been working as a consultant in Obstetrics and Gynaecology. I have the following post graduate qualifications: Doctorate of Medicine (MD), Fellowship of the Royal College of Obstetricians and Gynaecologists (FRCOG), Diploma of Faculty of Sexual and Reproductive Health of the RCOG (DFSRH, formerly DFFP), Post Graduate Certificate in Medical Education (PG Cert Med Ed), Cardiff University Law School Bond Solon Civil Expert Certificate (CUBS), European Society of Gynaecological Endoscopy (ESGE) Bachelor of Endoscopy diploma and Fellowship of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (FRANZCOG).

I have clinical experience, material to the overview report I have prepared.

I have attended courses for Medico-legal report writing and attended relevant training. Full details are in appendix 1.

2. Summary of my opinion regarding departures from standard and or acceptable practice

- In my opinion, the length of first stage of labour was more than 18 hrs. Therefore, I consider this to be a minor departure (vide paragraph 7.6.2).
- I am of the opinion that the standard of fetal surveillance was not met and I consider this as a moderate departure (vide paragraph 7.4.2).
- In my opinion, not to consider the decision to deliver by CS at 17.22 hrs is a moderate departure (vide paragraph 7.4.4).
- In my opinion, failure to involve the second-on-call SMO could be considered as a moderate departure (vide paragraph 7.11).
- In my opinion, not having an assessment by 19.22hrs is a severe departure (vide paragraph 7.4.4).
- In my opinion, failure to consider a decision to deliver the baby by caesarean section at or by 21.17 hrs is a severe departure (vide paragraph 7.7.2).
- I would consider there was an undue delay from the time when the decision to deliver by C-section was made, until delivery and, as such, is a severe departure from accepted practice (vide paragraph 7.8).

3. Instruction from the Commissioner

I have been asked to provide an opinion to the Commissioner on case number **21HDC00367** and I have read and agree to follow the Commissioner's "Guidelines for Independent Advisors".

Please comment on:

Antenatal care

1. The adequacy of the antenatal consultations undertaken by Te Whatu Ora.
2. The adequacy of Te Whatu Ora's management of [Mrs A] when she presented at around 31 weeks' gestation with antepartum haemorrhage.
3. Whether the plan to induce [Mrs A] at 39 weeks' gestation was reasonable.

Labour and delivery

4. The adequacy of the obstetric care provided to [Mrs A] during labour and delivery, including the timeliness of the obstetric reviews.
5. The adequacy of the assessment of progress in labour, and whether it was reasonable to continue the plan for vaginal delivery.
6. The length of labour and the adequacy of the interventions, based on the information available at the time.

7. Whether there was any undue delay in the decision to deliver by C-section. If so, please comment on when the decision to perform a C-section should have been made.
8. Whether there was any undue delay from the time when the decision to deliver by C-section was made, until such time as the C-section was performed.
9. Whether the initial allocation of the C-section (as a Category 2) was appropriate.
10. Whether the communication between staff was adequate.
11. Whether the staffing/resourcing levels at Te Whatu Ora were adequate.
12. The adequacy of relevant policies and procedures that were in place at the time of events at Te Whatu Ora.
13. Any other matters in this case that you consider warrant comment.

For each question, please advise:

1. What is the standard of care/accepted practice?
2. If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?
3. How would it be viewed by your peers?
4. Recommendations for improvement that may help to prevent a similar occurrence in future.

4. Documents received and used to assess the facts and reach an opinion are

1. Letter of referral from the Coroner, dated 18 February 2021
2. Te Whatu Ora's Serious Event Review
3. Statement from [Mrs A] dated [Day 7]
4. Post mortem report dated [Day 8]
5. Statements from various clinical staff members to the Coroner
6. [RM B's] response dated 27 April 2022
7. Timeline of antenatal care prepared by [RM B]
8. Te Whatu Ora's response dated 6 October 2022
9. Clinical records from [RM B] covering [the ante-natal period to [Day 7]]
10. Clinical records from Te Whatu Ora covering the period [Day 1] to [Day 7].

5. The document suggests the following relevant facts and chronology of events

5.1 [Mrs A] became pregnant with her first child in 2017, following IVF (in-vitro fertilisation). Her estimated due date was …

5.2 [Mrs A] had a history of diet-controlled Type 2 Diabetes Mellitus, which had regressed following weight loss. She also had asthma, Raynaud's syndrome and Systemic Lupus Erythematosus, but had been in remission for over 10 years. [Mrs A's] weight was 78kg and her height was 182cm. She had a BMI (body mass index) of 23.5.

5.3 [Mrs A] registered with [RM B], a private midwife, as her Lead Maternity Carer (LMC).

5.4 At [Mrs A's] routine anatomy ultrasound (US) a velamentous cord insertion was noted (umbilical cord inserted and running through the membranes before reaching the placenta).

5.5 At around 31+2 weeks' gestation, [Mrs A] was admitted to Christchurch Women's Hospital (CWH) for antepartum haemorrhage with reduced fetal movements. A formal US with dopplers showed a normal umbilical artery pulsatility index (PI) and normal amniotic fluid index (AFI) and the cardiotocograph (CTG) was normal. No cause for the antepartum haemorrhage was seen on ultrasound scan. Follow-up was arranged with twice weekly CTG at Day Assessment Unit (DAU) attendance and ultrasound scans with Dopplers.

5.6 A further US with Dopplers was performed at 32 weeks and 3 days. AFI was found to be 6 while umbilical artery PI remained normal. Middle cerebral artery PI was abnormally low. CTG was normal. A further US was performed 2 days later (32 weeks and 5 days) and all values were normal, as was the CTG. A further US at 33 weeks and 3 days reported all values being normal.

