Bay of Plenty District Health Board
(now Te Whatu Ora Hauora a Toi Bay of Plenty)

A Report by the
Deputy Health and Disability Commissioner

(Case 20HDC00753)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

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Executive summary

1. This report concerns the care provided to a young woman by Te Whatu Ora Hauora a Toi Bay of Plenty during her labour. The case highlights the importance of ensuring that CTG traces are reviewed and interpreted in a timely manner.

2. The woman was pregnant with her first baby when she was admitted to Tauranga Hospital with elevated blood pressure and early labour. There was high acuity on the labour ward and a clinical emergency occurred during the night, which had a significant impact on staff. Following this event, morning staff were called into work early to relieve night staff.

3. At the request of a core midwife, the woman had cardiotocograph (CTG)[1] monitoring commenced by a midwife at 6.20am. The midwife then left the room to attend another patient. The CTG was reviewed at 7.20am by a third midwife, who identified an abnormal trace, and the woman underwent an emergency Caesarean section delivery. Her baby was born in a poor condition and required transfer to another hospital for specialist care.

Findings

4. The Deputy Commissioner was satisfied that the woman's blood pressure was monitored appropriately overnight in line with Ministry of Health guidelines.

5. However, the Deputy Commissioner considered that the delay between commencing the CTG and reviewing the trace was unacceptable. This oversight was primarily a systems matter, as it related to the allocation and pattern of work across the ward at the time. The Deputy Commissioner found Te Whatu Ora Hauora a Toi Bay of Plenty in breach of Right 4(1) of the Code.

6. The Deputy Commissioner was critical of the midwife who commenced the CTG and had a responsibility to evaluate and document her findings and hand over any concerns, as well as the core midwife who asked for CTG monitoring to be commenced but did not follow up on the outcome. The Deputy Commissioner was also critical of a further midwife who did not bring an abnormal test result to the attention of the doctor caring for the woman overnight.

Recommendations

7. The Deputy Commissioner recommended that Te Whatu Ora Hauora a Toi Bay of Plenty provide the woman with a written apology; provide HDC with a copy of its updated Fetal Surveillance policy; provide HDC with an updated copy of staff who have completed the Fetal Surveillance Education Program and online updates; and audit 20 clinical records to identify whether CTG assessments have been documented in the clinical record in accordance with the Fresh Eyes CTG Monitoring pathway.

[1] CTG is a continuous recording of the baby's heart rate and the mother's uterine contractions taken with an ultrasound transducer placed on the woman's abdomen.

Complaint and investigation

8. The Health and Disability Commissioner (HDC) received a complaint from Ms B about the services provided by Bay of Plenty District Health Board (BoPDHB) (now Te Whatu Ora Hauora a Toi Bay of Plenty).[2] The following issue was identified for investigation:

- *Whether Bay of Plenty District Health Board provided Ms B with an appropriate standard of care in 2019.*

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

10. The parties directly involved in the investigation were:

Ms B	Consumer/complainant
Te Whatu Ora Hauora a Toi Bay of Plenty	Provider

11. Further information was received from:

Registered Midwife (RM) A	Core midwife/clinical coordinator
RM C	Core midwife
RM D	Core midwife
RM E	Core midwife
RM F	Core midwife
RM G	Core midwife

The Accident Compensation Corporation (ACC)

12. Dr H, a locum senior registrar, is also mentioned in the report.

13. Independent advice was obtained from a registered midwife, Emma Farmer (Appendix A), and an obstetrician, Dr John Short (Appendix B).

Information gathered during investigation

14. This report concerns the maternity care and monitoring provided to Ms B (aged in her twenties at the time of events) during the labour of her first child, at Tauranga Hospital.

[2] 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 Te Whatu Ora|Health New Zealand. All references to BoPDHB in this report now refer to Te Whatu Ora Hauora a Toi Bay of Plenty.

Antenatal care[3]

15. On Day 1, Ms B was 41 weeks and 2 days' gestation, and planned for an induction of labour on Day 3. When labour pains started early in the morning, she contacted her lead maternity carer (LMC), who arranged to visit that evening. By 6.30pm Ms B had further pains with vaginal discharge and had vomited.

16. The LMC saw Ms B at home that evening for a labour assessment. Midwifery notes document that Ms B was experiencing early labour symptoms with irregular contractions and had had a 'pv show'.[4] On vaginal examination, the amniotic membrane[5] was intact with some brown show on the glove. A stretch and sweep[6] was performed with consent. Ms B's blood pressure (BP) was 160/105mmHg (high, and above her baseline booking BP of 118/70mmHg). The midwife contacted the maternity unit to advise of her findings and referred Ms B to be assessed at the unit in light of her hypertension.

Admission to Tauranga Hospital

17. Ms B arrived at Tauranga Hospital's maternity unit at approximately 9pm. She was assessed on admission by a core[7] midwife, RM E, who noted Ms B's symptoms: '[N]o headache, no visual disturbances, no facial oedema. Has lower body oedema.[8] In latent phase[9] [of labour]. Tightenings since 0530 this morning.'

18. RM E noted that Ms B had vomited and had not had much to drink that day and could be dehydrated. RM E commenced IV fluids and took blood tests for PET,[10] group and hold,[11] and PCR.[12] Ms B's blood pressure taken at 9.05pm using a small cuff was 166/102mmHg (high), and when retaken manually at 9.20pm was 148/86mmHg.

19. CTG monitoring was commenced at approximately 9.00pm. The CTG initially showed 'reduced variability, little reactivity on CTG' but improved before it was discontinued at 10.30pm. The midwife documented that 'IV fluids [might] improve [the] CTG', and that a

[3] HDC has assessed the care provided by the LMC as a separate matter from this investigation.
[4] A 'per vagina' show is the discharge of a plug of mucus from the cervix. The show can be thick and stringy or blood-tinged. This may happen on the day a woman goes into labour, or up to a week beforehand.
[5] The protective membrane that surrounds and contains the baby and amniotic fluid. When the membrane is intact this suggests that the waters have not yet broken.
[6] A process used to try to initiate labour in late pregnancy. A circular sweeping movement is made to separate the membranes from their attachment to the cervix, and the cervix is stretched.
[7] New Zealand midwives who are employed by Te Whatu Ora and are based in hospitals and maternity units are known as core midwives.
[8] A build-up of fluid in the body that causes the affected tissue to become swollen.
[9] The early stage of labour.
[10] Pre-eclamptic toxaemia (PET) is a condition characterised by a new onset of hypertension after 20 weeks' gestation (in a woman who has had normal blood pressure before 20 weeks' gestation) or superimposed on pre-existing hypertension, together with one or more of the following: proteinuria or other maternal organ dysfunction, or uteroplacental dysfunction.
[11] Blood samples for pre-transfusion testing.
[12] Protein:creatinine ratio (PCR) — a screening test for proteinuria (protein in the urine).

doctor had been informed about Ms B's BP and CTG and had been asked to attend to review her.

