Obstetrician and Gynaecologist, Dr B

District Health Board

A Report by the

Deputy Health and Disability Commissioner

(Case 17HDC00384)

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Executive summary

1. In 2015, Ms A (25 years old at the time) was pregnant with her second baby, having delivered her first baby by emergency lower segment Caesarean section owing to a failed forceps delivery, two years previously.

2. Ms A was admitted to the public hospital for a maternal and fetal post-dates check, which included cardiotocography (CTG) monitoring. When a CTG was commenced, Ms A's lead maternity carer (LMC), registered midwife (RM) C noted a variable fetal heart rate (FHR), no accelerations, and three late decelerations. She contacted obstetrician and gynaecologist Dr B.

3. Throughout the course of the day and evening, Ms A was reviewed by Dr B. He offered her a Caesarean section, which he recommended, or an induction of labour.

4. Dr B accepts that he did not advise Ms A that a Caesarean section was the only appropriate course of action. He stated that he needed to consider Ms A's "very strong preferences".

5. CTG monitoring continued into the evening, and Dr B reviewed Ms A again. His plan was to stop CTG monitoring to allow Ms A to mobilise, and to repeat a CTG at 10pm. Dr B went home after this, and said that he asked to be called back at 10pm. This was not documented and he was not called.

6. At handover, all four hospital-employed core midwives working on the shift viewed the CTG and made a decision to discontinue the trace. The decision was made because the CTG had not deteriorated and was no different from previous CTGs.

7. In the early hours of the following morning, the core midwife recommenced CTG monitoring and documented that it was non-reassuring. After turning Ms A onto her left side to try to improve the CTG, Dr B was called in to review her.

8. Dr B arrived at 4am. At 4.40am he documented that there had been a prolonged period of reduced variability and that he had ruptured Ms A's membranes and that meconium-stained liquor was present. Dr B noted his plan to continue the CTG monitoring and to review the trace again in 15 to 30 minutes.

9. At 5.20am, Dr B decided to proceed to an emergency Caesarean section. Baby A was delivered at 6.55am in poor condition, with no heartbeat and no respiratory effort, and immediate resuscitation was carried out. Later, Baby A was diagnosed with multiple co-morbidities[1] and hypoxic ischaemic encephalopathy.

[1] Microcephaly, congenital hypothyroidism, and cardiac issues including ventricular septal defect, atrial septal defect, and patent ductus arteriosus.

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Findings

10. Dr B failed to provide Ms A services with reasonable care and skill, including incorrectly interpreting the CTG when Ms A was admitted, and not recommending a Caesarean section as the only appropriate course of action. When Dr B reviewed Ms A again, the CTG continued to be abnormal, but he decided to proceed with an induction of labour. Overall, there was a concerning delay in delivery of Baby A, and Dr B was found to have breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code).

11. Ms A's care by DHB staff is concerning for a number of reasons. Over an extended period of time, four midwives failed to comply with the RANZCOG *Intrapartum Fetal Surveillance Clinical Guideline* adopted by the DHB as its policy. In addition, at no point during Ms A's admission did midwifery staff think critically about the abnormal CTG or challenge Dr B's management plan and advocate for Ms A. The DHB should have had in place a system to ensure that staff were aware of and complied with its policies and procedures, and a culture that supported staff to voice concerns and ask questions.

12. Ultimately, the DHB is responsible for the failings of multiple staff and, as such, it did not provide services to Ms A with reasonable care and skill. Accordingly, the DHB breached Right 4(1) of the Code.

Recommendations

13. It is recommended that Dr B provide Ms A with a formal written letter of apology for his breach of the Code.

14. It is recommended that the DHB:

a) Provide Ms A with a formal written letter of apology for its breach of the Code.

b) Update HDC on the progress made in relation to increasing the number of employed obstetricians based at the public hospital.

c) Consider:

- developing local policies around intrapartum fetal surveillance in accordance with RANZCOG guidelines;
- implementing an updated CTG interpretation sticker and providing training on the use of that sticker;
- introducing mandatory fetal surveillance updating for all staff who work in maternity services.

d) Use this investigation (anonymously) as a case study to provide training for obstetric and midwifery staff.

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Complaint and investigation

15. The Commissioner received a complaint referred from the Medical Council of New Zealand about the services provided to Ms A by Dr B at the DHB. Ms A confirmed to HDC that she supports the complaint. The following issues were identified for investigation:

- *Whether Dr B provided Ms A with an appropriate standard of care in 2015.*
- *Whether the DHB provided Ms A with an appropriate standard of care in 2015.*

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

17. The parties directly involved in the investigation were:

Ms A	Consumer/complainant
DHB	Provider
Dr B	Provider/obstetrician gynaecologist

18. Information was reviewed from:

RM C	Provider/registered midwife/LMC
RM D	Provider/hospital-employed registered midwife
RM E	Provider/hospital-employed registered midwife

19. Independent expert advice was obtained from an obstetrician, Dr David Bailey (**Appendix 1**), and a registered midwife, Emma Farmer (**Appendix 2**).

Information gathered during investigation

Background

20. In 2015, Ms A (25 years old at the time) was pregnant with her second baby, having delivered her first baby by emergency lower segment Caesarean section owing to a failed forceps delivery two years previously. Ms A booked self-employed, community-based registered midwife (RM) C as her lead maternity carer (LMC).

21. Ms A's second pregnancy was complicated by a finding of fetal ventriculomegaly[2] on ultrasound, and subsequently she was referred to the maternal fetal medicine team at a public hospital. The ventriculomegaly was monitored, and the fluid was found to return to within normal parameters.

[2] Ventriculomegaly is an excess of fluid in the lateral ventricles within the brain.

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22. The remainder of Ms A's pregnancy was uneventful. This report concerns the care provided when Ms A was admitted post term to the public hospital for assessment and, in particular, the monitoring and interpretation of her baby's heart rate.

Interpretation of cardiotocography

23. Cardiotocography (CTG) monitoring is the combined monitoring of the baby's heartbeat in utero and the mother's uterine contractions, if any. This allows for an interpretation of the fetal heart rate either alone or in relation to the contractions, and may be used to assist with the identification of fetal well-being and/or distress.

24. The DHB advised HDC that, at the time of the events, it adopted the *RANZCOG*[3] *Intrapartum Fetal Surveillance Clinical Guideline* (Third Edition, 2014) (RANZCOG Guideline) as its fetal heart rate monitoring policy. The DHB noted that "where there are best practice guidelines available the DHB does not create its own policy instead adopts the external guidelines and adds the document to its policy page for staff to access".

RANZCOG Guideline

25. Recommendation 8 of the RANZCOG Guideline states:

> "[I]n clinical situations where the fetal heart rate (FHR) pattern is considered abnormal, immediate management should include:
>
> - Identification of any reversible cause of the abnormality and initiation of appropriation action (e.g. maternal repositioning, correction of maternal hypotension, rehydration with intravenous fluid, cessation of oxytocin and/or tocolysis for excessive uterine activity) and initiation or maintenance of continuous CTG.
> - Consideration of further fetal evaluation or delivery if a significant abnormality persists.
> - Escalation of care if necessary to a more experienced practitioner."

26. The RANZCOG Guideline provides:

> "[T]he following features may be associated with significant fetal compromise and require further action, such as described in Recommendation 8:
>
> - Baseline fetal tachycardia > 160 bpm.
> - Reduced[4] or reducing baseline variability (3–5bpm).
> - Rising baseline fetal heart rate.
> - Complicated variable decelerations.[5]

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[3] The Royal Australian and New Zealand College of Obstetricians and Gynaecologists.
[4] 3–5bpm (caution should be exercised in interpreting variability in the presence of an external transducer).
[5] Repetitive or intermittent decreasing of FHR with rapid onset and recovery. Time relationships with contraction cycle may be variable but most commonly occur simultaneously with contractions.

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- Late decelerations.[6]
- Prolonged decelerations."

27. The RANZCOG Guideline outlines:

"[T]he following features are likely to be associated with significant fetal compromise and require immediate management, which may include urgent delivery:

- Prolonged bradycardia (<100 bpm for >5 minutes).[7]
- Absent baseline variability (<3 bpm).
- Sinusoidal[8] pattern.
- Complicated variable decelerations with reduced or absent baseline variability.
- Late decelerations with reduced or absent baseline variability."