5.7 An US at 35 weeks found the estimated fetal weight was 3178gms, which was on the 90th centile on a customised growth chart. US at 37 weeks was performed due to ectopic heartbeats. The AFI and Dopplers were normal with no ectopic beats seen on scan.

5.8 A plan was made to induce [Mrs A] at 39 weeks' gestation for advanced maternal age and IVF pregnancy.

5.9 On [Day 1], at 39 weeks' gestation, [Mrs A] presented to CWH for induction of labour. She was admitted at 4.00pm. She received two doses of prostaglandin pessary (Cervidil) over 48 hours, as per local protocol.

6. [Day 4]

6.10 04 45hr: [Mrs A] was distressed with uterine contractions and her cervix was noted to be 3 cm dilated. She was transferred to a birthing room and analgesia in the form of Entonox and morphine was given.

6.11 07 12hr: VE: cervix fully effaced, 6–7cms dilated, head well applied.

6.12 08 01hr: Spontaneous rupture of membranes, clear liquor noted at 08.11 am.

6.13 08 47hr: LMC midwife present to take over care. CTG suggests reduced variability of the fetal heart rate noted on the CTG as well as some normal variability. Serious Event Review team (Review team) noted that reduced variability met criteria for correction of reversible causes and medical review.

6.14 09 15hr: Review by Specialist Obstetrician A: "*now in labour, contractions 2–3 in 10 mins, long and strong, partogram — progress, CTG: acceleration, slightly reduced [fetal heart rate] variability at times, abdominal examination, spine right, 2/5^{ths} palpable. Impression: progress reasonable. Plan: review 4 hours [from last examination] = 1100hrs, at present no need for oxytocin, will consider need for this during second stage, review urgently as required.*"

6.15 10 37hr: "*Clear liquor +++*"

6.16 10 54hr: No response to page — so LMC Midwife went to the handover room and spoke to the Obstetric Registrar.

6.17 11 11hr: **VE** (vaginal examination) by LMC Midwife, "*cervix 6cms dilated, well applied to head, caput ++, anterior fontanelle on entry, query deflexed [position of head].' Presenting part station -2, lie right anterior or lateral. CTG still reduced variability but good fetal heart rate response during examination.*"

6.18 11 30hr: LMC Midwife discussed progress with Specialist Obstetrician A. Plan was for epidural analgesia, oxytocin augmentation and reassess in 4 hours. LMC Midwife recalls that she informed Specialist Obstetrician A of deflexed head and caput. Specialist Obstetrician A recalls only being informed that [Mrs A] had not progressed. Specialist Obstetrician A recalls that a review of [Mrs A] was not carried out in person by obstetric medical staff prior to recommending that an epidural and oxytocin be administered.

6.19 12 00 midday: Review of CTG by LMC Midwife. CTG review indicating reduced variability and absent accelerations — "no action" was circled. Review team noted that this should have been "action to correct reversible causes and referral to medical staff". Plan was to continue and change maternal position.

6.20 12 09hr: No response from paging anaesthetist twice, so paged again from the handover room. LMC Midwife paged the Clinical Coordinator of Birthing Suite (CCO) to test the paging system — which worked. Review team note on CTG further reduced variability of fetal heart rate.

6.21 12 28 hr: Reduced variability on CTG. 12 30 hr: Improved fetal heart rate variability documented. 01 16 pm: CTG assessed as normal.

6.22 13 49 hr: Epidural sited.

6.23 14 16 hr: Oxytocin infusion started

6.24 15 00 hr: Review by Obstetric Registrar A. documented as — "*contraction 2–3 in 10, VE: cervix 7–8cms, significant moulding, deflexed, right occipito-anterior, presenting part -2, 2/5th palpable abdominally. Plan: aim to increase contractions, reassess in 2–4 hours.*" Documented to have been discussed with Specialist Obstetrician. Specialist Obstetrician A does not recall being informed that there was a deflexed head and moulding, only that there was delay in labour and a delay in oxytocin commencing.

6.25 17 00 hr: CTG review as documented on CTG assessment tool indicated absent accelerations and variable decelerations with overall conclusion that no action was required. Review team note that "correct reversible cause and second opinion" was indicated.

6.26 17 22 hr: VE by LMC Midwife: "cervix 7–8cms dilated, presenting part 2cm above ischial spines, deflexed, query asynclitic, caput ++, no moulding."

6.27 17 44 hr: LMC Midwife had a conversation with Obstetric Registrar A and Specialist Obstetrician A, in the handover room, that "*the next assessment would be decisive but that [timing of delivery] was dependent on theatre availability as there were possibly two other women who may need caesarean section"*.

6.28 18 10 hr: Uterine activity 3 in 10, CTG assessed as normal

6.29 19 00 hr: Uterine activity 3–4/10, CTG assessed as normal

6.30 19 40 hr: clear liquor noted

6.31 20 00 hr: CTG assessment suggests: variable decelerations with a period of reduced variability and normal variability, contracting 4:10, regular and strong, concluded no action required, however noted for a review. LMC documented "*awaiting on [Obstetrics & Gynaecology] review with next VE. All doctors busy*".

6.32 20 42 hr: Discussion between LMC Midwife and Specialist Obstetrician A regarding the plan as almost 4 hours since last VE. Plan: Obstetric Registrar A to review at 2100hrs.

6.33 21 17 hr: Review by Obstetric Registrar A and Specialist Obstetrician A. "*Four hours since last examination, oxytocin at 96mls/hr, contractions 3–4:10 (3:10 from 1600hrs, 4:10 last two hours). Fetal heart rate baseline 130bpm, reassuring CTG (some variable decelerations earlier on*". VE performed by Obstetric Registrar A and repeated by Specialist Obstetrician "*Cervix 8–9cms, lip from 8 o clock to 3 o clock, slightly oedematous, feels occipito posterior. Ultrasound scan to confirm: head occipito posterior, spine to the right. Conclusion: direct occipito posterior, somewhat deflexed. Discussed progress/obstruction/deflexion, may come but can sometimes become wedged and not progress. Baby and mother both well currently. Plan was to continue and review in two hours. Should be fully dilated at*

that stage". Specialist Obstetrician A recalls determining that there was not a brow presentation and would have assessed for caput and moulding but did not document this and cannot recall if this was present.