20. Ms B was seen by Dr H, a locum senior registrar, who noted that Ms B had been referred by her LMC for possible PET and was being seen for a labour assessment. Ms B's blood pressure at 10.30pm was 140/83mmHg (normal), and she was asymptomatic. The PCR result had yet to arrive. Dr H documented a plan for 4-hourly observations overnight, analgesia, and discussion about induction the following day. Dr H noted that if Ms B was contracting, a Cook's balloon[13] was to be inserted. There is no documentation of CTG monitoring or a physical assessment.

21. The CTG was initialled at approximately 11.10pm and then discontinued. There is no documentation in the midwifery or medical notes of the reason for discontinuing the CTG, and no plan documented for repeat CTG or fetal monitoring overnight.

22. Ms B told HDC that initially she and her baby were monitored for approximately two hours, and she was then given pain relief. She stated: '[I was] advised to rest and if I woke in the night to call my bell so my BP could be done. I was left unattended all night with high BP.'

23. At 11.30pm, Ms B was given anti-nausea medication, pain relief (codeine 60mg[14] and paracetamol 1 gram), medication to promote cervical dilation and shorten the duration of labour,[15] and a sleeping pill.[16] She was encouraged to try to sleep, and to call staff if required. Her mother was present at this time.

24. Ms B's PCR result (48) was documented in the clinical records by core midwife RM F at 11.40pm. This was a moderately elevated result (indicating proteinuria, which is a diagnostic criterion for pre-eclampsia), and it is not documented whether medical staff were informed of this. The PCR result was not viewed or accepted by a doctor until the following day. Dr H cannot recall whether she was made aware of the PCR result overnight, but she noted that she did not specifically ask for this, and the plan was to induce Ms B that morning.

25. Te Whatu Ora Hauora a Toi Bay of Plenty told HDC that Ms B's blood pressures were within range, and the PCR result would not have changed the plan. An induction of labour would not have commenced in the middle of the night. However, information about the PCR result would have assisted in prioritising Ms B's induction in the morning.

Monitoring overnight

26. Te Whatu Ora Hauora a Toi Bay of Plenty's response to HDC included information from RM C that staff are not often allocated patients on night shift, and when the call bell rings it is answered. Women are encouraged to sleep overnight, and it is standard for midwives to let

[13] A Cook's balloon catheter is a device used to aid cervical ripening. Two inflated balloons apply gentle pressure above and below the cervix.
[14] A medication used to relieve moderately severe pain.
[15] Buscopan 20mg.
[16] Zopiclone 7.5mg.

women know that generally staff will not come into the room unless required or if they need anything. RM C considered that Ms B was aware to call overnight (via the call bell in her room) if she had any concerns.

27. Ms B rang the bell at 2.40am for a BP check. She was seen by RM C, who documented the BP as 142/84mmHg (normal). RM C recorded that Ms B 'had managed some broken sleep — having irregular contractions'. RM C and Te Whatu Ora Hauora a Toi Bay of Plenty note that if Ms B's contractions had increased and labour had become established, it would have been routine practice to re-examine her for cervical changes, and to recommence CTG monitoring. However, Ms B was reporting irregular contractions at this time, which is not established labour. RM C stated that if Ms B's labour was increasing in severity, it was not communicated to her, otherwise she would have acted on this.

28. RM C cannot recall whether she considered the placement of a Cook's catheter (as per Dr H's plan) overnight. RM C noted that irregular contractions showed that labour had not established further, and she suspects she thought that as Ms B's labour had not advanced from when the doctor had assessed her, the plan remained similar. RM C was off the floor from around 3.30am, and at 6.00am she documented in the notes: '[W]e haven't heard from [Ms B] further overnight so left undisturbed.'

Monitoring in early morning

29. In response to the provisional opinion, Ms B told HDC that the documentation that she remained settled overnight is incorrect. She said that she was in 'excruciating pain' in the early hours of the morning and rang the call bell at approximately 5.00am. An orderly attended to her but she was told that no midwives were available as they were busy attending an emergency (discussed further below at paragraph 42). About an hour later, a 'nurse' came in and commenced CTG monitoring and 'said she would be back in 10 minutes', but 'roughly 30 minutes passed'.

30. Core midwife RM D had been called into work early to relieve night staff and was assisting with tasks until the morning handover at 7.00am. RM D stated that a core midwife asked her to commence a CTG on Ms B and said that she would then take over and do a full assessment. RM D documented that Ms B was 'tired, exhausted and sore', and that her BP taken at 6.30am was 150/88mmHg (borderline/high). Ms B was now contracting 1:5 (contractions lasting for one minute, every 5 minutes). The clinical notes at 6.30am document: 'CTG commenced. For V/E[17] and assessment.'

31. RM D recommenced CTG monitoring at 6.24am and told HDC that at this time, she 'had anticipated that the DHB midwife would return in a short time to assess [Ms B] re[garding] whether or not she was in established labour'. RM D told HDC that she was then called away and asked to assist with a delivery, where she remained for most of the morning.

[17] Vaginal examination (used during labour to ascertain cervical changes and the position of the baby).

32. In response to the provisional opinion, Ms B told HDC that the CTG machine did not alarm while she was being monitored at 6.30am, and she had not been told what to do if it did alarm. She said that the nurse told her that she would be 'back in 10 minutes. But this was not the case.' She told HDC that when the nurse returned, she was 'not happy' with the CTG trace and asked Ms B to turn onto her side.[18] However, Ms B told HDC that she needed to go to the toilet, so the CTG was removed.

33. Ms B's observations are documented[19] as being taken at 6.30am, and the CTG recorded a fetal heart deceleration at approximately 6.32am. Te Whatu Ora Hauora a Toi Bay of Plenty told HDC that it considers it 'likely that the observations took place prior to the CTG being applied'. It is unclear whether RM D was present in the room at 6.32am when the deceleration occurred.

34. In response to the provisional opinion, Te Whatu Ora Hauora a Toi Bay of Plenty told HDC that usual practice is to review the initial CTG trace to ensure connectivity, and, if there are no concerns, the midwife may leave to attend to other patients. All CTG monitors have default alert settings, and it is not best practice, nor usual practice, for default alerts to be deactivated.[20] As part of the usual practice, women are asked to contact staff if they feel unwell, the midwife is away for longer than expected, they hear a CTG alert, or have any concerns; however, Te Whatu Ora Hauora a Toi Bay of Plenty was unable to comment specifically on the instructions given to Ms B.

35. Ms B's CTG trace was not read and reviewed until approximately 7.20am, by RM G (close to an hour after the CTG monitoring had commenced). Te Whatu Ora Hauora a Toi Bay of Plenty acknowledged that women receiving continuous CTG should have traces reviewed at least every 15–30 minutes, and any abnormalities acted upon. Te Whatu Ora Hauora a Toi Bay of Plenty also acknowledged that review of the CTG assessments should be documented in the clinical record.