CTG interpretation sticker

28. The DHB also advised that it utilises a CTG interpretation sticker, which is placed in the clinical notes and outlines the features of a "reassuring", "non-reassuring" and "abnormal" CTG:

	Reassuring	**Non-reassuring**	**Abnormal**
Baseline rate[9]	110–160	100–109 161–180	< 100 > 180
Variability (bpm)	5 bpm or more	< 5 for 40 min Or more but < 90	< 5 for 90 minutes or more
Accelerations[10]	Present	None	None
Decelerations[11]	None	Early variable single prolonged deceleration up to 3 minutes	Repeated variable late or prolonged decelerations > 3 mins
Opinion	Normal CTG (All four features reassuring)	Suspicious CTG (one non-reassuring feature)	Pathological CTG (two or more non-reassuring or one or more abnormal features)
Actions			

[6] Uniform, repetitive decreasing of FHR with, usually, slow onset mid to end of the contraction and nadir more than 20 seconds after the peak of the contraction and ending after the contraction.
[7] Decrease of FHR below the baseline for longer than 90 seconds but less than five minutes.
[8] A regular oscillation of the baseline FHR resembling a sine wave. A persistent undulating pattern. Baseline variability is absent and there are no accelerations.
[9] Baseline variability is defined in the RANZCOG Guideline as the minor fluctuations in baseline FHR. It is assessed by estimating the difference in beats per minute between the highest peak and lowest trough of fluctuation in one minute segments of the trace between contractions.
[10] Accelerations are defined in the RANZCOG Guideline as transient increases in FHR of 15bpm or more above the baseline and lasting 15 seconds.
[11] Decelerations are defined as transient episodes of decrease of FHR below the baseline of more than 15bpm lasting at least 15 seconds.

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29. At 41 weeks and two days' gestation, Ms A was admitted to the public hospital at 11.30am for a maternal and fetal post-dates check, which included CTG monitoring. Initially her care was overseen by her LMC, RM C. Ms A was not in active labour,[12] but RM C noted that Ms A had been having contractions since the previous evening, although the frequency and strength had remained the same. A CTG was commenced at 11.32am.

30. The DHB advised that "on admission, the CTG readings demonstrated delayed decelerations". At 11.52am, RM C noted that the FHR was 135–140bpm, and documented: "[V]ariability [greater than] 5 beats. No accelerations. [Three times] late decelerations evident … In view of decelerations, on call obstetrician contacted and asked to come in."

12.20pm review — abnormal CTG

31. At approximately 12.20pm, RM C documented: "[Dr B] in room to review. For [intravenous] fluids, then [vaginal examination] to assess with ? [artificial rupture of membranes/induction of labour]."

32. Dr B reported that he was presented with a CTG tracing that was "clearly abnormal". He stated:

> "I was able to quickly determine that this was not a case of acute hypoxia. The length of time between starting the recordings and me reviewing them was clear confirmation that this could not possibly have been acute hypoxia, as that would show as a deterioration over a short period of time. This was a pre-existing situation that had shown no evidence of deterioration during the time [Ms A] was monitored.
>
> Further, the presence of decelerations occurring during a uterine contraction was acknowledged. This feature is a protective mechanism that is a marker of a baby's intact ability to physiologically respond to its environment, and its presence is an indicator that this essential brain function is intact and adequately oxygenated. It is not always a sign of poor health. Further clues were displayed by the way the baby adjusted his heart rate at the end of the contraction, with a rapid return and maintenance of the baseline."

33. Dr B reported that CTG interpretation has evolved over many years. He advised that he used a physiological approach to his interpretation of the CTG, and stated:

"• The presence of normal baseline variability is the most important feature of the CTG in terms of fetal wellbeing.

- Normal baseline variability represents a balanced and well oxygenated central nervous system and when present on a CTG, is the most important marker of fetal well-being where present.
- Typically the rapid fall and rise in the fetal heart rate in association with cord compression, reflects a well oxygenated CNS.[13]

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[12] Active labour is marked by regular, long, strong contractions accompanied by cervical dilation.
[13] Central nervous system.

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- To a large extent, regardless of the other features of the CTG, if the baseline variability is normal, the fetal CNS is adequately oxygenated.
- Whilst many decelerations reflect an adequately oxygenated fetal CNS; where they are present, the CTG cannot be described as normal. It is by RANZCOG definition, abnormal. This does not imply that the fetus is necessarily unwell, simply that the CTG has not met the criteria for normal and therefore cannot be described as normal."

34. Dr B told HDC that following this review, he wanted to observe the fetal condition further and review the CTG again. Dr B did not document his review of Ms A and the CTG at 12.20pm.

1.37pm review — discussion of options

35. At 1.37pm, Dr B reviewed the CTG again. RM C documented the following:

> "[Dr B] in room reviewing CTG and discussion options. Options offered: 1. Cooks catheter[14] 2. LSCS [lower segment Caesarean section]. Cooks [catheter] would be inserted tonight to [artificially rupture the membranes] can be performed in the morning. [Ms A] really hoping to avoid LSCS so is keen to have Cooks catheter inserted …"

36. Dr B documented:

> "CTG — suspicious
> Has [decelerations] — late/variable with [normal] baseline and variability.
> Prev[ious] [Caesarean section].
>
> Plan
> Discussed options of:
>
> [Caesarean] now or mechanical [induction of labour] [with] Cook's catheter.
>
> Agreed: — Fluids
> — Rest
> — Re[view] CTG in 1–2 hours
> — Mechanical [induction of labour] this evening."

37. Dr B explained that these notes were written retrospectively, as a summary of a discussion he had with Ms A, and do not provide the full details of the conversation.

38. Dr B told HDC that he recommended a Caesarean section delivery because of the overall picture, including the suboptimal trace and the potential for deterioration over time. Ms A confirmed that a Caesarean was recommended.

[14] Used for mechanical dilation of the cervical canal prior to labour induction when the cervix is unfavourable for induction.

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39. Dr B told HDC that Ms A informed him that she did not wish to have a Caesarean section and asked if there was a chance that she could try for a vaginal birth. Ms A confirmed that she asked whether she could "wait a few hours to see how her labour progressed". She told HDC: "I can't remember much specifically about the conversation but I vividly remember my fears/reluctance of a Caesarean … I was afraid of how I could manage a new born and a toddler after having a Caesarean."

40. Dr B also discussed with Ms A the option of an induction of labour, and advised HDC that this was Ms A's preferred option. Dr B stated:

> "[I]n accordance with my usual practice discussions about induction in patients who have had a previous Caesarean section always includes information about the risks of uterine rupture … The increased risk of needing an emergency Caesarean section [was] also discussed."

41. Ms A told HDC that she does not recall being told of any risks associated with an induction of labour in a woman who has had a previous Caesarean section.

42. Dr B accepts that he did not advise Ms A that a Caesarean section was the only appropriate course of action. He stated that he needed to consider Ms A's "very strong preferences".

43. Ms A said that she felt reassured by both her midwife and Dr B when she was allowed to continue with the labour. She stated:

> "I was never aware of the dangers to my newborn baby by attempting to progress my labour and I don't believe I was made aware that he could be in any danger. If at any point I thought he was at risk I would have demanded a Caesarean."

44. At 2.05pm, RM C documented that the FHR baseline was 135–140bpm, variability was greater than 5bpm, and there were no accelerations although there were late decelerations down to 110bpm. RM C documented that she discussed this CTG with the hospital midwives and decided to discontinue the CTG for 30 minutes to allow Ms A to mobilise. RM C told HDC that when she discussed the CTG with the hospital midwives, they were all in agreement that the CTG was showing late decelerations.

45. At 2.30pm, the CTG was recommenced and RM C stated that it "remained the same". RM C documented that the FHR baseline remained at 140bpm, there were some periods of reduced variability, and there were no accelerations but there were late decelerations now down to 100bpm.

46. At 3.30pm, RM C noted that there had been no change in the CTG, and at 4.15pm she documented: "CTG: baseline: 140bpm, Variability > [greater than] 5, no accelerations present, late decelerations evident, contractions 1:6–7mins …"

47. At approximately 4.30pm, RM C handed over Ms A's care to a hospital midwife, RM D, to attend a postnatal appointment.

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Evening reviews

48. At approximately 5.30pm, RM D documented that the CTG baseline was 135bpm, there had been short periods of reduced variability and some accelerations, but that the late decelerations continued. She noted: "CTG trace seen by [Dr B]. Plan to continue with trace for further 20 minutes, then place Cook's catheter." RM D reported that "the CTG continued but did not deteriorate". At 5.51pm, RM C returned and resumed care of Ms A. RM C stated that while she was away "the CTG remained the same".

49. At 6.16pm, RM C documented: "[Dr B] in room inserting Cook's catheter with staff midwife RM D assisting." Dr B stated that the Cook's catheter induction was completed at 6.30pm and "was a follow on from earlier discussions with the family". He documented:

> "CTG suspicious, but accelerations in between [decelerations]. [Decelerations] follow uterine contraction (are provoked) …
>
> With consent
> Cook's catheter inserted.
>
> <u>Plan</u>
> CTG for next 30 minutes and review → decide rest of management."