6.34 23 00 hr: CTG assessed by LMC Midwife as normal: fetal heart baseline 120bpm, variability good and accelerations present. Plan to continue.

6.35 23 25 hr: Review by Obstetric Registrar C. VE: "*cervix 8cms, thick anterior crescent of cervix, presenting part -3, poorly applied [to cervix]. Oxytocin at 96mls/hr, contractions 4:10, query early decelerations of fetal heart rate in sleep phase. Explained no progress despite good uterine activity, good sized fetus and malposition. Recommend caesarean section, couple accepting, consented for category 2 caesarean section, oxytocin off. Midwifery and theatre team made aware and Specialist Obstetrician A informed. To review the CTG in 15 minutes*." Clinical Coordinator (**CCO**) Birthing Suite was informed and faxed the theatre request form then went to talk to the theatre staff. CCO informed Neonatal Registrar A in the corridor and informed him/her of the case. Delay in transfer to theatre as awaiting completion of another case and the theatre being cleaned.

[Day 5]

6.36 00 25 hr: [Mrs A] in theatre. Epidural top up commenced by anaesthetist. CTG assessed as normal. Further delay as the start was on hold because fetal blood sampling was performed on the other case with an abnormal CTG. At this time Obstetric Registrar A and Specialist Obstetrician A were attending another urgent review on the Gynaecology Ward.

6.37 00 35 hr: CTG commenced on [Mrs A] due to the delay. Neonatal Registrar A was called for delivery and was present however obstetric medical staff were not ready to commence surgery.

6.38 00 55 hr: Medical staff arrived into theatre. The fetal blood sample in the other case was normal and therefore the decision was made to start [Mrs A's] case. CTG in theatre was documented as normal by Obstetric Registrar C (specifically baseline rate of 130bpm, normal variability, accelerations and one possible variable deceleration). A vaginal examination to determine cervical dilatation was not carried out prior to surgery commencing.

6.39 01 11 hr: Knife to skin. Neonatal Registrar A arrived in theatre. Caesarean section commenced by Obstetric Registrars B and C with Specialist Obstetrician A supervising.

Obstetric Registrar C made the incision and placed a hand down to deliver the head — felt fetal head to be very deflexed therefore Obstetric Registrar B took over. Obstetric Registrar B tried to disimpact head with left then right hand — difficulty getting hand over the head. Specialist Obstetrician verbalised "upgrade

to category 1 caesarean section" while putting on gloves and performed a VE to assist with dis-impacting the head.

Neonatal Registrar A made a phone call to Neonatal Registrar B requesting attendance and asked whether to call Specialist Neonatologist A on call at home.

On VE Specialist Obstetrician A found the head deflexed and tightly into sacral hollow and unable to flex head up from below. Specialist Obstetrician A gowned and gloved quickly (no time for performing thorough hand washing procedure) and attempted to dis-impact and flex head up abdominally from the right side of the table — "*fetal head tightly wedged into sacral hollow, unable to flex up"*.

Decision for T extension to uterine incision and deliver the legs/buttocks first (breech delivery). Fetal legs delivered with flexion without difficulty and brought up. Head still held tightly within thick lower segment — further cut to lower segment (midline). Still tight therefore a finger was inserted into fetal mouth to assist with delivery of the head.

Liquor was noted as clear.

Glyceryl trinitrate (GTN) was administered to [Mrs A] for intraoperative relaxation of the uterus.

6.40 01.13 hr: [Baby A] was born. The umbilical cord was clamped and [Baby A] was handed to Neonatal Registrars A and B. Heart rate present > 100 bpm (113bpm) [Baby A] was floppy, pale, not moving and had no respiratory effort. He required cardio-pulmonary resuscitation up to 36 minutes of age and was transferred to the Neonatal Intensive Care Unit. He sustained injuries (subarachnoid haemorrhage, non-displaced fractures within the skull, and cerebral oedema). Apgar score was 2, 1 and 0 at 1, 5 and 10 minutes. Notes suggest [Baby A] was "purple and floppy".

6.41 01 15 hr: Cord bloods taken: Arterial pH 7.178, base excess -7.7mmol, lactate 4.3 mmol. Venous pH 7.215, base excess -5.1 mmol, lactate 2.5 mmol.

6.42 02 12 hr: [Baby A] was admitted to the neonatal intensive care unit. Extensive ecchymosis (discolouration of skin resulting from bleeding underneath, caused by bruising) was noted on chest, arms & legs. Petechiae (small spots on skin caused by burst blood vessels) especially on upper arms. Boggy swelling noted on occiput of head (sub-galeal haemorrhage). Diagnosis of severe hypoxic ischaemic encephalopathy (**HIE**). Monitoring showed an isoelectric trace (an absence of electrical brain activity) which was in keeping with a grade III severe HIE.

6.43 02 25 hr**:** Capillary blood test results: pH 6.78, base excess -21mmol/L, oxygen saturation 53.3%, lactate 13.1mmol/L, oxyhaemoglobin 51.7%, total haemoglobin 145g/L.

6.44 12 00 midday: Head ultrasound suspicious for intraventricular haemorrhage bilaterally — for formal head ultrasound.

6.45 15 11hr: Head ultrasound scan performed by Specialist Neonatologist suggests slit like ventricles and increased echogenicity in left hemisphere. Formal head ultrasound was arranged.