36. The clinical coordinator midwife, RM A, noted that it was 'a particularly stressful night'. Some staff went home because of the extreme stress following a significant clinical event at approximately 4.10am, and morning staff were called in early to relieve the night staff. RM G was assigned to look after Ms B at the 7.00am handover. Te Whatu Ora Hauora a Toi Bay of Plenty told HDC that RM G was the first person to check on Ms B since 6.30am. RM G introduced herself to Ms B and checked the CTG, noting prolonged decelerations[21] on the trace. A line is drawn on the trace at 7.20am.

[18] Turning a pregnant person onto their side can help to correct any supine hypotension (a low blood pressure which may develop in late pregnancy when a pregnant person lies flat and the weight of the uterus compresses the inferior vena cava).
[19] Documented on the Maternal Obstetric Early Warning Chart.
[20] Alerts draw the user's attention to readings that are outside of a defined range or if the signal is lost for a defined period of time. Default thresholds for fetal heart rate are above 160beats/min or less than 110 beats/min.
[21] Decelerations are transient episodes where the baby's heart rate slows down. A prolonged deceleration lasts for longer than 90 seconds, but less than 5 minutes.

37. Once the abnormal CTG trace was identified, RM G activated the emergency bell, transferred Ms B to the delivery suite at approximately 7.21am, and started intravenous fluids. Dr H was informed and called to assist. A vaginal examination was performed, and Ms B's membranes were artificially ruptured, which showed meconium-stained [22] amniotic fluid (indicating fetal stress).

38. Dr H obtained verbal consent from Ms B for an emergency Caesarean section delivery, and the baby was delivered at approximately 7.53am. The baby was born in poor condition and required resuscitation and transfer to the Special Care Baby Unit (SCBU) for meconium aspiration syndrome. The baby was later transferred to a main centre hospital for 16 days, and Ms B transferred with her baby.

Further information

Ms B

39. Ms B told HDC that this was a traumatic experience. She is concerned that she had high blood pressure overnight, and that if her baby had been delivered by Caesarean during the night, she would have been able to bring her baby home sooner and would have been able to spend time with a family member who died a few weeks after the baby was born.

Documentation

40. Te Whatu Ora Hauora a Toi Bay of Plenty acknowledged that the documentation of Ms B's clinical care over the night shift was not comprehensive and timely due to the extreme workload of staff that shift. It stated that Dr H was off duty the following day, and when she returned to work, Ms B had been transferred and Dr H was unable to add to the notes retrospectively.

Staffing

41. Te Whatu Ora Hauora a Toi Bay of Plenty considers that overnight on Days 1–2 was an 'unusually busy shift'. Te Whatu Ora told HDC that the staff-to-patient ratio in the delivery unit was in a negative balance of –2.50 hours. It said that the postnatal ward would help out on the delivery unit when necessary, but its staffing that night was also in a negative balance (–7.24 hours), and they were unavailable to assist. Overnight there were two registered midwives and one coordinator on duty for 11 patients in the antenatal and delivery ward at Tauranga Hospital.

42. During the night shift there were six births in seven hours (not including Ms B), with two emergency Caesareans, and an unexpected extreme clinical emergency at around 4.30am, as set out in the table below.

[22] Meconium is the first faeces, or stool, of the newborn, and may indicate fetal stress if it is passed prior to birth.

Name	Delivery	Time of birth
1.	LMC present Caesarean — Obstetric input (RM2 attended) Post Caesarean observations overnight	Approx. 00:30
2.	LMC present (RM1 attended)	Approx 01:45
3.	LMC present (RM 3 attended)	Approx 03:45
4.	LMC present (RM 1, RM 2 attended, and RM 4, RM5 from the postnatal ward attended) Clinical Emergency/Caesarean — Obstetric input RM 7 remained with the family until 08:00	Approx 04:00–05:00
5.	LMC present (RM 2 attended)	Approx 05:30
6.	LMC present (RM1 attended 2:15–4:45 am) RM 2 attended Assisted delivery — Obstetric input	Approx 07:15
7. Ms B	No LMC Caesarean — Obstetric input (RM 7, RM 9 attended)	Approx 07:45

43. Te Whatu Ora Hauora a Toi Bay of Plenty told HDC that the clinical emergency took staff away from their normal duties, and the trauma of the event affected their subsequent care. Te Whatu Ora stated that due to the emotional trauma caused, the staff working the morning shift were called in early so that some of the night staff could go home.

44. Te Whatu Ora provided the following table of staff on duty overnight:

Name	Time
RM C	23:00–0700
RM F	23:00–0700
RM A	Started 04:20
RM D	Started 0500
RM G	Approx 06:20
RM …	Started 0700

45. From this information it appears that there were four staff on duty in the labour ward after RM A arrived at 4.00am and RM D arrived at approximately 5.00am.

Adverse event review (AER)

46. BoPDHB conducted an investigation and review of the care provided to Ms B and her baby. The post-investigation SAC score was 2,[23] which is an event that must be reported to Te Tāhū Hauora | Health Quality & Safety Commission.

47. The AER noted the following key findings:

- There were concerns about the initial admission CTG, and the plan from the medical team did not include continuation of CTG monitoring overnight.
- The midwife who applied the CTG in the morning did not notice the concerning trace, and approximately 30–45 minutes passed before the morning CTG was reviewed.
- A contributing factor was the acuity of the ward overnight with a significant maternal event affecting staff acuity and concentration.

48. Outcomes of the AER included the following:

- Ms B's case was to be reviewed in the Perinatal Mortality and Morbidity (PNM&M) meeting with possible recommendations as a result.
- All staff were to complete mandatory CTG training annually, with an audit of training attendance.
- A reminder of expected documentation standards was to be sent to staff.
- Retrospective notes were to be completed as soon as possible following any event.

ACC reports

49. As part of Ms B's ACC treatment injury claim, ACC sought independent advice, which was provided to this Office.

50. The ACC obstetrics advisor considered that the admission CTG was within normal parameters, and there were no indications of fetal compromise at that stage. The plan to await PET investigations and discuss induction of labour the following day was a reasonable course of action. The advisor noted that the CTG at 6.30am was pathological at the outset and considered it unacceptable that it was not acted on until 7.20am. In addition, Ms B was a high-risk patient, and the adviser noted that the clinical records document that Ms B was uncomfortable overnight, and it is likely that Ms B's contractions had been increasing in severity. In his opinion, if her contractions were increasing, she should have had continuous fetal monitoring overnight, which may have resulted in a different outcome.

[23] A Severity Assessment Code (SAC) 2 event is one that results in permanent major or temporary severe loss of function that is not related to the natural course of the illness or differs from the immediate expected outcome of the care management.

