Obstetrician and Gynaecologist, Dr A
Hutt Valley District Health Board

A Report by the
Deputy Health and Disability Commissioner

(Case 17HDC01376)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Contents

Executive summary

1. This report concerns the care provided to a woman during her pregnancy, induction of labour, and birth. The lead maternity carer (LMC) was a self-employed obstetrician and gynaecologist. The obstetrician carried out ultrasound scans in his office to monitor the fetal growth, but he did not record the outcomes in the clinical notes and did not detect that there was asymmetrical intrauterine growth restriction. At 38 weeks' gestation the woman was diagnosed with pre-eclampsia and was admitted to hospital for an induction of labour.

2. Throughout the induction of labour the woman experienced excessively frequent contractions (tachysystole), and although this was a high-risk birth, fetal heart rate (FHR) monitoring was not continuous. The clinicians involved in her care failed to recognise and address the potential accumulative significance of the tachysystole. As labour progressed the fetal heart rate was not recognised as significantly abnormal and the baby was born with a brain injury consistent with hypoxic ischaemic injury.

Further information

3. In November 2018, Hutt Valley DHB commissioned an independent external review of its maternity services. The review identified several areas of risk that threatened the safety of the service, including a severe staff shortage, and made a number of recommendations. In June 2019, Hutt Valley DHB accepted the majority of these recommendations.

Findings

4. The Deputy Commissioner found the obstetrician in breach of Right 4(1) and Right 4(2) of the Code. She was critical that the obstetrician (a) did not institute a written plan, shared with the woman, to manage her antenatal risk factors; (b) carried out suboptimal growth assessment resulting in the asymmetrical IUGR not being detected; (c) did not discuss monitoring and risks with the woman when pre-eclampsia was first identified; (d) did not document in the care plan his expectation that there should be continuous FHR monitoring; (e) did not recognise the cumulative risk of the ongoing tachysystole, or the fetal distress at 3.00am, and act urgently on the CTG abnormalities; and (f) did not meet the Medical Council of New Zealand standards on record-keeping. As a consequence of these failings, the obstetrician did not identify that the baby was compromised.

5. The Deputy Commissioner found Hutt Valley DHB in breach of Right 4(1) of the Code. She was critical of systemic failures at the DHB, as identified in the external review of Hutt Valley DHB maternity services commissioned in 2018. These failures left staff without clear instructions and support, and resulted in a failure to monitor the woman and her baby adequately during the induction process, and to recognise the significance of the ongoing tachysystole, or, where it was recognised, to escalate the abnormal CTG by requiring the obstetrician's earlier attendance.

Recommendations

6. The Deputy Commissioner recommended that the Medical Council of New Zealand consider undertaking a further competence review of the obstetrician, and that he provide an apology to the woman and undertake further training on the identification of risk factors, including intrauterine growth restriction, antenatal assessments, induction of labour, and interpretation of FHR monitoring.

7. The Deputy Commissioner recommended that Hutt Valley DHB (a) report back to HDC on the amendments to its clinical procedures and implementation of the recommendations made in the 2018 external review; (b) develop a policy regarding induction of labour involving private obstetricians; (c) provide training to hospital midwives about advocating for women and seeking advice from senior clinicians; (d) review its FHR monitoring equipment; (e) provide training to midwifery staff on the recognition of excessively frequent contractions; and (f) provide evidence that all hospital midwives are undertaking annual fetal surveillance training.