50. At 6.47pm, RM C documented that the CTG baseline was 135bpm, variability was greater than 5bpm, accelerations were present, no decelerations evident, and that contractions were irregular. RM C handed over Ms A's care to RM D and went home.

51. At 7.15pm, Dr B reviewed Ms A again. He documented:

> "CTG looks much improved. [Ms A] wants to mobilise and eat.
>
> <u>Plan</u>
> — Stop CTG.
> — Mobilise.
> — Repeat CTG at 2200 hrs."

52. Dr B reported that he did not see the CTG at 10pm because he was not on site. He told HDC that he had asked to be called back at 10pm but was not. This request was not documented. Dr B said:

> "[A]t the end of a long and busy day, I went home for a meal and for some rest, and then fell asleep … Unfortunately, on this occasion, I was not called back until the early hours of the next morning."

53. RM D followed Dr B's instructions and discontinued the CTG monitoring. She resumed it again at 10pm. RM D documented:

> "FH 137bpm. Variability initially reduced. Continues to have late decelerations, but trace no different/worse than earlier in evening. Discussed leaving CTG on for one hour for night staff to see earlier ones and compare."

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54. At 11pm, RM D noted: "CTG discontinued after discussing with [RM E], decision made to continue with night sedation and repeat CTG when/if [Ms A] awake during night." RM D handed over Ms A's care to RM E. RM E documented: "CTG discontinued, as above, remains suspicious but improved from earlier."

55. RM D told HDC that she was not happy to make a decision on her own to discontinue the CTG, and spoke to RM E about it. RM D reported that at handover, all four midwives working on the shift viewed the CTG and made a decision to discontinue the trace. She explained that this decision was made because the CTG had not deteriorated and was no different from, or worse than, the previous CTGs. RM E confirmed that the decision to discontinue the CTG was a "joint decision". She added:

> "The CTG remained non-reassuring with the decelerations, however the beat to beat variability was acceptable at [greater than] 5bpm and having reviewed the previous CTGs, when no action had been taken, it was decided that it was not deteriorating and so the situation was in status quo."

56. At 1.20am, CTG monitoring was commenced again. At 1.40am, RM E reviewed the CTG and documented: "[B]aseline 125bpm, beat to beat variability > 5bpm and accelerations present with no decelerations but due to maternal change of position and fetal movements, to continue …"

57. At 1.55am, RM E recommenced CTG monitoring, and at 2.15am she documented: "CTG non-reassuring. Baseline 130bpm with reduced variability and variable decelerations [down] to 105bpm." To attempt to improve the variability, RM E turned Ms A onto her left side.

58. At 2.55am, RM E documented that there had been no improvement in the CTG, and that this was explained to Ms A. At 3.15am, RM E noted that she had telephoned Dr B and he was coming in to review Ms A. Dr B told HDC that he was called to review Ms A after 3.30am and arrived at the hospital at 4am.

4.40am review

59. At 4.40am, Dr B noted that he had reviewed Ms A. He wrote:

> "CTG — prolonged period of reduced variability …
> Cook's removed.
> [Artificial rupture of membranes] — mec[onium] stained liquor.
>
> <u>Plan</u>
> Continue CTG [and] see in 15 to 30 mins."

60. RM E continued CTG monitoring and noted that Ms A continued to drain meconium-stained liquor. At 5.20am, RM E documented: "[D]ecision made by [Dr B] to proceed to emergency [Caesarean] … Prep started for O[perating] T[heatre]." Dr B told HDC that "the CTG at this time displayed additional features that required action (reduced and sometimes absent variability)". Dr B stated: "I made assessments, including rupturing [Ms

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A's] membranes, and the finding (including meconium) led me to a new recommendation to do a Caesarean section."

61. Between 5.50am and 6.00am RM E documented that the FHR variability remained reduced but the decelerations were not so marked, and that theatre was ready for Ms A.

62. Ms A arrived in theatre at 6.25am, and at 6.55am Baby A was born by emergency Caesarean. Baby A was born in poor condition, with no heartbeat and no respiratory effort, and immediate resuscitation was carried out. Later, Baby A was diagnosed with hypoxic ischaemic encephalopathy and multiple co-morbidities.[15]

Public hospital staffing and acuity

63. The DHB noted that at the time of Ms A's admission, the public hospital had two obstetricians working a 1–2 on-call roster, and had been doing so for approximately a month. It stated that recruitment efforts were being undertaken. The DHB added that there were no registrar positions to help to share the load, and therefore there were times when the obstetricians had to work long hours, without on-site collegial support. The DHB acknowledged that this arrangement may have affected performance.

64. Dr B stated that he was working long hours and that approximately two months earlier he had received an email advising him that he would "be on a 1 in 2 roster from next week". He noted:

> "[A]s well as having no registrar to assist, the public hospital was very short staffed in obstetrics and gynaecology and my colleague and I had been working a 1 in 2 roster [for approximately two months], creating a very onerous workload."

65. The DHB stated that the maternity department was quite busy on the afternoon and night shifts. The DHB reported that its workload measurement tool indicated that the afternoon and night shift staff were "stretched to provide care" for all the women in their care.

66. RM D stated:

> "The acuity on the maternity ward was busy with [five] postnatal women admitted, [two] of which had babies under the care of the special care baby unit (SCBU) but rooming in on the ward. Three of the postnatal women were first time mums requiring additional support, and one antenatal woman required admission to the ward. Additionally, two ladies delivered during the shift, further increasing the workload both on labour and post natal wards."

67. RM E noted that the public hospital is staffed by two midwives each night shift, and on the night of Ms A's delivery there were eight mothers and six babies needing care.

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[15] Microcephaly, congenital hypothyroidism, and cardiac issues including ventricular septal defect, atrial septal defect, and patent ductus arteriosus.

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Further information — Dr B

68. Dr B stated that he has never had the opportunity to meet with Ms A since these events. He said that he communicated with the midwifery leader expressing a wish to meet the family, and he understands that the family are aware of this.

69. Dr B told HDC that he has now reverted back to pattern recognition for CTG interpretation. He stated that this was what he was originally taught and used during training, before adding the physiological method. Dr B remarked that although the physiological method is much more predictive of the fetal condition, he acknowledges that the method is quite complex. Dr B reflected that he now believes that this method may be unsuitable for use in a poorly staffed and resourced setting like his own. He stated that the physiological method of CTG interpretation requires closer supervision and is very draining mentally.

70. Dr B advised that he now manages his workload more closely. Specific changes he has made include:

- He does not hold outpatient clinics whilst also on call for the maternity ward.
- He actively manages his diary to ensure sufficient rest in between runs of shifts.
- When faced with a rostering crisis, he cancels elective work to leave only on-call (acute) work.

71. Dr B noted that the on-call frequency has now eased.

72. Dr B has also reviewed how he deals with strong expressions for particular birthing methods, and has undertaken more extensive CTG training.

Further information — the DHB

73. The DHB stated that this was a very sad outcome that may have been prevented if a Caesarean delivery had been undertaken earlier following Ms A's presentation to the maternity unit. The DHB conveyed its sincere apologies to the family.

74. The DHB accepts that a recommendation of an immediate Caesarean was the only reasonable course of action that should have been given to Ms A, and that the additional offer of a Cook's catheter induction should not have been given.

75. The DHB undertook a case review of Ms A's care. It reported that the midwifery thinking appeared to become "heuristic" during this episode of care, and explained that heuristics are mental shortcuts that usually involve focusing on one aspect of a complex problem and ignoring others. The DHB stated:

> "[The midwives] interpreted what they read on the CTG to be normal, because they had seen similar CTG print outs earlier in the duty and had accepted that these were normal or acceptable. The acceptance of the CTG readings and normalising them led to further delays and prevented active intervention."

76. The DHB reported that there were many delays during the care provided in this case. It acknowledged that the initial delay by Dr B was compromised further because the

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maternity staff were under pressure with the demands on the maternity department, and were working at capacity and not focusing on the CTG evidence in front of them.

77. The DHB advised that Dr B and hospital midwives have undertaken further training on CTG interpretation. PROMPT courses (training for obstetric emergencies) are also run regularly in the maternity department.

78. The number of employed obstetricians based at the public hospital has now increased to three, and a business case has been submitted to increase the number to four.

Further information — Medical Council of New Zealand

79. Following notification of this HDC investigation to the Medical Council of New Zealand, the Council required Dr B to undergo a performance assessment under section 36 of the Health Practitioners Competence Assurance Act 2003. In 2018, the Medical Council considered the outcome of the performance assessment and reported back to HDC that Dr B meets the required standard of competence for a doctor registered and working within a vocational scope of obstetrics and gynaecology, and that the Medical Council had resolved to take no further action. The Medical Council acknowledged "the positive steps Dr B has taken and continues to take following the initial incident and assessment", and has also reinforced to him the benefits of peer support.