51. The ACC midwifery advisor noted that there was no medical instruction regarding CTG monitoring, 'so it was reasonable for the midwife to take a watch and wait approach'. However, she did not consider it acceptable for Ms B to have been left undisturbed overnight in light of her admission for PET, and when she was known to be in the latent phase of labour with possible induction the following day. Although Ms B's blood pressure was checked during the night, no fetal assessment was documented. There are gaps in the documentation regarding assessments and rationale for actions taken, such as discontinuing the admission CTG and not undertaking the VE at 6.30am. The midwifery advisor considered that the CTG became grossly abnormal at 6.32am and should have been reviewed and acted on at that time.

Responses to provisional opinion

52. Ms B was provided with an opportunity to comment on the 'information gathered' section of the provisional opinion, and her comments have been included in this report where relevant.

53. Te Whatu Ora Hauora a Toi Bay of Plenty was provided with an opportunity to comment on the provisional opinion and its comments have been included in this report where relevant. It confirmed that RM F had no comment to make.

54. Te Whatu Ora Hauora a Toi Bay of Plenty provided HDC with RM D's comments. RM D stated that under normal circumstances it was her usual practice to remain with the woman for the first 5–10 minutes when placing them on CTG monitoring. She said that she fully expected that the midwife who had asked her to commence the CTG would be returning to assess and continue to care for Ms B, and subsequently she (RM D) was moved to the delivery suite to take care of an allocated patient, and she was not aware of the events that occurred.

Opinion: Preliminary matters

55. I acknowledge the very difficult set of circumstances that presented on the night the baby was born. Ms B was admitted in labour with her first baby, which culminated in an emergency Caesarean delivery and a period of specialist care for her baby at another hospital. I acknowledge that this outcome had a significant impact on Ms B and her family, and that Ms B found the experience traumatic. I also recognise that the acuity on the labour ward was high, with midwives attending six deliveries over seven hours, and staff significantly affected by a devastating clinical situation that had taken place at around 4am that day. I have taken these factors into consideration.

56. To assist my consideration of the care provided to Ms B, I sought independent midwifery advice from RM Emma Farmer, and independent obstetrics advice from Dr John Short (advice attached as appendices A and B).

Opinion: Te Whatu Ora Hauora a Toi Bay of Plenty

Management of hypertension — no breach

57. At 9pm, at 41 weeks and two days' gestation, Ms B was admitted to Tauranga Hospital with hypertension. After an initial CTG between 9.10pm and 11.10pm, Ms B was monitored four-hourly overnight, and her blood pressure remained stable during this time.

58. RM Farmer advised that Ms B's blood pressure monitoring overnight and the initial CTG were within national guidelines on the diagnosis and treatment of hypertension in pregnancy,[24] and stated that it would not be unusual to let a patient rest overnight. I accept this advice and I am satisfied with the level of Ms B's blood pressure monitoring between the time of Ms B's admission and 6.30am the following day.

CTG monitoring — breach

Monitoring overnight

59. After Ms B's admission, the initial CTG was discontinued at 11.10pm and no further fetal heart monitoring was performed until 6.30am the following day. My obstetrics advisor, Dr Short, advised that the evening CTG was normal and there was no indication to repeat this overnight. My midwifery advisor considered that there were some abnormal features during the earlier period, but that the latter part of the CTG trace shows reassuring features such as normal variability and accelerations from the baseline.

60. There is a documented plan for maternal BP monitoring overnight, although there was no documentation regarding a plan for further CTG monitoring. The ACC midwifery opinion is that given the lack of instruction, it was reasonable to take a 'watch and wait approach' to CTG monitoring. However, she noted that in the circumstances of Ms B being admitted with PET and known to be in early labour, it was inappropriate to leave her overnight with no assessment of fetal wellbeing documented. While I have taken this into account, I am mindful that the ACC advisors do not have access to all the contextual information and provider statements that are acquired by HDC.

61. Te Whatu Ora Hauora a Toi Bay of Plenty told HDC that a CTG would have been considered if Ms B had been in labour and noted that she was reporting irregular contractions that did not indicate established labour. RM Farmer considered that it would not be usual practice to give midwives instructions for further monitoring of the fetal heart rate overnight, as further monitoring would be commenced in the morning or if labour was established. This is consistent with the clinical practice guideline of daily CTG monitoring for inpatient women with hypertensive disorders in pregnancy, and Dr Short's view that the frequency of CTG monitoring was adequate.

[24] Diagnosis and treatment of hypertension and pre-eclampsia in pregnancy in New Zealand: A clinical practice guideline — Monitoring requirements for women with hypertensive disorders in pregnancy: Pre-eclampsia/ expectant management (hospital inpatient): 4–6 hourly blood pressure (except overnight when an interval of 8 hours is acceptable), p 12, Cardiotocography (CTG) daily if inpatient, p 13.

62. I accept RM Famer's advice that CTG monitoring overnight would not be expected unless Ms B was in established labour. However, I am concerned that when Ms B rang her call bell in pain at 5.00am, there is no documented evidence that anyone assessed her to consider whether or not she was in established labour (and therefore whether further fetal heart rate monitoring was required at this time).

Review of CTG

63. RM D's clinical entry at 6.30am notes that Ms B was 'tired, exhausted and sore' and contracting every five minutes. At that stage, CTG monitoring was commenced by RM D at a DHB midwife's request, with a plan for the DHB midwife to review and assess Ms B further.

64. After placing the CTG at 6.24am, RM D left to attend another patient, and Ms B's CTG was not reviewed between 6.30am and 7.20am. Te Whatu Ora Hauora a Toi Bay of Plenty acknowledged that women receiving continuous CTG monitoring should have traces reviewed at least every 15–30 minutes in accordance with RANZCOG guidelines.[25]

65. All the advisors who reviewed this case (both HDC and ACC) are of the view that Ms B's CTG trace was abnormal from approximately 6.32am. RM Farmer advised that not reviewing the trace for 50 minutes after commencement would be viewed with moderate disapproval, and this view is supported by the two ACC advisors. Dr Short noted that while there was an indication for an earlier Caesarean section by 30 minutes, he would not be critical of the obstetric care in light of the ward being busy.

66. I acknowledge that while both RM Farmer and Dr Short agree that the CTG trace was abnormal, and that this was not reviewed as it should have been, they disagree with the level of criticism that they would place on this omission. I note that Dr Short is commenting on the actions of the obstetrics (medical) team in response to the information available to them.

67. As monitoring of Ms B during her labour overnight was a midwifery responsibility, I consider that the opinion of the midwifery advisor regarding the CTG review is therefore particularly relevant at this point. I agree with the midwifery advisor that the delay in reviewing the morning CTG should be viewed with moderate disapproval.