Complaint and investigation

8. The Health and Disability Commissioner (HDC) received a complaint from Mrs B about the services provided to her by Dr A and Hutt Valley District Health Board (Hutt Valley DHB). The following issues were identified for investigation:

- *Whether Dr A provided Mrs B with an appropriate standard of care during her pregnancy and delivery in 2017.*
- *Whether Hutt Valley District Health Board provided Mrs B with an appropriate standard of care in 2017.*

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:

Dr A	Self-employed obstetrician and gynaecologist/ Lead Maternity Carer/provider
Mrs B	Complainant/consumer
Hutt Valley DHB	Provider

11. Further information was received from:

RM D	Midwife, Hutt Valley DHB
RM C	Midwife, Hutt Valley DHB
RM E	Midwife, Hutt Valley DHB
RM F	Midwife, Hutt Valley DHB

RM G	Midwife, Hutt Valley DHB
RM H	Midwife, Hutt Valley DHB
Dr I	Obstetrician and gynaecologist, Hutt Valley DHB

Also mentioned in this report:

RM J	Midwife
Dr K	Obstetrician and gynaecologist

12. Information from the Accident Compensation Corporation (ACC) was also reviewed.

13. Independent clinical advice was obtained from obstetrician and gynaecologist Dr Ian Page (**Appendix A**) and registered midwife (RM) Linda Burke (**Appendix B**).

Information gathered during investigation

Background

14. When Mrs B, aged 29 years, became pregnant, she chose self-employed[1] obstetrician and gynaecologist Dr A[2] to be her lead maternity carer (LMC). This was Mrs B's first pregnancy.

Antenatal care

15. At 9+4 weeks' gestation, Mrs B attended her first antenatal appointment with Dr A. Dr A told HDC that Mrs B was healthy with no obvious risk factors to her pregnancy. However, the booking form states that her blood pressure (BP) was raised at 145/89mmHg.[3] Dr A stated that he thought that Mrs B's elevated blood pressure "was caused by anxiety associated with her first visit".

16. The booking form records that Mrs B's mother had pre-eclampsia, and the pregnancy record notes a family history of hypertension (high blood pressure) in her father and grandfather. Mrs B told HDC:

> "[Dr A was] informed at my first visit of my family history, which included my mother having preeclampsia during my gestation and my father's hypertension and heart problems."

17. Antenatal appointments with Dr A continued throughout the pregnancy until 38 weeks' gestation. At these appointments Dr A checked Mrs B's BP, carried out urinalysis, and estimated the fetal weight. Dr A told HDC that at each visit he took individual

[1] Dr A was working as an independent contractor in private practice. He had an access agreement with Hutt Valley DHB for childbirth and delivery.
[2] Dr A is registered with the Medical Council of New Zealand in a general scope (obstetrics and gynaecology).
[3] Hypertension in pregnancy is defined in the Hutt Maternity Hypertensive Disorders including Pre Eclampsia Policy, 2016, as BP ≥140/90mmHg.

measurements of fetal biometry, which included both fundal height measurements[4] and ultrasound scan (USS) biometry to monitor the fetal growth. However, he did not record the fundal height measurements or the USS biometry. Dr A stated: "It is my usual practice to record the individual measurements, however, regretfully I did not do so for [Mrs B]." He said that this was because he felt that the measurements were normal. However, Mrs B told HDC that Dr A "never performed a fundal measurement".

18. Dr A said that he used a customised fetal growth chart, and the estimated fetal weight for the baby fell within normal growth parameters based on the measurements he performed at the time. However, the chart is not in Mrs B's records, and has not been provided to HDC by Dr A.

Day 1

19. On Day 1,[5] at 37+5 weeks' gestation, Mrs B attended an antenatal appointment with Dr A and was found to have an elevated BP of 148/94mmHg with proteinuria[6] "+++". Mrs B told HDC that she had "swollen calves and ankles for multiple visits to [Dr A] throughout the third trimester". However, Dr A told HDC that Mrs B was asymptomatic for pre-eclampsia.[7]

20. Dr A performed a bedside USS and estimated the fetal weight to be 3,375g. He told HDC that all other parameters, including the fetal position, movements, and amniotic fluid, were reassuring. He ordered blood tests to check for pre-eclampsia.

Day 2

21. Dr A told HDC that the blood test results were within normal limits except for the Protein Creatinine Ratio (PCR)[8] result, which was elevated at 41 (normal range <30). Based on the raised BP and abnormal PCR result, Dr A diagnosed early pre-eclampsia. He telephoned Mrs B to explain the results and booked her for an induction of labour (IOL) on Day 4.