6.46 16 08 hr: Head US suggested "*abnormal echogenicity in keeping with HIE".*

[Day 6]

6.47 First appearance of seizure activity.

[Day 7]

6.48 14 50 hr: US findings of global severe increased echogenicity which was more severe than 48 hours previous, low and reversed flow in arteries with high resistance. Suggestive of raised intracranial pressure due to global severe brain injury, which ultimately led to the decision to withdraw intensive care. [Baby A], sadly, died on [Day 7] at 21 35 hr.

6. Assumptions and limitations

None

7. My opinion

Antenatal care

7.1 The adequacy of the antenatal consultations undertaken by Te Whatu Ora.

7.1.1 What is the standard of care/accepted practice?

In view of the background risk factors (IVF pregnancy, advanced maternal age, type 2 Diabetes Mellitus, Lupus and possible heart murmur) an Obstetric referral was indicated.

(Ref: https://www.midwife.org.nz/wp-content/uploads/2019/06/Referral-Guidelines-Obstetric-and-related-medical-services.pdf 2012)

Offering low dose aspirin, surveillance for pre-eclampsia, blood sugar control surveillance, Regular growth scan, induction of labour at or before due date were indicated.

[Mrs A] further developed risk factors like velamentous insertion of placenta, antenatal bleeding and (foetal) ectopic heartbeat and recurrent glycosuria.

LMC led care along with obstetric consultation was appropriate.

7.1.2 If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?

In my opinion, there has been no departure from standard practice. [Mrs A] was adequately managed and had due consultation and investigations based on the risk factors.

7.1.3 How would it be viewed by your peers?

I am of the opinion that my peers would have a similar view.

7.1.4 Recommendations for improvement that may help to prevent a similar occurrence in future.

None

7.2 The adequacy of Te Whatu Ora's management of [Mrs A] when she presented at around 31 weeks' gestation with antepartum haemorrhage.

7.2.1 What is the standard of care/accepted practice?

The standard of care expected would be admission, stabilisation, investigation for the antepartum haemorrhage and management of ongoing pregnancy.

In my opinion, [Mrs A] was adequately managed when she was admitted at 31 weeks with antepartum haemorrhage. She underwent primary assessment by her LMC, followed by assessment by Obstetricians. [Mrs A] was then admitted, had steroid for foetal lung maturity and a bed side US followed by formal departmental US. Twice daily CTG, while in patient was followed by a plan to see her at day assessment unit (DAU) twice a week with CTG.

Six days after discharge [Mrs A] underwent further USS. This showed abnormality in blood flow (abnormal MCAPI). This was adequately followed up by further CTG and further USS.

7.2.2 If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?

In my opinion, there has been no departure from standard practice.

7.2.3 How would it be viewed by your peers?

I am of the opinion that my peers would have a similar view.

7.2.4 Recommendations for improvement that may help to prevent a similar occurrence in future.

I note that the USS at 32 weeks and 3 days the US suggests low liquor but the value notes was AFI of 6 and deepest pocket of 2.9cm. In my opinion both these values are within normal limit, rather than being low.

(Ref: https://www.uptodate.com/contents/assessment-of-amniotic-fluid-volume)

I also note that the MCAPI was performed which was abnormal. The SAER suggests that performing MCAPI was outside the relevant guideline. It might be important to understand the reason for such departure and if local guidance or protocol needs to be addressed.

7.3 Whether the plan to induce [Mrs A] at 39 weeks' gestation was reasonable.

7.3.1 What is the standard of care/accepted practice?

In my opinion, the plan to induce [Mrs A] at 39 weeks was reasonable. The standard of care would be to allow pregnancy till "term" and not to go over due date for the risk factors which have been elucidated before.

7.3.2 If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?

In my opinion there has been no departure from standard practice.

7.3.3 How would it be viewed by your peers?

I am of the opinion that my peers would have a similar view.

7.3.4 Recommendations for improvement that may help to prevent a similar occurrence in future.

None

Labour and delivery

7.4 The adequacy of the obstetric care provided to [Mrs A] during labour and delivery, including the timeliness of the obstetric reviews.

7.4.1 What is the standard of care/accepted practice?

I have consulted and referred to the National Institute of Health and Care Excellence (**NICE** CG 190, Ref 1) and RANZCOG (Provision of routine intrapartum care in the absence of pregnancy complications, C-Obs 31, Ref 2) guidance for reference. I am not aware of any hospital guideline which was existing that time. I am aware that the RANZCOG guidance is for "absence of pregnancy complications" but in my opinion the basic principles of care would remain similar.

According to the RANZCOG guidance (Ref 2) the recommendations for routine care throughout labour are the following. I have addressed the relevant ones for this report.

- Communication and support — not relevant
- Fetal Surveillance — discussed in detail
- Activity — not relevant
- Analgesia in labour — discussed in detail
- Fluids and oral intake — not relevant

- Antibiotics — not relevant
- Amniotomy (ARM) — not relevant
- Progress in Labour — discussed in detail

7.4.2 Fetal surveillance: I am of the opinion that the standard of fetal surveillance was not met and I consider this as a moderate departure. I say so because my interpretation of the CTG suggests long areas of abnormally low variability (defined as less than or equal to 5). This has been mentioned in the SAER review. In my opinion on [Day 4] the variability was mostly reduced from around 5.30 hrs till 10.00 hrs. Similarly, it was reduced from 10.50hrs till 12.20hr and again 14.20 till 15.00 hrs. In my opinion normal variability was noted between 10.00 hr till 10.50 hr, 12.20 hr till 2.20 hr. Then interrupted episode of normal variability roughly between 15.00–15.30 pm, 16.00–16.30 pm and from 17.30hr till 19.40 hr. I agree with the SAER review that there were areas of low variability where a medical review or second opinion should have been sought. This could have led to consideration of fetal blood sampling at or around 21.11 hrs. Please note the current NICE guidance (2022) suggests that "*NICE is unable to make a recommendation about fetal blood sampling because of limited evidence.*" However according to the relevant RANZCOG FSEP guidance that was in place, a fetal blood sampling would have been considered.