68. In my view, the delay between commencing Ms B's CTG and reviewing the trace was unacceptable. A midwife was tasked with attaching the CTG by another midwife, yet neither of them returned to review the trace in a timely manner. I consider that the midwives had an obligation either to follow up Ms B's CTG trace, or to hand over to another colleague to ensure that this was done. This oversight relates to the practice of the individual midwives involved (as discussed below), but is primarily a systems matter, as it relates to the allocation and pattern of work across the ward.

[25] Intrapartum Fetal Surveillance Clinical Guideline — Fourth Edition (2019 Royal Australian and New Zealand College of Obstetricians and Gynaecologists).

Staffing overnight

69. I am mindful of the pressure that staff were under that night (both in terms of the number and acuity of patients on the ward, and the emotional upheaval of an extreme clinical emergency), and I accept that this was a factor in the events that unfolded. I note that staff from the postnatal ward gave some assistance to the delivery unit during the clinical emergency, but that they also had high patient/staff ratios.

70. I acknowledge that during a busy and difficult shift it may be appropriate to reallocate workloads and take a team approach to care. However, whenever a team approach is used, there must be a high standard of communication and coordination between team members to ensure that the individuals are clear about the responsibilities they are carrying and that patient concerns are identified and followed up in a timely manner. This does not appear to have occurred when Ms B rang the call bell at 5.00am, and when the CTG monitoring commenced at approximately 6.20am and a concerning trace was not noticed or reviewed for approximately 50 minutes.

71. Te Whatu Ora Hauora a Toi Bay of Plenty told HDC that staff went home during the night shift and were replaced by morning staff who came into work early. By my calculations, there were four midwives on duty after RM D arrived at approximately 5.00am, and I also note that of the women who birthed overnight, all of them (except Ms B) had a lead maternity carer with them. Even allowing for a staff member remaining with the family following the clinical emergency, there were three staff on the floor at 6.20am when Ms B's CTG monitoring began, yet no one checked the trace before morning handover commenced.

72. I remain concerned that Ms B did not receive the care and attention she required that night. Her care was allocated as a series of tasks undertaken by a series of individuals, with four different staff members involved in aspects of her care between 2.30am and 7.30am, rather than a coordinated team approach or a single midwife taking overall responsibility for evaluating Ms B's condition. This has made it difficult to assign responsibility to any particular person, and herein lies my concern. I am unable to determine who responded to the 5.00am call bell. Further, I note that the midwife who commenced the CTG monitoring was not the midwife who was assigned to Ms B's care, and the midwife who commenced the CTG did not assume responsibility for reviewing the trace (of which I am critical, as discussed below). My view is that if the entirety of Ms B's care had been allocated to a single midwife, the lines of responsibility may not have been so blurred. I encourage the hospital to consider alternative evidence-based models of care allocation in high-pressure situations such as those that occurred that night.

73. I am also concerned with the paucity of documentation from medical and midwifery staff regarding Ms B's changing care plan and CTG assessments, particularly as there were a number of staff involved in providing her care, and actions taken by staff needed to be recorded. I note that Te Whatu Ora Hauora a Toi Bay of Plenty acknowledged that assessment of Ms B's CTG recordings should have been documented in the clinical records. I recognise that Ms B's care occurred in a rapidly evolving situation, and contemporaneous

note-taking may not have been practical in that circumstance; however, I consider that there should be a process for appending retrospective accounts to the record.

Conclusion

74. I consider that Ms B's blood pressure was monitored appropriately in line with Ministry of Health guidelines. Routine CTG monitoring (of the fetal heart rate) overnight was not expected with regard to the guidelines. Further, Ms B was experiencing irregular contractions when she was assessed at 2.40am, and as she was not in established labour at that time, a CTG was not indicated.

75. However, I am concerned that an assessment was not documented when Ms B rang the bell at 5.00am. This is in the context of a woman who had been admitted to the ward the night before in early labour with possible PET. However, I recognise that this was in the immediate aftermath of a clinical emergency that would have diverted the resources available at that time. Ms B was assessed by a midwife at around 6.20am when she was having regular contractions, and CTG monitoring was commenced at that time.

76. For women receiving continuous CTG monitoring, the trace should be reviewed at least every 15–30 minutes, and any abnormalities acted upon. I agree with my independent midwifery clinical advisor that the approximately 50-minute delay in reviewing Ms B's CTG on Day 2 would be viewed with moderate disapproval. There is no documentation of whether the CTG was reviewed prior to 7.20am, and this timeframe is not within RANZCOG fetal surveillance guidelines. There was a team approach to care delivery that night, with staff being affected by a clinical event and needing to go home during the shift. The midwife who commenced the CTG was diverted to the care of another patient, and no one assumed responsibility for reviewing the CTG trace until after the morning handover.

77. It is my opinion that regardless of the stress on the ward, Ms B had the right to services of an appropriate standard, and in my view this standard was not met. Accordingly, I find that Te Whatu Ora Hauora a Toi Bay of Plenty failed to provide services to Ms B with reasonable care and skill and breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights.

Opinion: RM D and another midwife — adverse comment

78. RM D had gone into work early to assist her colleagues and was working in a team to provide care to patients in the labour ward. She was not allocated responsibility for Ms B's care, but she did undertake Ms B's observations at 6.30am and set up the CTG monitoring at the request of a DHB midwife who was to 'attend to assess'.

79. The CTG was commenced at 6.24am and recorded the first fetal heart deceleration at approximately 6.32am. It is my expectation that when a staff member takes recordings, that person is responsible for critically evaluating and documenting the patient's condition, and

should hand over any concerns. However, there is no documentation in the notes, or on the CTG recording strip, that RM D reviewed the CTG, and it is unclear whether she was still with Ms B when the trace became abnormal.

80. While I acknowledge that RM D was completing a task on behalf of another midwife, and was under the impression that the midwife would attend shortly to review Ms B and the CTG trace, I consider that as the individual clinician who placed the CTG, RM D had the responsibility to check that it was not abnormal and document her findings before leaving Ms B unattended.

81. I am also concerned that the core midwife who asked RM D to commence CTG monitoring did not attend to assess the trace. If the midwife was unable to follow up with Ms B, my expectation is that this should have been handed over to another staff member to complete. As it was, Ms B was not reviewed until after handover when the morning shift midwife checked on her at approximately 7.20am.

Opinion: RM F — adverse comment

82. Ms B's PCR result of 48 (abnormal, indicating proteinuria, which is a diagnostic criterion for pre-eclampsia) was documented in the clinical notes at 11.40pm by RM F, but the result was not viewed or signed off by a doctor until the following day. Dr H had not specifically asked for the results and cannot recall whether they were brought to her attention. RM F acknowledges noting and documenting the PCR result, and that was the end of her involvement in Ms B's care.