Responses to provisional opinion

Ms A

80. Ms A was given an opportunity to comment on the "information gathered" section of the provisional opinion. Ms A did not have any further comments to make.

Dr B

81. Dr B was given an opportunity to comment on the aspects of the provisional opinion that related to him. Where relevant, his comments have been incorporated into the report.

The DHB

82. The DHB was given an opportunity to comment on the provisional opinion. The DHB advised HDC that it accepts the decision and has no further comment. It confirmed that RM D and RM E were provided with a copy of the report and were given the opportunity to comment.

RM C

83. RM C was provided with an opportunity to comment on the provisional decision, as it related to her.

84. RM C told HDC that she advocated for Ms A on a number of occasions during Ms A's admission, which included:

- Requesting Dr B's assessment and reassessment of the CTG;
- Discussing with Dr B that she believed Baby A was having late decelerations which she understood were caused by oxygen deprivation; and

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- Querying the delay in commencing the induction of labour.

Opinion: Introductory comment

85. The DHB and Dr B had a duty to provide Ms A with obstetric services with appropriate care and skill. Ms A's CTG was abnormal upon her admission at 11.30am. An emergency lower segment Caesarean section was not carried out until almost 7am the following day. This report considers the actions of Dr B and the midwives who cared for Ms A, as well as the system within which they were working.

Opinion: Dr B — breach

Initial reviews

Interpretation of CTG

86. My expert advisor, obstetrician and gynaecologist Dr David Bailey, noted that when Ms A was initially assessed by Dr B at 12.20pm and 1.36pm, she was not in labour. Dr Bailey advised:

> "[I]t appears that [Dr B] interpreted [Ms A's] CTG as if she were in labour. He considered that the decelerations did not necessarily indicate hypoxia, but might be a benign physiological response to contractions. He interpreted the baseline fetal heart rate as having normal variability and he interpreted the absence of tachycardia[16] as a reassuring feature.
>
> …
>
> Interpretation of fetal heart rate patterns in the absence of labour is less clear, but in general antenatal CTGs and early labour CTGs are not expected to have any abnormal features. Although decelerations may be a physiological response to contractions in labour, they should not occur before labour is established."

87. Dr Bailey considers there to have been a number of concerning features on the initial CTG recording. He advised:

> "The decelerations were not 'typical' short decelerations with quick recovery, which are often seen in labour and may be associated with cord compression, they were complex variable decelerations with slow recovery, indicating probably hypoxia.[17]

[16] A heart rate that exceeds the normal resting rate.
[17] Deficiency in the amount of oxygen reaching the tissues.

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The absence of fetal tachycardia is not necessarily a reassuring feature on an antenatal CTG. Finally, some parts of the admission CTG appear to have a sinusoidal[18] pattern, with 2–5 low amplitude oscillations per minute, which may also be a feature of hypoxia."[19]

88. I am guided by Dr Bailey's advice and consider Dr B's interpretation of the CTG to be concerning. Dr B's failure to recognise the non-reassuring features in this CTG set in motion a series of delays in the delivery of Ms A's baby.

Offering an induction of labour

89. I note that Dr B did not document his first review of Ms A at 12.20pm. The midwifery notes indicate that IV fluids were recommended, then a vaginal examination to assess whether an induction of labour was possible. I understand that it was Ms A's preference to have a vaginal birth. Dr B has reported that following this review, he wanted to observe the fetal condition and review the CTG again.

90. I accept that at 1.38pm, when Dr B reviewed the CTG again, he recommended a Caesarean section, but he also offered Ms A the option of an induction of labour to progress a vaginal birth. On that basis, Ms A quite reasonably understood that either option was appropriate.

91. However, Dr Bailey advised that "the only appropriate obstetric option was Caesarean section". Dr Bailey concluded that Dr B's failure to recommend a Caesarean section as the only reasonable course of action was a serious departure from accepted practice. I agree. Whilst I acknowledge that Dr B was attempting to uphold Ms A's wishes to have a vaginal delivery, an induction of labour was not a clinically appropriate option for Ms A, and the decision to offer that was, in my view, based on Dr B's failure to interpret the CTG correctly.

Evening reviews

92. Dr B reviewed Ms A twice in the evening before going home. He carried out a Cook's catheter induction at 6.30pm and advised midwifery staff to discontinue CTG monitoring at approximately 7pm and restart it again at 10pm. Dr B then went home to rest but remained on call.

93. Dr Bailey noted that CTG monitoring prior to the assessment at 6.30pm continued to show fetal heart rate decelerations, and advised that proceeding with the induction of labour in the presence of an abnormal antenatal CTG was a serious departure from accepted standards. I agree. Dr B's evening reviews of Ms A presented further opportunities for him to re-evaluate his initial assessment of Ms A and to revisit earlier discussions about the risks of continuing with an induction of labour. I am very concerned that Dr B continued with the original plan in light of the CTG remaining abnormal.

[18] A curve that describes a smooth periodic oscillation.

[19] A sinusoidal pattern is identified in the RANZCOG Guideline as a feature likely to be associated with significant fetal compromise and to require immediate management, which may include urgent delivery.

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94. I also note that the RANZCOG Guideline provides that in clinical situations where the fetal heart rate pattern is considered abnormal, immediate management should include maintenance of continuous CTG monitoring. Dr B's advice to discontinue CTG monitoring at this time was inconsistent with the RANZCOG Guideline, and I am critical of this.

Morning reviews

95. Despite the ongoing abnormal CTG from 10pm onwards, Dr B was not called to review Ms A until 3.15am. At 4.40am, he artificially ruptured Ms A's membranes and noted meconium-stained liquor. Dr B documented a plan to continue CTG monitoring and to see Ms A again in 15 to 30 minutes' time. After this, there is no further documented review of Ms A by Dr B; however, midwifery notes indicate that he made a decision to proceed to an emergency Caesarean section at approximately 5.20am.

96. Dr Bailey advised that from about 2am, there was reduced fetal heart variability in addition to prolonged variable decelerations, and that this suggested increasing fetal compromise. Dr Bailey considers that by 4.40am there was mounting evidence that continuing the induction would likely lead to an adverse outcome.

97. In light of Dr Bailey's comments that there were signs of increasing fetal compromise at this stage, it is concerning that Dr B decided to continue CTG monitoring for another 15 to 30 minutes.

Conclusion

98. Dr B failed to provide Ms A with services with reasonable care and skill. Dr B incorrectly interpreted the CTG when Ms A was admitted, and failed to recommend a Caesarean section as the only appropriate course of action. When Dr B reviewed Ms A again, the CTG continued to be abnormal, but he decided to proceed with an induction of labour. Overall, there was a concerning delay in delivery of Baby A. For the reasons set out, Dr B breached Right 4(1) of the Code.[20]

99. I note that the Medical Council of New Zealand required Dr B to undergo a performance assessment under section 36 of the Health Practitioners Competence Assurance Act 2003. The Medical Council has reported back to HDC that Dr B meets the required standard of competence for a doctor registered and working within a vocational scope of obstetrics and gynaecology, and the Medical Council has resolved to take no further action.

Opinion: The DHB — breach

Introduction

100. As a healthcare provider, the DHB is responsible for providing services in accordance with the Code. Dr B did not care for Ms A alone, but was supported by an LMC and a team of

[20] Right 4(1) of the Code states: "Every consumer has the right to have services provided with reasonable care and skill."

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midwives who viewed her CTGs. Ms A's CTG was abnormal upon arrival at the hospital, and it remained abnormal. As discussed below, I am concerned about the way in which the midwives responded to Dr B's instructions and the CTGs they were monitoring.

RM D — adverse comment

101. In the evening, Dr B reviewed Ms A and, despite the abnormal CTG, advised RM D to discontinue CTG monitoring at approximately 7pm and restart it again at 10pm. RM D followed these instructions. When RM D recommenced CTG monitoring at 10pm she continued the monitoring until the end of her shift.

102. My expert advisor, RM Emma Farmer, noted that at approximately 4.30pm, the CTG showed that late decelerations were continuing. RM Farmer advised that the RANZCOG Guideline recommends continuous CTG monitoring in situations where the fetal heart rate is considered abnormal. She considers that discontinuing the CTG was inconsistent with the RANZCOG Guideline, but would be viewed with "mild disapproval in this situation because it was ordered by the obstetrician supervising the care".

103. I acknowledge RM Farmer's view. However, in my opinion it is critical that midwives advocate for women and are prepared to act on their concerns. As I have stressed previously, it is essential that any individual in the clinical team is able to ask questions or challenge decisions at any time, and it is important that DHBs encourage such a culture.[21] I am critical that RM D did not question the management in view of the abnormal CTG, and I remind RM D of her responsibilities as an autonomous practitioner who is accountable to the woman and the midwifery profession for her midwifery practice.