7.4.3 Analgesia in labour: At 11 30 plan was made to offer epidural, but there was a delay in getting hold of anaesthetist. Ultimately epidural was sited at 1.49 pm. Apart from the noted delay, I am of the opinion that there was no departure from the standards.

7.4.4 Progress in labour: One of the difficulties in assessment of this case is that the clinical examination findings have been ambiguous (example 6–7cm rather than 6 or 7 cm). However, this is not unusual, as the examination during labour is often subjective to inter-observer variation. Where relevant, I have factored this in my opinion.

I have attached a table of clinical examination findings and my comments for easy reference. I have put my opinion on any possible departure from practice in italic.

Time in 24 hr	**Dilatation in cm**	**Station**	**Other finding**	**Comment**
4 45	3			Duration of first stage starts when labour is established. Established labour is from 3–4 cm, with regular uterine contraction (as per Ministry of Health guidance (Ref 3) However, 4 cm as starting point of "active labour" is commonly accepted.

				Considering the above, in my opinion, [Mrs A] was in established labour before 7.12 am. She made 3–4 cm progress in 2 and ½ hrs. Though it is difficult to be accurate, on balance of probability she was 6 cm or more at 6 00 hrs.
7 12	6–7		Fully effaced	
11 11	6	-2	caput ++, anterior fontanelle on entry, query deflexed.	Plan to start oxytocin and epidural is per standard and in my opinion there has been no departure from standard at this stage. Oxytocin was started at 14 16 hrs.
15 00	7–8	-2	significant moulding, deflexed, right occipito-anterior, presenting part. Uterine activity was 2 contractions in 10 minutes (2 in 10) Plan was to increase contractions and to review in 2–4 hrs	<u>Scenario (a):</u> If [Mrs A] has made 2 cm progress in 4 hrs (that is 8 cm from 6 cm): this would be accepted within normal limits as per NICE (ref 1) guidance. As per RANZCOG guidance (ref 2), this progress is acceptable, only if [Mrs A] preferred low intervention. In absence of any documentation on the contrary, I have accepted this as within limits. A review in 4 hrs is acceptable. <u>Scenario (b):</u> However, if it is 1 cm progress in 4 hrs (from 6 to 7 cm), there has been delay in progress of labour. A senior review was warranted (depending on seniority and experience of the Obstetric register A). A review in 2 hrs will be recommended. In my opinion (a) Plan to continue with oxytocin was reasonable and there was no departure from standard practice. (b) Review should have in 2 hrs from this assessment, rather than an ambiguous plan of "2–4 hrs". One should also have considered the duration of oxytocin use and made a clear plan of its implication with future assessments.

				However, assessment was carried out in 2 hours, therefore, in my opinion, there was no departure from standard practice.
17 22	7–8	-2	deflexed, query asynclitic, caput ++, no moulding. Plan: to continue. "Next VE to be decisive."	In my opinion, it was reasonable to consider a decision to deliver the baby that time by caesarean section (**CS**). This is because (a) At this point the change in dilation has been 1 or 2 cm in 10 hrs in spite of oxytocin for 3 hrs. (b) I note from the documents, that the rationale for continuing at this stage was that of oxytocin not being used for 4 hours. However, in my opinion, one would either have examined [Mrs A] 4 hrs post oxytocin (so after 18 16) or made a decision based on current findings (after 3 hours of oxytocin). Considering the overall picture, on balance of probability, it was unlikely that in an hour's time (i.e., 4 hrs from oxytocin) satisfactory progress would have been made (i.e., dilatation of 9 or 10cm). Therefore, again a decision to deliver by CS would have been reasonable at this stage. *Therefore, in my opinion, not to consider a decision to deliver by CS at 17.22 hrs is a moderate departure from standard or acceptable practice.* *I would expect that most of my peers would recommend delivery at this stage*. However, if one considers continuing further with oxytocin at this stage, it is imperative that the next assessment is in 2 hrs (by 19 22hrs).

				Therefore, in my opinion, not having an assessment by 19.22hrs is a major departure from standard and acceptable practice.
21 17	8–9		Occipito-posterior, deflexed, cervical lip from 8–3 o clock, oedematous cervix Plan was to review in 2 hrs	By this time the cervix has dilated only 2 or 3 cm (from 6–7 cm at 7.12 hrs) in 14 hrs in spite of having oxytocin for 7 hrs (from 14.16 hrs). *In my opinion, it was reasonable to consider a decision to deliver the baby at this time by caesarean section (**CS**). This is because the lack of progress even after oxytocin augmentation, is now clearly demonstrated.* *In my opinion this is a major departure from standard and acceptable practice.* *In my opinion, my peers would have a similar view.*
23 25	8	-3	thick anterior crescent of cervix,	Decision for CS made

7.4.5 If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?

As mentioned above. I have further discussed them in the following sections.

7.4.6 How would it be viewed by your peers?

As mentioned above.

7.4.7 Recommendations for improvement that may help to prevent a similar occurrence in future.

Local/national guidance on "progress of labour". I understand similar guidance is now available within the hospital.

7.5 The adequacy of the assessment of progress in labour, and whether it was reasonable to continue the plan for vaginal delivery.

7.5.1 What is the standard of care/accepted practice?

Standards against which care is compared is RANZCOG guidance (ref 2) which states that "*The purpose of labour augmentation with an oxytocin infusion is to increase the rate of progress in labour when it is considered slower than normal progress. However, assessment of the cause for abnormally slow progress is critical, particularly in parous*

women, or in those with a uterine scar. It is important that obstruction, for example due to cephalo-pelvic disproportion, is considered in this setting."