83. RM Farmer advised that 'not notifying the medical staff of a significantly abnormal blood result would be viewed with moderate disapproval'. Given that the result was not signed off by a doctor until the following morning, I find it unlikely that Ms B's abnormal PCR test result was reported to medical staff on duty. Te Whatu Ora Hauora a Toi Bay of Plenty submitted that this would not have changed the plan for labour to be induced in the morning, so there was no necessity for the results to be reviewed overnight. However, regardless of whether an elevated PCR would have changed the plan of care, this was a medical decision, and clearly it is the standard of care for such results to be communicated to medical staff. I would be critical if RM F failed to bring this to the attention of Dr H to ensure that she had all relevant information when deciding the plan of care.

Changes made since events

84. Subsequent to these events, Te Whatu Ora Hauora a Toi Bay of Plenty undertook to make the following changes, as outlined in the Adverse Event Review:

- A review of Protocol 8 care delivery — Physiological Observation Standards for Inpatients;
- Consideration of the installation of a centralised CTG monitoring system to facilitate direct overview of fetal and maternal monitoring;
- Annual mandatory CTG training for staff, and an audit of training completed; and
- A reminder to staff of expected documentation standards, including retrospective documentation.

Recommendations

85. In response to the proposed recommendations made in the provisional opinion, Te Whatu Ora Hauora a Toi Bay of Plenty provided HDC with information regarding improvements within the maternity unit since the event took place:

a) The care delivery protocol 8 — Care Delivery — Physiological Observation Standards for Inpatients was reviewed and finalised (November 2022), and a Fresh Eyes CTG Monitoring pathway was implemented in May 2022. A fresh eyes review of patients with intrapartum continuous CTG monitoring requires CTG interpretation to be documented at least every 30 minutes and following significant clinical events, and clinical events must be recorded on the CTG tracing. Every hour, the patient's full clinical picture and CTG trace is reviewed with a clinical colleague, and an appropriate plan of care is developed. CTG stickers are completed and signed by both staff and fixed to the patient's clinical notes.

b) Te Whatu Ora Hauora a Toi Bay of Plenty provided an update on the plan to install a centralised CTG monitoring system to facilitate direct overview of fetal and maternal monitoring. Te Whatu Ora Hauora a Toi Bay of Plenty noted that centralised monitoring would result in CTG trace reviews not being undertaken in the woman's room as part of a holistic assessment, and centralised monitoring does not have the capacity to alarm and alert staff to a concerning trace, and it requires staff capacity for monitoring. Te Whatu Ora Hauora a Toi Bay of Plenty plans to implement BadgerNet (Maternity Clinical Information System), but not enable centralised CTG monitoring, in line with other hospitals using this system.

c) Te Whatu Ora Hauora a Toi Bay of Plenty has considered whether alarms should be used routinely on CTG monitors when women are unattended while monitoring is in progress, along with a request to the woman that she ring the nurse call bell if the alarm activates.

It told HDC that this information will be included in the Fetal Surveillance Policy Antenatal and Intrapartum review.

d) Te Whatu Ora Hauora a Toi Bay of Plenty provided HDC with staff attendance for the RANZCOG Fetal Surveillance Education Program (FSEP) [26] (which includes CTG monitoring), which staff are strongly recommended to complete. Te Whatu Ora Hauora a Toi Bay of Plenty noted that currently it is working to record staff engagement with the online (OFSEP) update course; and that CTG review meetings for staff are held every Wednesday.

e) Te Whatu Ora Hauora a Toi Bay of Plenty provided HDC with evidence of a midwifery documentation requirements course that was available to Maternity Unit staff in April and May 2023, and told HDC that documentation standards are included in the annual compulsory emergency skill training.

f) Te Whatu Ora Hauora a Toi Bay of Plenty provided HDC with information about new measures for supporting staff when exceptionally busy shifts arise on the labour ward, and allocation of patients when staff resources are stretched, including implementation of the following:

- A Clinical Midwifery Coordinator on every shift to provide clinical oversight and management of emergency events, and an Intensive Care Outreach Team to provide senior nursing support and management of acutely unwell patients on the wards;
- Clinical Communication Standards (July 2022) to enhance communication and handover of clinical information between staff; and
- A Variance Response Management protocol (December 2021) to identify a mismatch between patient care needs and staff capacity, and actions to be implemented in response to variance.

86. In addition to the above changes made, I recommend that Te Whatu Ora Hauora a Toi Bay of Plenty:

a) Provide Ms B with a written apology for the failures identified in this report. The apology is to be sent to HDC within three weeks of the date of this report, for forwarding;

b) In response to the recommendation made in the provisional opinion that Te Whatu Ora consider whether alarms should be used on CTG monitors when a woman is unattended while monitoring is in progress, along with a request to the woman that she ring the nurse call bell if the alarm activates, Te Whatu Ora Hauora a Toi Bay of Plenty told HDC that the Fetal Surveillance Policy — Antenatal and Intrapartum is under review and will include these directions. As such, I recommend that Te Whatu Ora Hauora a Toi Bay of Plenty provide HDC with a copy of the updated Fetal Surveillance Policy — Antenatal and Intrapartum within three months of the date of this report;

[26] The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) Fetal Surveillance Education Program includes CTG monitoring and trace analysis.

c) Provide HDC with an updated copy of staff who have completed the Fetal Surveillance Education Program that includes the online update course, within three months of the date of this report; and

d) Audit 20 clinical records (randomly selected over a number of days and staff) to identify whether CTG assessments have been documented in the clinical record in accordance with the Fresh Eyes CTG Monitoring pathway. If the audit does not show 100% compliance, Te Whatu Ora is to consider what further changes it can make in this area, and report back to HDC accordingly within nine months of the date of this report.

Follow-up actions

87. A copy of this report with details identifying the parties removed, except BoPDHB/Te Whatu Ora Hauora a Toi Bay of Plenty and Tauranga Hospital, and the advisors on this case, will be sent to Te Tāhū Hauora|Health Quality & Safety Commission and the New Zealand Midwifery Council, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

88. A copy of this report with details identifying the parties removed, except BoPDHB/Te Whatu Ora Hauora a Toi Bay and the advisors on this case, will be sent to Te Whatu Ora. Te Whatu Ora will be invited to consider this information in the context of work underway to address the current workforce challenges facing the health and disability system.

Appendix A: Independent clinical advice to Commissioner

Sections of this report have been redacted as they pertain to another provider. HDC has assessed issues regarding the provider as a separate matter from this investigation.

The following independent advice was obtained from RM Emma Farmer:

'**Your ref: C20HDC00753**

I, Emma Farmer, have been asked to provide an opinion to the commissioner on case number C20HDC00753. 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 30-year career and am currently employed as the Director of Midwifery, at Waitematā District Health Board.