Midwives at handover

104. At handover at 11pm, all four midwives working on the shift viewed the CTG and discussed Ms A's care. Although it was noted that the CTG remained non-reassuring, because the CTG had not deteriorated from previous CTGs when no action had been taken, the midwives decided to discontinue the CTG and to recommence it intermittently.

105. RM Farmer advised that this decision was not consistent with the RANZCOG Guideline, which recommends continuous CTG monitoring when there are late decelerations present. RM Farmer considers that discontinuing the CTG would be viewed with "moderate disapproval as confirmation of this plan could have been sought from the obstetrician in charge of the care".

106. I am concerned by the lack of critical thinking demonstrated by midwifery staff at handover, and their failure to implement the RANZCOG Guideline recommendation to escalate in these circumstances. Irrespective of previous management, Ms A's CTG was abnormal, and this should have triggered midwifery staff to take their concerns to the consultant. This was yet another missed opportunity for midwifery staff to challenge earlier decisions and advocate for Ms A. I am critical that this did not occur.

[21] 14HDC01187.

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RM E — adverse comment

107. From approximately 2am, the trace showed persistent late decelerations with reduced baseline variability. RM Farmer noted that the RANZCOG Guideline suggests that these features are likely to be associated with significant fetal compromise and require immediate management, which may include urgent delivery.

108. RM Farmer advised that it would be usual to instigate "rescue measures" such as a change of position and IV fluids for a period of 20 to 40 minutes to observe for signs of improvement. However, RM Farmer is of the view that from 2.40am there was no improvement, and that it would be usual practice to refer to an obstetrician. She noted that RM E did not consult Dr B until 3.15am, and RM Farmer considers that this delay would be viewed with moderate disapproval by her midwifery peers.

109. I accept RM Farmer's advice. I acknowledge that RM E took steps to attempt to improve the CTG by repositioning Ms A. However, I am critical that RM E did not act promptly on the continued non-reassuring CTG by contacting Dr B, and I remind her of her responsibilities as an autonomous practitioner who is accountable to the woman and the midwifery profession for her midwifery practice.

Staffing and acuity

110. Dr Bailey noted that the public hospital has a small maternity unit, and that a consequence of this is that a small number of obstetricians have to provide 24-hour cover without support of middle-grade doctors or shift arrangements. Obstetricians in such small units may sometimes be required to work excessive hours without collegial support, and this may impair judgement and performance. RM Farmer also noted that the unit was "clearly busy and the staff would have been stretched".

111. As an employer, the DHB had a responsibility to ensure that Dr B and midwifery staff were supported appropriately to manage their workload. It is clear that at the time of these events Dr B would have benefited from greater collegial support and less onerous working hours. The DHB's workload measurement tool also indicated that the afternoon and night shift staff could have benefited from additional midwifery support. I further note that in the evening, Dr B went home to sleep, and therefore, at handover, midwifery access to an obstetrician was limited.

112. I note that the number of employed obstetricians based at the public hospital has now been increased to three, and that the DHB has advised that a business case has been submitted to increase the number to four.

Conclusion

113. There are a number of concerning features about how Ms A was cared for by DHB staff. Over an extended period of time, four midwives failed to comply with the RANZCOG Guideline adopted by the DHB as its policy. Further, although the DHB advised that it had a CTG interpretation sticker in use, there is no evidence in the clinical notes that this was used by staff.

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114. In addition, at no point during Ms A's admission did midwifery staff think critically about the abnormal CTG, challenge Dr B's management plan, and advocate for Ms A. The DHB should have in place a system that ensures that staff are aware of and comply with its policies and procedures, and a culture that supports staff to voice concerns and ask questions.

115. For the reasons set out above, I am not satisfied that such a system and culture were present at the time Ms A received care. In my view, ultimately the DHB is responsible for the failings of multiple staff and, as such, it did not provide services to Ms A with reasonable care and skill. Accordingly, the DHB breached Right 4(1) of the Code.

116. I note that the DHB has advised that Dr B and hospital midwives have undertaken further training on CTG interpretation. I consider that this case highlights the importance of regular fetal surveillance updating for all staff and, in particular, that senior medical officers are encouraged and supported to self-reflect on whether or not they are fully up to date with all aspects of their core competencies.

Opinion: RM C — adverse comment

117. RM C was Ms A's LMC. RM C cared for and reviewed Ms A's CTG between approximately 11.30am and 7pm. She was also present when Dr B reviewed Ms A at 12.20pm and 1.36pm. Throughout this time, Ms A's CTG was significantly abnormal.

118. My expert advisor, RM Farmer, commented that "it is clear from [RM C's] statement that she was concerned about the fetal wellbeing and consulted with other midwives to confirm her views … [but] it is not clear to what extent she advocated for her client in this regard".

119. In my view, it is critical that midwives advocate for women and are prepared to act on their concerns. As I have stressed previously, it is essential that any individual in the clinical team is able to ask questions or challenge decisions at any time.[22] RM C has provided HDC with detailed descriptions of the ways in which she advocated for Ms A. I would expect RM C to document such information, and I remind her to ensure that her midwifery notes are a complete record of the care she provides.

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[22] See case 14HDC01187.

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Recommendations

120. I recommend that Dr B provide Ms A with a formal written letter of apology for his breach of the Code. The apology should be sent to HDC within three weeks of the date of this report, for forwarding to Ms A.

121. In response to my provisional decision, Dr B provided evidence to HDC of fetal surveillance training undertaken following the events of this case, and therefore he has met this recommendation.

122. I recommend that the DHB:

a) Provide Ms A with a formal written letter of apology for its breach of the Code. The apology should be sent to HDC within three weeks of the date of this report, for forwarding to Ms A.

b) Update HDC on the progress made in relation to increasing the number of employed obstetricians based at the public hospital from three to four, within three months of the date of this report.

c) Consider:

- developing local policies around intrapartum fetal surveillance in accordance with RANZCOG guidelines;
- implementing an updated CTG interpretation sticker and providing training on the use of that sticker;
- introducing mandatory fetal surveillance updating for all staff who work in maternity services.

The DHB should report back to HDC on its consideration of the above points within three months of the date of this report.

d) Use this investigation (anonymously) as a case study to provide training for obstetric and midwifery staff. The training should include discussion on the importance of speaking up when staff are concerned about a clinical situation or plan of care. The DHB should confirm that this training has occurred, within six months of the date of this report.

Follow-up actions

123. A copy of this report with details identifying the parties removed, except the experts who advised on this case, will be sent to the Medical Council of New Zealand and RANZCOG, and they will be advised of Dr B's name.

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124. A copy of this report with details identifying the parties removed, except the experts who advised on this case, will be sent to the Midwifery Council of New Zealand, the National Maternity Monitoring Group, and the New Zealand College of Midwives, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

125. I will be writing to DHBs and the National Maternity Monitoring Group to discuss the introduction of mandatory fetal surveillance training for all LMCs and DHB obstetric and midwifery staff. I will also be highlighting the importance of senior medical officers being encouraged and supported to self-reflect on whether or not they are fully up to date with all aspects of their core competencies, and asking how such a culture of self-reflection on upskilling can be developed.

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Appendix A: Independent obstetric advice to the Commissioner

The following expert advice was obtained from obstetrician Dr David Bailey:

"I have been asked to provide expert advice to the Health and Disability Commissioner regarding the care provided by [the DHB] to [Ms A] around the time of the birth of her son [Baby A] [in 2015]. I have read the Guidelines for Independent Advisors provided by your office and agree to follow these guidelines.

I am a Consultant in Obstetrics & Gynaecology at Northland District Health Board. I graduated in Medicine from London University in 1985 and trained in Obstetrics & Gynaecology in New Zealand and in the United Kingdom, with advanced training in Maternal Medicine and Fetal Medicine. I became a Member of the Royal College of Obstetricians and Gynaecologists in 1999 and a Fellow of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists in 2005. I also have a Diploma in Advanced Obstetric Ultrasound from the Royal College of Obstetricians and Gynaecologists. My main interest is in quality improvement in maternity care.

I have been asked to review the records of the care provided to [Ms A] and to comment on the following:

1. The Obstetric management subsequent to the review at 13.38 on [admission].
2. The decision to offer the option of a Cook catheter induction of labour, given that [Ms A] was 41 weeks and 2 days gestation and had a history of a previous lower segment Caesarean section, and taking account of the vaginal examination findings and the features of the CTG.
3. The information provided to [Ms A] regarding the risks and benefits associated with her wish to have an induction of labour.
4. The decision to proceed with the plan for a Cook catheter induction of labour after [Ms A] was seen at 18.30.
5. The plan to continue with induction of labour after [Ms A] was reviewed at 04.40 [the following morning].
6. Whether there was a clinical indication for a different treatment pathway to have been followed and, if so, at what stage this treatment should have commenced.
7. If different or earlier Obstetric treatment was indicated, is it likely that such earlier treatment would have avoided the injury in [Baby A's] case.