The above guidance suggests that for "*Failure to progress in primigravida (1st labour)*": "*the 10th centile for progress of cervical dilatation in labour is 0.9 cm/hour. The threshold at which slow cervical dilatation merits a recommendation for oxytocin infusion is therefore appropriately: (a) Individualised with an informed discussion between the woman and her carer (b) Will commonly be at 1 cm/hr for most women in spontaneous labour but may be as high as 1 cm/2 hrs in women prioritising low intervention*".

"*Progress is judged solely in terms of cervical dilatation and head descent in the 1st stage of labour.*"

7.5.2 If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?

In my opinion, not having an assessment by 19.22hrs is a major departure in assessing labour progression for [Mrs A]. I have explained this in the above table under comments at 17.22 hrs.

7.5.3 How would it be viewed by your peers?

In my opinion, my peers would have a similar view.

7.5.4 Recommendations for improvement that may help to prevent a similar occurrence in future.

Local/national guidance on "progress of labour". I understand similar guidance is now available within the hospital.

7.6 The length of labour and the adequacy of the interventions, based on the information available at the time.

7.6.1 What is the standard of care/accepted practice?

It is estimated that most "*first labour last on average 8 hours and unlikely to last over 18 hours*" (ref 1).

7.6.2 If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?

In my opinion, the length of labour was more than that expected from a woman labouring for the first time. I have expressed above that a conservative estimate would be that [Mrs A] was 4 cm by 6 am (considering 3 cm at 4 45 hrs and 6–7cm at 7 12 hrs).

Therefore, an estimation of her total duration in first stage of labour, considering [Mrs A] never reached full dilatation of 10 cm, was from 6 00 hrs till delivery at 01 13 hrs the next day. That would be at least 18 hrs 13 minutes.

If we consider 3 cm to be in active labour, as per MOH, then the duration of first stage was 19 hrs 28 min.

In my opinion, the length of first stage of labour is less relevant in isolation. Therefore, I consider this to be a minor departure from standard practice as the duration was over 18 hrs. However, I do think there has been major departure from standard practice in assessment of labour, as mentioned above.

7.6.3 How would it be viewed by your peers?

In my opinion, my peers would have a similar view as mine. However, it is also possible that some peers would be of the opinion that it would be a moderate departure from standard as it is over 18 hours. I also note that the SAER team suggested that the duration of labour was less than 18 hours. I accept there might be difference in opinion, and I have explained the reasoning for my opinion.

7.6.4 Recommendations for improvement that may help to prevent a similar occurrence in future.

Local/national guidance on "progress of labour". I understand similar guidance is now available within the hospital.

7.7 Whether there was any undue delay in the decision to deliver by C-section. If so, please comment on when the decision to perform a C-section should have been made.

7.7.1 What is the standard of care/accepted practice?

As per NICE guidance (ref 1) "*Advise the woman to have a vaginal examination 4 hours after starting oxytocin in established labour:*

If cervical dilatation has increased by less than 2 cm after 4 hours of oxytocin, further obstetric review is required to assess the need for caesarean section."

7.7.2 If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?

In my opinion, there are two instances of departure from standard or accepted practice. (a) By 17.22hrs it was reasonable to consider a decision to deliver the baby by caesarean section (CS) for reasons explained above. In my opinion, not to consider a decision to deliver by CS at 17.22 hrs is a moderate departure from standard or acceptable practice.

(b) In my opinion, it was also reasonable to consider a decision to deliver the baby by caesarean section at or by 21.17 hrs. This is because the lack of progress even after oxytocin augmentation, is now clearly demonstrated. In my opinion, failure to do so is a major departure from standard and acceptable practice.

7.7.3 How would it be viewed by your peers?

In my opinion, my peers would have a similar view.

7.7.4 Recommendations for improvement that may help to prevent a similar occurrence in future.

Local/national guidance on "progress of labour". I understand similar guidance is now available within the hospital.

7.8 Whether there was any undue delay from the time when the decision to deliver by C-section was made, until such time as the C-section was performed.

7.8.1 What is the standard of care/accepted practice?

Both RCOG (now archived) and RANZCOG guidance (ref 4) for "Categorisation of urgency for caesarean section" suggests 4 categories for CS urgency. However, none of this guidance has any specific time frame and suggest "urgency appropriate to the cases" for each category.

The local guidance has suggested "rapid" delivery for category 2 CS.

In my opinion, the main delay was to start the CS. Once started, [Baby A] was delivered within a reasonable time (2–5 minutes) which, I consider to be appropriate considering impaction of fetal head. I am also of the opinion, that appropriate steps were taken for dis-impaction followed by breech delivery.

7.8.2 If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?

In the absence of such a standard time frame, it is difficult to consider the departure from standard. However, the decision for CS was made at 23.25 and [Baby A] was delivered at 01.13 hrs the next day. Decision to delivery interval was therefore 108 minutes. I would consider this as undue delay and a severe departure from accepted practice.

7.8.3 How would it be viewed by your peers?

I would expect some peers to consider this as a moderate departure.

7.8.4 Recommendations for improvement that may help to prevent a similar occurrence in future.

I understand that there is a current and updated guidance for "Classification and communication for caesarean section and assisted deliveries in theatre". Therefore, I have no further recommendation.

7.9 Whether the initial allocation of the C-section (as a Category 2) was appropriate.

7.9.1 What is the standard of care/accepted practice?

As above in paragraph 7.8.

7.9.2 If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?

I would consider the initial allocation of CS as category 2 was appropriate.

7.9.3 How would it be viewed by your peers?

In my opinion, my peers would have a similar view.