I have read the following information provided to me:

1. Letter of complaint dated 29 April 2020
2. BoPDHB's response date 19 June 2020
3. … Lead Maternity Carer response dated 25 November 2020
4. Clinical records from BoPDHB covering period … 2019
5. Clinical records from the Lead Maternity Carer … covering the period … 2019

…

And the care provided by Bay of Plenty DHB:

1. The adequacy of the management plan put in place for [Ms B]
2. The adequacy of the overnight monitoring of [Ms B]
3. The appropriateness of the decision to leave [Ms B] "undisturbed" at 6am
4. Whether concerns were escalated to the midwifery team in a timely manner
5. The timeliness of reviewing and acting on the results of the CTG
6. The adequacy of the documentation
7. Whether earlier intervention was indicated in light of [Ms B's] high protein/ creatinine ratio
8. The adequacy of the relevant BoPDHB policies and procedures
9. Any other matters in this case that you consider warrant comment/amount to a departure from the accepted standard of care.

Firstly, I would like to acknowledge significant stress experienced by [Ms B] in having an emergency procedure and finding unexpectedly that her baby was extremely unwell needing a period of expert level care. These events take a significant toll on the mental wellbeing of parents and family. I also acknowledge that [Ms B] sadly missed spending time with [a family member] in her last days.

…

Names have been removed (except BoPDHB/Te Whatu Ora Hauora a Toi Bay of Plenty, Tauranga Hospital, and the advisors) to protect privacy. Identifying letters are assigned in alphabetical order and bear no relationship to the person's actual name.

Care provided by BoPDHB

[Ms B] was admitted to Tauranga Hospital at 21.00 on [Day 1] with a diagnosis of hypertension and a differential diagnosis of pre-eclampsia. On admission maternal observations were recorded on the MEWS (Maternity Early Warning Score) chart. Blood pressures were repeated at 21.20, 21.25, 22.00 and 22.30, when the blood pressure had settled to 140/85. An intravenous line was sited and bloods taken to assess for pre-eclampsia "PET". Intravenous fluids were commenced to correct dehydration and a cardiotocograph of the fetal heart rate pattern was also commenced. Sometime after admission possibly after 22.00 a request was made for obstetric review. This would be considered usual practice.

At either 22.20 or 23.20 (the records have been altered so it is not possible to tell the exact time) [Ms B] is reviewed by [Dr H], who again queries a diagnosis of pre-eclampsia and makes a plan for 4 hourly blood pressure observations, await PCR (urine protein/creatinine ratio) and blood test results and proceed with induction of labour in the morning. The national guidelines on the diagnosis and treatment of hypertension and pre-eclampsia in pregnancy[1] recommends the following frequency of observations:

"4–6 hourly blood pressure (except overnight when an interval of 8 hours is acceptable)" p12 and *"Cardiotocography (CTG) daily if inpatient" p13*

The frequency of overnight blood pressure observations (22.30, 02.40, 06.30) meets these recommendations and the plan of obstetric care.

It would be usual practice to plan an induction or augmentation of labour to start at the beginning of the day shift where more staff are on duty, especially in this situation as the blood pressure had appeared to settle. It is not clear from the records if the Obstetric registrar was aware of the PCR result. The PCR was abnormal and this may have resulted in an earlier intervention. Not notifying the medical staff of a significantly abnormal blood result would be viewed with moderate disapproval, but it is not clear from the records if this occurred or not.

The cardiotocograph trace recorded between 21.10 and 23.10 shows some abnormal features during the earlier period, this includes reduced beat to beat variability. The latter part of the CTG trace shows reassuring features such as normal variability and accelerations from the baseline. The CTG strip is signed by [Dr H] at just before 23.10 and the trace is discontinued shortly after. There are no instructions to further monitor the fetal heart rate overnight and this would be usual practice in this situation with an expectation that further monitoring would be commenced in the morning or if labour established.

[1] Ministry of Health. 2018. Diagnosis and Treatment of Hypertension and Pre-eclampsia in Pregnancy in New Zealand: A clinical practice guideline. Wellington: Ministry of Health.

At 06.00 a note is made that there has been no contact from [Ms B] overnight and that she be allowed to rest. This would be considered usual practice, as the next set of observations was not due until 06.30.

At 06.30 a midwife (name undecipherable) is called to the room, she notes that contractions are occurring every 5 minutes and that [Ms B] appears tired. Blood pressure remains stable at 150/88. A CTG trace is commenced. The CTG trace is abnormal from 06.32 with decelerations from a baseline of 140bpm down to 80bpm with slow recovery. This CTG appears to go undetected until 07.20 nearly one hour later. I understand from the investigation completed by BoPDHB that the shift had been significantly busy and staff were obviously very distracted. Not reviewing a CTG trace for 50 minutes after commencement would be viewed with moderate disapproval. Once the trace was reviewed the appropriate referral to obstetric care was made and [Ms B] was transferred to theatre for a Category 1 (Urgent) caesarean section. [The baby] was born at 07.53 with Apgar score of 1, 3 and 5. He was later transferred to [a main centre hospital] for tertiary neonatal care.

I have requested a copy of the BoPDHB Hypertension in pregnancy guidelines, the response was that they follow the national guidelines and do not have a localised version.

I have limited my response to the scope of midwifery practice and have not commented on the obstetric care or decision making, as this would require the opinion of an obstetric specialist.

I hope this advice will assist you in your investigation, please contact me if I can be of further assistance.

Kind regards

Emma Farmer
RN RM DPSM MHSc Midwifery

Addendum 18 September 2022

I have reviewed the advice provided by ACC and the response by Bay of Plenty DHB. In light of these my advice remains unchanged. I would add that the extraordinary events that occurred on this night would have put the staff under extreme pressure and I acknowledge the efforts made by staff to work additional hours to meet the care needs of mothers and babies in their service.'

Appendix B: Independent clinical advice to Commissioner

The following independent advice was obtained from Dr John Short:

'**Complaint: [Ms B]/Bay of Plenty District Health Board**

Your ref: C20HDC00753

I have been asked to provide advice in this case (C20HDC00753). I have read and agree to follow the Commissioner's guidelines for independent advisors. I can confirm there is no conflict of interest.

I am a specialist Obstetrician and Gynaecologist, vocationally registered in New Zealand since 2007. I have worked as a senior medical officer in Obstetrics and Gynaecology at Christchurch Women's Hospital since 2006.

I have been provided with relevant documents, including the consumer complaint, hospital records and reports from the clinicians involved. I have been asked to comment specifically on the following:

1. The adequacy of the obstetrics assessment and planning on [Ms B's] admission to Tauranga Hospital by the obstetrics team.
2. The adequacy of the monitoring of [Ms B's] blood pressure by the obstetrics team.
3. The adequacy of the CTG monitoring and interpretation by the obstetrics team.
4. The reasonableness of the decisions made by the obstetrics team during [Ms B's] stay at Tauranga Hospital.
5. Whether there was any indication for [Ms B] to undergo an earlier caesarean section.
6. The adequacy of the relevant policies and procedures in place at BoPDHB.
7. The adequacy of the documentation in this case.
8. Any other matters in this case that you consider warrant comment/amount to a departure from the accepted standard of care.