22. Dr A stated that he then managed Mrs B's pregnancy as high risk, requiring close monitoring to manage any complications. However, Mrs B told HDC: "At the time, my labour, induction, and delivery was never classed as high risk. I was never told I was a high risk patient."

Day 3

23. Mrs B saw Dr A only one more time for monitoring prior to the IOL on Day 4. Her BP was 145/93mmHg and she had protein in her urine "++". Dr A did not record whether Mrs B had any other signs or symptoms of pre-eclampsia.

[4] Measurement of the distance from the mother's pubic bone (symphysis pubis) to the top of the womb. The measurement is then applied to the gestation and compared with normal growth on a customised growth chart.
[5] Relevant dates are referred to as Days 1–5 to protect privacy.
[6] Urinary protein excretion is considered abnormal in pregnant women when it exceeds 300mg in 24 hours at any time during gestation. Pre-eclampsia is the leading diagnosis that must be excluded in all women with proteinuria first identified after 20 weeks of gestation.
[7] Showing no symptoms.
[8] Urinary protein creatinine ratio. A urine protein test, such as a dipstick urine test, screens for protein in the urine, which can indicate pre-eclampsia and other conditions.

Induction of labour

Day 4

24. At 8.00am on Day 4, Mrs B was admitted to the Birthing Suite for the IOL. Core midwife[9] RM H greeted Mrs B and discussed the IOL process. A cardiotocograph[10] (CTG) admission tracing was started, which showed a normal fetal heart rate (FHR) of 135bpm,[11] normal variability, and no decelerations. Mrs B's observations were normal except for an elevated BP of 148/98mmHg. An intravenous (IV) line was sited and bloods were taken.

25. At 8.30am Dr A viewed the CTG and recorded that it was reactive. He performed a vaginal examination (VE) and found the cervix to be closed, long, and posterior. To induce labour, Dr A inserted 2mg of Prostin gel[12] vaginally. Dr A made a care plan for BP monitoring, pre-eclampsia blood investigations, and pain relief, and for review in five to six hours' time if labour had not started. He did not record a plan for fetal monitoring.

26. Dr A told HDC that he advised the team of midwives verbally that Mrs B was high risk and required continuous monitoring, and felt that "this would be sufficient". He said that this was his usual practice at the time.

27. Following the insertion of the Prostin, a CTG was recorded for 40 minutes. RM H entered in the clinical notes the findings of the post Prostin CTG, and recorded that the FHR was satisfactory with good variability, accelerations, and no decelerations. Mrs B's BP was 148/92mmHg, her pulse was 76bpm, and her temperature was 36.4°C. RM H recorded: "No uterine contractions." She said that she updated Dr A.

28. Dr A reviewed Mrs B at 2.30pm. No concerns were noted, and he recorded that the CTG was reassuring, that Mrs B had mild uterine activity, and that the FHR was reactive. Dr A performed a VE, which showed that the cervix had not changed.

29. RM H stated that she was aware that the CTG showed tachysystole,[13] although that is not recorded in the notes. She told HDC that she commented to Dr A that "there [was] a lot of uterine activity", and that Dr A acknowledged her statement but decided to insert a second dose of Prostin (1mg). Dr A's plan was to review Mrs B again in four to six hours' time. He told RM H that he was available to attend if required.

30. At 3.00pm, RM H handed over care to staff on the next shift. The CTG was in progress at the time of handover.

[9] A midwife employed by the DHB and working rostered shifts.
[10] 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.
[11] Beats per minute.
[12] A vaginal gel used in the induction of labour. The prostaglandin stimulates uterine contractions.
[13] Uterine tachysystole is defined as the presence of more than five active contractions in ten minutes without fetal heart rate abnormalities (as per Hutt Valley DHB's Uterine Hyperstimulation Policy, and the RANZCOG definition).