7.9.4 Recommendations for improvement that may help to prevent a similar occurrence in future.

I understand that there is current and updated guidance for "Classification and communication for caesarean section and assisted deliveries in theatre". Therefore, I have no further recommendation.

7.10 Whether the communication between staff was adequate.

7.10.1 What is the standard of care/accepted practice?

I do not have any specific standards to quote, but going through the available documents, my opinion is that the communication between staff members was mostly adequate.

There were two instances (10.54 hrs 12.09 hrs on 14.01.18) where the medical team could not be contacted by the paging system. Remedial steps were taken and the matter was adequately addressed. Midwives went into the office to speak with the medical team and a closed loop communication was maintained.

Assessment of labour always has an element of inter-observer variation. Keeping that in mind the records have been contemporaneous and accurate. I observe the comment for partogram, and in my opinion, it is the responsibility of the reviewing team (midwifery or medical) to assess the whole picture, including partogram while making clinical decisions.

However, ambiguity in clinical finding (e.g. 6–7 cm or 7–8 cm) was the recurring theme when assessing the progress of labour, which, in my opinion, did not help the overall situation. Similarly, on 14th Jan 2018 at 15.00 hrs the decision to examine in "2–4 hrs" is an example of ambiguity and leaves this open to interpretation.

7.10.2 If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?

In my opinion there has been no departure from acceptable standards.

7.10.3 How would it be viewed by your peers?

In my opinion, my peers would have a similar view.

7.10.4 Recommendations for improvement that may help to prevent a similar occurrence in future.

None.

7.11 Whether the staffing/resourcing levels at Te Whatu Ora were adequate.

7.11.1 What is the standard of care/accepted practice?

I do not have any specific standards to quote, but going through the available documents, my opinion is that the staffing pattern could be improved.

Based on the available documentation it is apparent that the shift was very busy. There were multiple clinical events happening in the delivery suite and in the gynaecology ward. In my opinion, the then existing staffing pattern of two Registers and one SMO would otherwise be adequate. I note that the SMO was available on the floor and was prioritising and delegating tasks appropriately.

The documentation suggests that there were at least two times where acuity of delivery suite delayed review. They were (a) 20.00 hrs suggest there were delays in review due to lack of medical doctors and (b) delay in starting the CS.

As far as the delay in starting the CS, again, it is difficult to know the effect of an earlier start. The oxytocin was stopped nearly 100 minutes before the birth of [Baby A], but in theory, with on-going uterine activity, there will be more chance of impaction of fetal head in pelvis. In my opinion, an earlier start would have made it less difficult to dis-impact the head. Please note, this is personal opinion, and cannot be based on any specific medical evidence.

In my opinion, one possible difference from involvement of the second-on-call SMO would be (a) Timely review around 20.00 hrs and (b) “second opinion” or a “fresh eye” on the situation and possible recognition of non-progress of labour. Please note that these are human factors and not easy to be objectively defined.

7.11.2 If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?

In my opinion, failure to involve the second-on-call SMO could be considered as a moderate departure.

7.11.3 How would it be viewed by your peers?

In my opinion, my peers could have divided views about the severity of departure and could be divided between mild to moderate departure.

7.11.4 Recommendations for improvement that may help to prevent a similar occurrence in future.

I understand a new on call system and escalation guidance is now available within the hospital. I have no further recommendation.

7.12 The adequacy of relevant policies and procedures that were in place at the time of events at Te Whatu Ora.

I have commented on the following —

7.12.1 CTG stickers: In my opinion, the CTG stickers used at the time of incidence were acceptable. It is my opinion that the interpretation of the CTG rather than use of sticker, fell below expected standards. It is not clear from the stickers, when a second opinion on CTG is to be taken and who is the second signatory.

7.12.2 Availability of second theatre for category 2 CS: It appears that the existing policy at the time suggested that a second theatre can be opened for a category 1 CS only. However, "Classification and communication for CS (July 2016)" document does not explicitly state this position. In my opinion, a busy unit should have more flexibility in accessing theatre as and when needed. I appreciate the resource implication of such statement.

7.12.3 Staff escalation: It appears there was no existing guidance at the time of incidence that I can comment on.

7.12.4 Time frame for category 2 CS: Classification and communication for CS (July 2016) does not have any acceptable time frame for the categories for CS. Though both RCOG and RANZCOG has expressed similar views (i.e. appropriate urgency for each case rather than prescribed time frames). However, in my opinion a "preferred" time frame rather than a "prescribed" time frame should still be preferable.

7.12.5 Recommendations for improvement that may help to prevent a similar occurrence in future.

To consider the updated "Classification and communication for CS and assisted deliveries in theatre" to have a "preferred time frame" for deliveries.

7.13 Any other matters in this case that you consider warrant comment.

7.13.1 As expressed above, in my opinion, there has been a serious departure from accepted and standard practice as far as timing of delivery is concerned. In my opinion CS would have been considered earlier. There also has been a moderate departure from fetal surveillance practice. What I am unable to corelate (though not specifically asked for in the instructions) is the causal relationship between these departures and the final outcome.

7.13.2 The presence of a normal CTG less than 20 minutes prior to [Baby A's] delivery would suggest a healthy fetus. The final outcome would then suggest that most, if not all of the injury would be resulting from the trauma of delivery and likely to be "acute" in nature.

7.13.3 However, (a) suggestion of meconium aspiration when liquor was noted to be clear through the labour (b) moderately abnormal cord pH and lactate values

(compared to expected severe range) (c) presence of extensive and global damage to brain along with presence of reactive astrogliosis at post-mortem is not usually in keeping with acute intra-partum hypoxic injury. However, a perinatal pathologist will be better qualified to be more exact regarding timing of injury.