Background

[Ms B] was in her first pregnancy with an expected date of delivery of … The pregnancy was relatively uncomplicated prior to [Day 1]. That evening she was seen in the maternity dept at Tauranga Hospital, having been referred by her Lead Maternity Carer, with high blood pressure. Key points to note are that induction of labour (IOL) was planned for [Day 3] and [Ms B's] booking Body Mass Index was very increased at 39.

An initial assessment was carried out for pre-eclampsia. This included blood pressure (BP) readings, analysis of urine for protein and blood tests. A cardiotocograph (CTG) was normal, indicating a healthy baby. [Ms B] was having irregular contractions. An

examination of the cervix revealed it 2cm thick and 1–2cm dilated. The first BP (at 2105) was elevated at 166/102 (high), although it is commented that this was with a small cuff. For adults with high BMI a large cuff should be used to avoid overestimation (ie falsely high readings) of blood pressure. Further BP readings were more reassuring and by 2230 the BP was stable at 140/83 (normal).

[Ms B] was seen at 2300 by [Dr H]. The working diagnosis was pre-eclampsia and early labour with a long latent phase. Blood and Urine results were not available at that time. A plan was made with admission for observation and analgesia and possible IOL the following morning. Observation included BP checks every 4 hours.

Blood pressure at 0230 was 142/84 (normal).

[Ms B] was seen at 0630 on [Day 2] with increasing contractions, every 5 minutes. Blood pressure at this time was 150/88 (borderline/high). A CTG was commenced. This CTG was abnormal from the outset, indicating fetal hypoxia. At approximately 0700 a vaginal examination (VE) was performed revealing the cervix to be 3cm dilated. The fetal membranes were ruptured (ARM) revealing meconium, a sign of fetal distress. The CTG remained abnormal and [Ms B] was transferred to the operating theatre for a caesarean section. This was performed by [Dr H], with the birth at approximately 0753. The baby was in poor condition. Analysis of cord blood revealed pH levels of 7.122 from the umbilical artery and 7.258 from the umbilical vein, indicative of acute hypoxia. Birthweight was 3500g. The baby remained in poor condition requiring resuscitation and transfer to [a main centre hospital] for ongoing care.

Comments

In response to the specific questions

1. *The adequacy of the obstetrics assessment and planning on [Ms B's] admission to Tauranga Hospital by the obstetrics team.*

This appears to have been adequate. It is unclear if any attempt was made to chase up the urine and blood results that were not available at the time of initial assessment, although this is not relevant to the outcome.

2. *The adequacy of the monitoring of [Ms B's] blood pressure by the obstetrics team.*

This was adequate. The initial readings were every 30 minutes until stable and then every 4 hours.

3. *The adequacy of the CTG monitoring and interpretation by the obstetrics team.*

The admission CTG was recognised as normal. There was no indication to repeat this overnight. The standard frequency for CTG monitoring for an antenatal would vary depending upon the specific reason but would not be more than twice or thrice daily. Therefore, the frequency of monitoring was adequate, as was the interpretation.

4. *The reasonableness of the decisions made by the obstetrics team during [Ms B's] stay at Tauranga Hospital.*

The decisions on [Day 1] were reasonable.

It is difficult to follow the decision-making process on [Day 2] (see snapshot from notes below).

[Hand-written clinical notes.]

These notes would suggest that the midwife made the decision to move the patient to the operating theatre at about 0730, with transfer occurring at 0735. The obstetrician was not present until 0743. It is not clear if [Dr H] was involved in verbal discussions prior to being physically present. Also, I understand it was an extremely busy shift and it is entirely plausible that the entire obstetric team was busy elsewhere.

However, the ultimate decisions made on [Day 2] were correct and very reasonable.

5. *Whether there was any indication for [Ms B] to undergo an earlier caesarean section.*

In my opinion it would have been reasonable to undergo a caesarean section from 0705 on [Day 2]. At approximately 0700 there was a fetal heart rate deceleration which took 7 minutes to return to baseline. For the entire CTG prior to this (approx. 30 minutes) there were prolonged decelerations. Interestingly the CTG was relatively normal following this bradycardia, until at least 0720. Therefore, one cannot be critical of any further delays in delivery, especially as the team were extremely busy. Even had a decision for caesarean section been made earlier this would have been by 30 minutes at the most and is unlikely to have affected the final outcome.

6. *The adequacy of the relevant policies and procedures in place at BoPDHB.*

These are adequate.

7. *The adequacy of the documentation in this case.*

As noted above, there is some deficiency in documentation on the morning of [Day 2] in that there is no pre-operative documentation from [Dr H]. The doctor has made adequate operative notes and completed the consent form appropriately (although consent was verbal, not written). It was apparently a very busy shift and events were unfolding towards the usual end of the shift (0800) and it is entirely plausible that [Dr H] did not have the opportunity to make complete notes. I also note [Dr H] was a locum although it is not clear if that was just for that shift or longer, therefore an opportunity to return to make retrospective notes may not have arisen.

8. *Any other matters in this case that you consider warrant comment/amount to a departure from the accepted standard of care.*

I have no further comment to make.

Conclusion

Whilst this was clearly a very stressful and upsetting time for [Ms B] I can find no evidence of substandard care. The admission plan was appropriate, and the monitoring was normal until shortly before delivery. A slightly earlier birth, by approximately 30 minutes, would have been justified. In the context of a busy maternity unit this is within reasonable limits and earlier is unlikely to have made a significant difference to the final outcome. There are deficiencies in the record-keeping by the obstetric registrar, [Dr H], although there are potential mitigating reasons for this. However, [Dr H] should still be reminded of the importance of good record keeping. Overall, I am satisfied that the care provided to [Ms B] by BoPDHB was reasonable.

I hope you find this report helpful and please contact me if you require further information.

Yours Sincerely,

John Short'

Appendix C: Relevant standards

National guidelines on the diagnosis and treatment of hypertension and pre-eclampsia in pregnancy: A Clinical practice guideline (Ministry of Health 2018)

Table 3. Monitoring requirements for women with hypertensive disorders in pregnancy:

- Pre-eclampsia/expectant management (hospital inpatient)

  4–6 hourly blood pressure (except overnight when an interval of 8 hours is acceptable)

  Cardiotocography (CTG) daily if inpatient

Intrapartum Fetal Surveillance Clinical Guideline — Fourth Edition (2019 RANZCOG)

Maintaining Standards in Intrapartum Fetal Surveillance:

- For women receiving continuous CTG, the trace should be reviewed at least every 15–30 minutes and any abnormalities acted upon. It should be regularly recorded, either by written or electronic entry, in the medical record that the CTG has been reviewed.
- Consideration should be given to a policy of a second clinician independently assessing the CTG periodically