I am providing this advice with reference to the following documents:

a. Clinical records from [this time] regarding [Ms A's] care, including cardiotocography (CTG) recordings in labour.
b. Statements by members of [the DHB] staff involved in [Ms A's] care.

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c. A statement from [RM C], [Ms A's] lead maternity carer.
d. A statement from [the paediatrician] who attended [Baby A's] birth and who reported on subsequent progress.
e. A discharge summary for [Baby A] from [the] Neonatal Unit.
f. References at the end of this report.

This advice relates to the Obstetric management. I discussed the background to this case with several Obstetric and Midwifery colleagues to establish what would be considered appropriate practice in a case of this kind.

Background

[Ms A] registered with [RM C] for primary maternity care at 32 weeks gestation. She had recently moved to [the region]. She was expecting her second baby. Her first baby was delivered by Caesarean section because of slow progress in labour. Earlier in the pregnancy she had been seen at the Maternal Fetal Medicine Department at [a main centre hospital] because the baby had borderline ventriculomegaly; this was no longer apparent on review at 35 weeks. [Ms A] was noted to have a positive red cell antibody screen; the antibody identified was not associated with a significant risk of fetal anaemia.

[Ms A] was referred to the antenatal clinic at [the public hospital] to discuss her previous Caesarean section and was seen by an Obstetrician at 36 weeks gestation. It was noted that she wanted to attempt a vaginal birth and this was the agreed birth plan.

She was re-referred to [the public hospital] at 40 weeks + 5 days for assessment of prolonged pregnancy. She was seen at the hospital for assessment [at 41 weeks + 2 days' gestation]. She reported contractions since the previous evening, but these were infrequent and were not increasing in strength. Electronic fetal heart rate monitoring was commenced with a CTG. The fetal heart rate pattern was abnormal with decelerations. The on-call Obstetrician [Dr B] was consulted and he reviewed [Ms A] at 12.20. He noted the fetal heart rate decelerations, but considered the baseline fetal heart rate and baseline variability between the decelerations were normal. He recommended intravenous fluid therapy and requested a vaginal examination to determine if labour could be induced with artificial rupture of membranes. An examination was performed and it was found that [Ms A] had a closed cervix. [Dr B] returned to reassess the situation at 13.38. The CTG continued to show fetal heart rate decelerations. [Dr B] discussed the options of Caesarean delivery or induction of labour with [Ms A]. He documented a plan for a repeat CTG in the afternoon and induction of labour in the evening with a cervical Cook catheter.

[Dr B] saw [Ms A] again at 18.30 and inserted a cervical Cook catheter to induce labour. He requested a further CTG which he reviewed at 1915 and which he considered had improved. He made a plan to discontinue the CTG and repeat it at 22.00. The repeat CTG at 22.00 showed fetal heart rate decelerations, but was

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discontinued by the hospital midwives as it appeared no worse than recordings earlier in the day. [Ms A] was awake at 01.20 having uncomfortable tightenings every 8 minutes and CTG monitoring was recommenced. This showed fetal heart rate decelerations with reduced fetal heart rate variability. At 03.15 [Dr B] was informed and he attended at a time that was not documented. At 04.40 he examined [Ms A], removed the Cook catheter and ruptured her membranes. The examination findings were not recorded; the liquor was meconium stained. At 05.20 [Dr B] recommended Caesarean delivery and [Ms A] agreed. She was transferred to the operating theatre at 06.15 and the [Baby A] was delivered at 06.55. He required resuscitation and was in poor condition at birth with cord blood gas analysis indicating severe metabolic acidosis. [Baby A] was transferred to [another hospital] with neonatal encephalopathy and subsequently had severe developmental delay with quadriplegia and epilepsy.

1. The Obstetric management subsequent to the review at 13.38 on [the first day of admission].

[Dr B] was consulted on [the first day of admission] because [Ms A's] CTG recording was abnormal. He decided that the fetal heart rate pattern was unlikely to indicate acute fetal hypoxia, because of the presence of a normal fetal heart rate and variability.

In his statement to the Commission, [Dr B] wrote that he recommended Caesarean delivery and only discussed induction of labour because [Ms A] did not want a Caesarean section. The clinical records do not reflect this, but imply the options of Caesarean sections and induction were presented as alternatives, with no indication that one option was recommended over the other. He stated that he considered the CTG pattern might reflect fetal compromise, but that it was not possible to determine how long this had been present and Caesarean section might not prevent injury.

There are two questions to address in this section:

- Was [Dr B's] interpretation of the CTG appropriate?
- Was the Obstetric management plan appropriate?

It is important to note that when [Ms A] was assessed between 11.30 and 13.38 on [admission] she was not in labour. She was having infrequent contractions and a vaginal examination showed no cervical dilatation. However, it appears that [Dr B] interpreted [Ms A's] CTG as if she were in labour. He considered that the decelerations did not necessarily indicate hypoxia, but might be a benign physiological response to contractions. He interpreted the baseline fetal heart rate as having normal variability and he interpreted the absence of a tachycardia as a reassuring feature.

The RANZCOG Fetal Surveillance guideline mainly relates to the interpretation of fetal heart rate patterns in labour. In the guideline labour is identified by the presence of contractions at least every 5 minutes and with cervical dilatation of at least 4 cm. Interpretation of fetal heart rate patterns in the absence of labour is less clear, but in

HDC

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general antenatal CTGs and early labour CTGs are not expected to have any abnormal features. Although decelerations may be a physiological response to contractions in labour, they should not occur before labour is established. There were a number of concerning features of the initial CTG recording. The decelerations were not 'typical' short decelerations with quick recovery, which are often seen in labour and may be associated with cord compression; they were complex variable decelerations with slow recovery, indicating probable hypoxia. The absence of fetal tachycardia is not necessarily a reassuring feature on an antenatal CTG. Finally, some parts of the admission CTG appear to have a sinusoidal pattern, with 2–5 low-amplitude oscillations per minute, which may also be a feature of hypoxia. Overall the CTG indicated probable hypoxia of unknown duration.

The abnormal fetal heart rate pattern was present on admission and hypoxic brain injury might already have occurred, but further delay would be expected to increase the risk of injury and in my opinion the only appropriate Obstetric option was Caesarean section. This would not guarantee a good outcome, but delaying delivery was likely to increase the risk of permanent harm. I have discussed elements of this case with several colleagues who agree that the only appropriate action was to recommend Caesarean delivery. None of them consider that delay or induction of labour were appropriate courses of action. I therefore consider the failure to recommend Caesarean section as the only reasonable course of action was a serious departure from accepted practice.

2. **The decision to offer the option of a Cook catheter induction of labour, given that [Ms A] was 41 weeks and 2 days gestation and had a history of a previous lower segment Caesarean section, and taking account of the vaginal examination findings and the features of the CTG.**

Elective delivery is usually recommended between 41 weeks + 0 days and 42 weeks + 0 days, even in the absence of obstetric risk factors. Induction of labour for prolonged pregnancy is often offered to women with previous Caesarean section and many Obstetricians consider that cervical ripening with a cervical catheter (Foley or Cook catheter) may be safer than prostaglandins after Caesarean section, although evidence regarding this is limited. Induction of labour in women with previous Caesarean section is associated with a higher risk of labour complications, including uterine rupture, compared to spontaneous labour and women should be informed about this before deciding if they wish to proceed with induction. At the time of writing this report the Royal Australian & New Zealand College of Obstetricians and Gynaecologists (RANZCOG) did not have a guideline or position statement on induction of labour. The National Institute for Health and Care Excellence (NICE) guideline Induction of Labour, which is widely regarded as an authoritative reference, advises the following:

If delivery is indicated, women who have had a previous Caesarean section may be offered induction of labour with vaginal PGE2, Caesarean section or expectant

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management on an individual basis, taking into account the woman's circumstances and wishes. Women should be informed of the following risks with induction of labour:

- *increased risk of need for emergency Caesarean section during induced labour*
- *increased risk of uterine rupture.*

And

Before induction of labour is carried out, Bishop score should be assessed and recorded, and a normal fetal heart rate pattern should be confirmed using electronic fetal monitoring.

The issue of informed consent is discussed in the next section. Given that the CTG was abnormal, induction of labour should not normally be offered and Caesarean delivery should have been recommended. I consider that proceeding with induction of labour in the presence of an abnormal antenatal CTG was a serious departure from accepted practice.

3. The information provided to [Ms A] regarding the risks and benefits associated with her wish to have an induction of labour.