1 I have read and agree to follow the Commissioner's Guidelines for Independent Advisors.

2 I do not have a personal or professional conflict in this case.

Dr Sikhar Sircar, 7th June 2023.

Appendix 1

Brief resumé:

I completed my MBBS in 1995, with honours in Physiology, Biochemistry, Pathology, Surgery and Obstetrics and Gynaecology. I received merit awards and distinctions at the University examinations.

I completed my MD in Obstetrics and Gynaecology in 2000, with dissertation on maternal morbidity related to caesarean section.

In 2004 I became a member of Faculty of Family Planning and sexual health (UK) and later a member of the Royal College of Obstetrics and Gynaecology (UK). I finished my speciality training in Obstetrics and Gynaecology in 2009.

My training included advanced training in colposcopy, labour ward practice, gynaecological surgery and gynaecological oncology. I was appointed as a Consultant, in 2009 with NHS Scotland and currently I am working in New Zealand as a specialist in obstetrics and gynaecology.

I obtained further postgraduate certification in 2015 and 2016 in Medical Education and Medico-legal practice respectively.

I was awarded the Fellowship of the Royal College (FRCOG, UK) in 2017, Bachelor Endoscopy in 2019 and Fellow of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (FRANZCOG) in 2020.

I have been involved with clinical governance and risk management and have been a member of an Obstetric Risk management committee and have chaired such

committees. I have been involved with analysis of critical incidents and have authored Critical Incident Report (CIR) or Significant Adverse Event Report (SAER).

I am actively involved with teaching and training and act as a faculty in various Obstetric simulation courses, Laparoscopic and hysteroscopy courses as well as Obstetric sphincter injury courses. These are held at national and international events.

I am involved with RCOG and RANZCOG as an examiner.

I have published articles in peer-reviewed journals. I was a sub editor for RCOG global newsletter and a media representative for RCOG.

I started medico-legal practice in 2014. So far I have received over a hundred instructions. The majority are from the Claimant (90%) with other (10%) from the Defendant. I have undergone certified courses on medico-legal report writing and successfully completed a Cardiff University Civil expert certification course in 2015.

Relevant publications:

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2. Five-year follow-up after cervical cytology and histology discordance: A retrospective cohort study; SM Scheck, C Liddle, Z Wood, B Lockett, S Sircar; Australian and New Zealand Journal of Obstetrics and Gynaecology 61 (3), 424–4291 2021
3. Quality Indicators for Endometrial Cancer Treatment in midcentral DHB; A Yu, S Sircar; Australian & New Zealand journal of obstetrics & gynaecology 61, 138–138 2021
4. Retrospective Five-Year Follow-Up Study of Cervical Smear-Biopsy Mismatch; S Scheck, C Liddle, B Lockett, S Sircar; Australian & New Zealand journal of obstetrics & gynaecology 61, 106 2021
5. Caesarean scar ectopic pregnancy: a case series and case report to highlight the experience in regional New Zealand; K Maslowski, S Scheck, S Sircar, H Liu; The New Zealand Medical Journal (Online) 134 (1533), 61–62 2021
6. Good planning, fewer hours, better family life — a New Zealand doctor's experience of Covid-19; SM Sikhar Sircar; BMA 2020
7. Post-partum duodenal perforation; A Di Bartolo, S Sircar, R Mitchell; The New Zealand Medical Journal (Online) 133 (1516), 97–99 2020
8. Care of pregnant women during Covid 19 pandemic — editorial; S Sircar; Journal of Undergraduate Medical Research 2 (2), 1–2 2020
9. Implementing laparoscopic hysterectomy procedure using peer learning techniques in a district general hospital; M Gherghe, S Sircar; European Journal of Obstetrics and Gynecology and Reproductive Biology 234 2019

10. Cervical treatment follow up: A review of test of cure implementation; M Gherghe, S Sircar; European Journal of Obstetrics and Gynecology and Reproductive Biology 234, e782019

11. Childbirth and oasis — what is new? S.Sircar

    https://www.iconicmediasolutions.co.uk/assets/medico-legal-issue_72.pdf2018

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14. Simulation-based teaching — does it help in lifelong learning and skill transfer? S Sircar; RCOG International News 2015

15. Interventional procedure overview of insertion of a balloon device to disimpact an engaged fetal head before an emergency caesarean section

    Https://www.nice.org.uk/guidance/ipg515/documents/insertion-of-a-balloon … 2014

16. Training in cosmetic and reconstructive gynaecology; MJ Farquharson, S Sircar; WJMER, 201445 2013

17. The introduction of the fetal pillow (FP) in our department: a novel device which elevates the fetal head prior to delivery to reduce maternal and fetal morbidity in caesarean … NM Mufti, TT Thomas, SS Sircar; Bjog — An International Journal of Obstetrics and Gynaecology 120, 414 2013

18. PL. 54 The Fetal Pillow (FP): A Novel Intervention to Reduce Maternal and Fetal Complications in Caesarean Sections at Full Dilatation (CSFD) NM Mufti, TT Thomas, SS Sircar; Archives of Disease in Childhood-Fetal and Neonatal Edition 98 (Suppl 1 … 3 2013

19. Mini-laparotomy in advanced ovarian cancer; S Sircar, GJ Robson, JA Davis, JK Kennedy, F Alexander-Sefre; Gynecological Surgery 9, 179–183 2012

20. Unexplained postmenopausal hematometra; SS Bollapragada, S Sircar, DW Rae, E Walker; Acta obstetricia et gynecologica Scandinavica 85 (1), 121–1237 2006

21. Twisted paratubal cyst in a young girl; SSircar, A Tantia; Journal of Obstetrics and Gynaecology of India 54 (2), 196

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5. The Scottish perinatal Neuropathology study: Arch Dis Child Fetal Neonatal Ed 2004;89:F399–F407. doi: 10.1136/adc.2003.037606'