The records provided do not indicate that [Ms A] was informed of the specific risks of labour complications and uterine rupture associated with induction in women with previous Caesarean section. [Dr B's] statement and [RM C's] statement do not refer to specific counselling about the increased risks of induction. It is therefore likely that [Ms A] was not informed about these risks.

It appears that at the time of these events [the DHB] did not have an organisational guideline regarding previous Caesarean section, but referred to the New Zealand College of Midwives position statement 'Vaginal Birth after Caesarean Section', a document which does not discuss induction of labour after Caesarean.

4. The decision to proceed with the plan for a Cook catheter induction of labour after [Ms A] was seen at 18.30.

CTG monitoring prior to assessment at 18.30 continued to show fetal heart rate decelerations. The opinion expressed in section 2 regarding the advisability of induction of labour also apply here: induction was inappropriate in the presence of an abnormal CTG.

5. The plan to continue with induction of labour after [Ms A] was reviewed at 04.40.

From about 02.00 there was reduced fetal heart rate variability in addition to prolonged variable decelerations. This suggests increasing fetal compromise. By 04.40 there was mounting evidence that continuing the induction was likely to lead to an adverse outcome.

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6. Whether there was a clinical indication for a different treatment pathway to have been followed and, if so, at what stage this treatment should have commenced.

As discussed above, the only appropriate Obstetric plan should have been to advise Caesarean section when [Ms A] first presented with an abnormal CTG, which was evident by 12.30 on [the first day]. She should have been firmly advised that expectant management and induction of labour were inappropriate options.

7. If different or earlier Obstetric treatment was indicated, is it likely that such earlier treatment would have avoided the injury in [Baby A's] case.

When [Ms A] arrived at the hospital at 11.30 the initial CTG was abnormal, suggesting fetal hypoxia. It is possible that hypoxic brain injury had already occurred.

While I agree with [Dr B's] opinion that a high proportion of cases of hypoxic brain injury occur before labour, immediate Caesarean delivery would have reduced the duration of exposure to hypoxia and the outcome might have been less severe.

However, the situation was more complicated, as [Baby A] had congenital abnormalities which were not known about at the time of the labour and birth. In addition to the borderline ventriculomegaly detected during pregnancy, the discharge summary from [another hospital] lists the following:

- Dysmorphic features including micrognathia
- A ventricular septal defect
- Thrombocytopenia
- Hypothyroidism

It is likely that [Baby A] had an underlying developmental syndrome which was not identified antenatally and which may have led to a poor developmental outcome regardless of the circumstances of the birth. Although it is likely that Caesarean section at an earlier stage may have reduced the severity of [Baby A's] hypoxic brain injury, it is also possible that some of his subsequent disability may have been a result of congenital factors and would not have been prevented by earlier Caesarean section. It cannot therefore be concluded that earlier Caesarean section would have prevented brain injury.

8. Additional Comments

I have been asked to make recommendations for improvements which might help prevent similar occurrences in the future. This is difficult for an external reviewer to address. Quality improvements require local solutions involving personal and collective reflection. Reference has been made in the responses from [DHB] staff involved in this case regarding engagement in further training in fetal surveillance and plans to employ more Obstetric staff. It appears that [the DHB] faces a challenge which is common to many areas of New Zealand and for which there is no ideal solution. [The public hospital] has a small maternity unit and a consequence of this is

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that a small number of Obstetricians have to provide 24-hour cover without the support of middle-grade doctors or shift arrangements. Obstetricians in such small units may sometimes be required to work excessive hours without collegial support, and this may impair judgement and performance. The alternative option, adopted in some areas, is to withdraw Obstetric services from smaller maternity units and require women with pregnancy risk factors to travel long distances to better-staffed hospitals. Neither of these options is ideal and each DHB needs to decide which arrangements provide the best solution for their local population.

References

National Institute for Health and Care Excellence. Guideline 70. Induction of Labour. 2008

New Zealand College of Midwives position statement. Vaginal Birth after Caesarean Section 2015

Royal Australian and New Zealand College of Obstetricians & Gynaecologists. Intrapartum Fetal Surveillance Clinical Guideline — Third Edition 2014

Dr David Bailey”

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Appendix B: Independent midwifery advice to the Commissioner

The following expert advice was obtained from midwife Emma Farmer:

"I, Emma Farmer, have been asked to provide an opinion to the commissioner on case number C17HDC00384; I have read and agree to follow the Commissioner's Guidelines for independent advisors.

I am a registered midwife and hold a MHSc (Hons) Midwifery. I have worked in a variety of practice settings over a 25 year career and am currently employed as the Head of Division — Midwifery, at Waitemata District Health Board.

I have read the documentation sent to me:

1. [The DHB's] response dated 17th May 2017 (including responses from LMC midwife [RM C] and core midwives [RM E] and [RM D])
2. [The DHB's] case review
3. Clinical records from [the DHB]
4. Maternity records from [RM C]

You have asked me to provide an opinion on the following matters regarding standard of care provided to [Ms A]:

[RM C]

1. [RM C's] management of [Ms A] in 2015
2. The extent of [RM C's] responsibility to advocate for [Ms A] in the light of her concerns about the non-reassuring features of the CTG tracing
3. The appropriateness of [RM C] handing over [Ms A's] care to the core midwives given her concern about the CTG tracing
4. Any other comments regarding the care provided

RM D

1. [RM D's] management of [Ms A] in 2015
2. The extent of [RM D's] responsibility to advocate for [Ms A] in the light of her comment to staff that she had 'only seen one other CTG similar to this whereby the outcome was poor'
3. Any other comments regarding the care provided by [RM D]

[RM E]

1. [RM E's] management of [Ms A] in 2015
2. The extent of [RM E's] responsibility to advocate for [Ms A] following her discussion with the other core midwives about the non-reassuring CTG and the fact that no change of plan had been made
3. The appropriateness of the decision to discontinue the CTG at 11pm to allow [Ms A] to get some rest
4. The administration of sedatives

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5. The timeliness of [RM E] contacting the on-call obstetrician and her rationale for not doing so earlier
6. Any other comments regarding the care provided by [RM E]

Core midwives

1. The overall management of [Ms A] in 2015
2. The extent of the core midwives' responsibility to advocate for [Ms A] following their discussion at handover about the non-reassuring CTG and the fact that no change of plan had been made
3. The decision of the core midwives to discontinue the CTG and sedate [Ms A] and then only monitor the CTG during the night when [Ms A] was awake
4. The monitoring that occurred during the period the CTG was discontinued
5. Whether maternal observations were taken regularly
6. Any other comments regarding the care provided by the core midwives

[RM C]

1. [RM C's] management of [Ms A] in 2015

In 2015 [RM C] arranged to meet [Ms A] for a routine appointment, on arrival [Ms A] reported that she was experiencing early labour contractions. As part of her assessment [RM C] performed a CTG, which she recognised as abnormal and sought obstetric advice, as per code 4003 of the 'Referral Guidelines'.[1]

Figure 1 Section from Guidelines for Consultation with Obstetric and related medical services 2012

Code	Condition	Description	Referral category
3020	Third or fourth degree tear	Compromised bowel function	Consultation
4000–5000 Current pregnancy			
4001	Acute abdominal pain		Consultation
4002	Abdominal trauma		Consultation
4003	Abnormal CTG		Consultation
4004	Antepartum haemorrhage		Consultation

At this time it appears that [RM C] was anticipating a Caesarean birth and had started to make preparations for this, e.g. drawing blood for 'group and hold'. The Obstetrician recommended intravenous fluids and induction of labour with artificial rupture of membranes. At 13.05 [RM C] performed a vaginal examination but was not able to rupture the membranes as the cervix was not sufficiently open. She reported her findings to the obstetrician, who made the decision to proceed with a Cooks catheter induction of labour later that day. During the afternoon [RM C] provided

[1] Ministry of Health. 2012. *Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines).* Wellington: Ministry of Health.
http://www.health.govt.nz/system/files/documents/publications/referral-glines-jan12.pdf

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standard early labour care to [Ms A] and continued to monitor the fetal heart with short breaks to allow [Ms A] up to the toilet. At 16.43 [RM C] transferred the care to the core midwives so that she could make a postnatal visit to another client. She resumed care again at 17.51 and was present when the Obstetrician inserted the Cooks catheter. At 18.45 she again handed care to the core staff with instructions to call her back if needed.

With the exception of the abnormal trace, which I will comment on later, the midwifery care was as expected, and consistent with that described in the Midwives Handbook for Practice (2008).[2]

2. The extent of [RM C's] responsibility to advocate for [Ms A] in the light of her concerns about the non-reassuring features of the CTG tracing

The CTG tracing on admission had concerning features which included persistent late decelerations and inadequate accelerations from the baseline. At the time of this incident [the DHB] has confirmed that they had implemented the RANZCOG Intrapartum Fetal Surveillance Guidelines. These guidelines note that late decelerations are 'associated with significant fetal compromise and require further action'. The actions planned by the Obstetrician were rehydration and induction of labour with ARM (artificial rupture of membranes). [RM C] followed these instructions but was not able to perform the ARM. When this was reported to the obstetrician a decision was made to proceed to induction of labour with a Cooks catheter. [RM C] continued to monitor the fetal heart with only short breaks, this is consistent with the RANZCOG guideline which recommends continuous monitoring when abnormalities are detected.

j) Midwives have a responsibility to ensure that no action or omission on their part places the woman at risk (NZCOM Midwives Handbook for Practice p.12)

It is clear from [RM C's] statement that she was concerned about the fetal wellbeing and consulted with other midwives to confirm her views. She has not documented that she raised these concerns with the obstetrician directly, so it is not clear to what extent she advocated for her client in this regard. With the benefit of hindsight it is clear that other courses of action could have been proposed such as a recommendation to proceed to Caesarean section or a second obstetric opinion, however it is usual to accept the decision of the obstetrician who is leading the care. In fact there is ample research to support the view that health professionals have difficulty challenging those who are perceived to be in positions of authority.[3]

3. The appropriateness of [RM C] handing over [Ms A's] care to the core midwives given her concern about the CTG tracing

[Ms A] was receiving obstetric oversight of her care due to the planned induction of labour and abnormal CTG tracing. It would not be expected that [RM C] remain with

[2] NZCOM 2008 Midwives Handbook for Practice ISBN 978-0-473-12992-7

[3] Okuyama A et al 2014 *Speaking up for patient safety by hospital-based health care professionals: a literature review.* BMC Health Services Research 2014

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her client throughout the induction of labour process and it would be usual practice for the midwife to hand over to staff midwives until labour is established and the woman is requiring one to one care.

4. Any other comments regarding the care provided

I have no further comments regarding the care provided by [RM C].

[RM D]

1. [RM D's] management of [Ms A] in 2015

At 16.34 [RM D] took over care from LMC [RM C] while she undertook a postnatal visit. During this time, [RM D] administered fluids, discontinued the CTG briefly so that [Ms A] could go to the toilet, monitored the CTG trace and noted that late decelerations were continuing and that contractions were mild and 1 in every 7 minutes. At 17.28 she noted that the obstetrician returned and reviewed the CTG and planned to continue with the induction of labour. At 17.51 [RM C] returned from the postnatal visits and [RM D] assisted with the insertion of the Cooks catheter. At 19.05 [RM D] again took over care from the LMC. At 19.15 the Obstetrician made an assessment that the CTG is improved and can be discontinued until 22.00hrs. [RM D] follows these instructions, this is contrary to the RANZCOG guideline which recommends continuous CTG 'in clinical situations where the fetal heart rate pattern is considered abnormal' (Recommendation 8). Discontinuing the CTG would be viewed with mild disapproval in this situation because it was ordered by the obstetrician supervising the care.

At 22.07 the CTG was recommenced and again it showed persistent late decelerations. [RM D] describes her concern regarding the trace and seeks advice from colleagues. She does not remove the trace and continues to monitor the fetal wellbeing until the end of her shift.

2. The extent of [RM D's] responsibility to advocate for [Ms A] in the light of her comment to staff that she had 'only seen one other CTG similar to this whereby the outcome was poor'

My opinion in this regard remains the same for all the midwives involved in this case. All midwives have a duty of care. With the benefit of hindsight it is clear that other courses of action could have been proposed such as a recommendation to proceed to Caesarean section or a second obstetric opinion, however it is usual to accept the decision of the obstetrician who is leading the care. In fact there is ample research to support the view that health professionals have difficulty challenging those who are perceived to be in positions of authority.

I have no other comments regarding the care provided by [RM D].

[RM E]

1. [RM E's] management of [Ms A] in 2015

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Overall the care provided was of a standard consistent with the care provided for a woman undergoing an induction of labour, with the exception of the missed opportunity to respond to a non-reassuring CTG trace.

2. The extent of [RM E's] responsibility to advocate for [Ms A] following her discussion with the other core midwives about the non-reassuring CTG and the fact that no change of plan had been made

My opinion in this regard remains the same for all the midwives involved in this case. All midwives have a duty of care. With the benefit of hindsight it is clear that other courses of action could have been proposed such as a recommendation to proceed to Caesarean section or a second obstetric opinion, however it is usual to accept the decision of the obstetrician who is leading the care. In fact there is ample research to support the view that health professionals have difficulty challenging those who are perceived to be in positions of authority.

3. The appropriateness of the decision to discontinue the CTG at 11pm to allow [Ms A] to get some rest

[RM E] assumed care at from 22.45, according to her statement. A conversation is documented both in the clinical records and in [RM E's] statement that a discussion between all the midwives took place at shift handover and a decision was made to discontinue the CTG and recommence this intermittently on the basis that the trace had not worsened over time. This decision is not consistent with the RANZCOG guideline that recommends continuous CTG when there is a presence of late decelerations (Recommendation 8). Discontinuing the CTG would be viewed with moderate disapproval as confirmation of this plan could have been sought from the obstetrician in charge of the care.

4. The administration of sedatives

The administration of Temazepam 10mgs which occurred at 23.30pm may have contributed to the loss of variability seen on the CTG trace from 01.57; Temazepam is a benzodiazepine which diffuses readily across the placenta, its peak effect occurs around 1 hour and 30 minutes after administration and there is an association between benzodiazepine use and reduced beat to beat variability[4].

5. The timeliness of [RM E] contacting the on-call obstetrician and her rationale for not doing so earlier

From 01.57 on [the second day] the trace has persistent late decelerations with reduced baseline variability. The RANZCOG guidelines suggest that these features 'are likely to be associated with significant fetal compromise and require immediate management, which may include urgent delivery' (p18). It would be usual to instigate rescue measures such as change of position and IV fluids while the fetal heart trace is being assessed for a period of 20–40 minutes to observe for signs of improvement,

[4] Iqbal MM et al 202 *Effects of Commonly Used Benzodiazepines on the Fetus, the Neonate, and the Nursing Infant* Psychiatric Services 2002 53:1, 39-49 http://ps.psychiatryonline.org/doi/abs/10.1176/appi.ps.53.1.39

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given that it is usual for the fetus to have sleep cycles for periods of up to 40 minutes where variability is reduced. From 02.40 when there is no improvement it would be usual practice to refer to an obstetrician. [RM E] whilst obviously concerned and attempting to investigate a cause did not refer to the obstetrician until 03.15. This delay would be viewed with moderate disapproval from peers.

6. Any other comments regarding the care provided by [RM E]

I note in [RM E's] statement that the unit was clearly busy and the staff would have been stretched; it is difficult to assess how the demands of other women and infants in the unit affected her responsiveness or her appreciation of the passage of time.

The core midwives

The other midwives present on shift [at that time] do not appear to have provided care with the exception of the shared decision making discussion that occurred at shift handover. As noted previously it is my view that the decision to discontinue the CTG trace was incorrect and continuous monitoring should have occurred as per the RANZCOG guidelines.

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

Subsequent to the publication of the latest edition of the RANZCOG guidelines many DHBs have implemented a CTG trace assessment sticker or stamp. This leads staff to make an assessment of the CTG and recommends a course of action. The use of this sticker ensures that clinicians use consistent language and promotes a consistent response.

Figure 2 Example of a CTG interpretation sticker.

Date/time	CTG Indication:			Maternal pulse:	
	Baseline rate	110-160bpm	100-109bpm	Tachycardia > 160bpm	
	Baseline variability	6-25bpm		Reduced 3-5bpm	<3bpm or Absent
	Accelerations >15 bpm*	>15 seconds	Absent*	Rising baseline rate	Sinusoidal
	Decelerations	None	Variable without complicating features	Complicated variable or late prolonged	Complicated variable or late **AND** reduced or absent variability
	RANZCOG definitions	Low probability of fetal compromise	Unlikely to be associated with fetal compromise in isolation	May be associated with significant fetal compromise	Likely to be associated with significant fetal compromise
		NORMAL	ABNORMAL	ABNORMAL	ABNORMAL
	ACTIONS		CONSULT	CONSULT URGENTLY	EMERGENCY
	Name	Designation		Signature	

*accelerations are not always present in labour

Additionally it may be worth considering a programme that encourages staff to speak up when they are uncomfortable with a clinical situation or plan of care. There are

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courses available in New Zealand that promote this, an example would be the Cognitive Institute 'Speak up for safety' programme.[5]

I trust that you find this advice helpful in your investigation; please contact me again if you would like further clarification.

Kind regards

Emma Farmer
RN RM DPSM MHSc Midwifery"

[5] http://www.cognitiveinstitute.org/

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