31. At 3.40pm, the Associate Clinical Midwifery Manager (ACMM), RM F, checked and reported on the CTG. She recorded that the beginning of the CTG showed uterine activity of five contractions in ten minutes. She told HDC that her entry indicated that she had recognised the tachysystole. The CTG was then discontinued.

32. RM F told HDC that she does not recall specific details relating to Mrs B, but surmised that the assigned core midwife had been otherwise engaged at the time that she reviewed Mrs B. RM F said that her usual practice is to review the previous CTG trace and the obstetric plan. She stated: "I [expect] I was reassured that [Mrs B's] obstetrician had seen the trace and made a plan which was being followed."

33. At 6.00pm, Mr and Mrs B returned from a walk, and core midwife RM E checked the FHR, which was 118–130bpm over one minute. RM E recorded that Mrs B's BP was elevated at 142/96mmHg, but was stable, and there were no concerns.

34. At 6.40pm, Dr A attended and reviewed Mrs B. He noted that there were frequent mild contractions, and that the FHR was normal. No CTG monitoring was in progress. Dr A told HDC:

> "I discussed with [Mr and Mrs B] that we would continue monitoring her and her baby overnight with a plan to continue with active induction the following morning if she had not gone into labour overnight."

35. There was no discussion about using the bath for pain relief, and the care plan did not specify continuous monitoring by CTG.

36. From 8.35pm to 9.50pm, Mrs B spent time in the bath. RM E recorded that Mrs B's contractions were a little stronger, lasting 30 seconds, that fetal movements were good, and that the FHR was 145–155bpm. There was no CTG monitoring, as Mrs B was in the bath.

37. Just before 9.50pm, Dr A rang to check on Mrs B's progress. RM E informed him about the fetal movement and FHR, and told him that a CTG and BP monitoring would be completed once Mrs B was out of the bath. Dr A advised that a VE should be performed if Mrs B requested pain relief.

38. Dr A stated that when he rang the hospital for an update, he was not aware that Mrs B "would not have been monitored in the bath due to the need to be connected to electrical equipment". He said that there could have been a period of hypoxia that went unnoticed while Mrs B was not monitored by CTG.

39. At 9.50pm, Mrs B was out of the bath, and RM E recommenced the CTG. RM E told HDC that "[t]he CTG showed a baseline rate of 140, variability greater than 6 and deceleration down to 100 lasting only 15 seconds with quick recovery". RM E noted that Mrs B's BP was 150/98mmHg, and that she was having frequent contractions, "5:6/10" lasting 30 seconds, and that there was tachysystole.

40. RM E rang Dr A to inform him of the CTG results and the tachysystole. Dr A told HDC: "I considered that this was tachysystole rather than hyperstimulation syndrome [as] the CTG was normal and the baby was coping well." He requested that RM E perform a VE, and gave a verbal order for pethidine to be given if requested by Mrs B.

41. At 10.10pm, RM E carried out a VE. There was very little change from the assessment earlier in the day. Mrs B's BP was elevated at 150/98mmHg. At 10.15pm, RM E rang Dr A to notify him of the VE findings and Mrs B's BP. Dr A gave no new orders at that stage. No ongoing plan for fetal monitoring was documented. Mrs B declined pain relief at that time.

42. RM E told HDC: "I felt uneasy about [Dr A's] plan, that did not include any new orders, given the concerning CTG results." She said that she discussed the CTG, the tachysystole, and her findings with the on-call obstetrics and gynaecology registrar, Dr I, who was present in the duty room when she called Dr A. RM E stated: "[Dr I] reassured me of [Dr A's] plan." RM E said that she did not document the conversation because Dr I did not provide care to Mrs B.

43. Dr I told HDC that she has limited recollection of this case, and "had not been consulted prior to this point in [Mrs B's] care about the CTG itself, the frequency of contractions or any other issues".

44. By 10.30pm, the CTG had been discontinued and Mrs B returned to the bath.

45. At 11.00pm, RM E completed a verbal handover to the incoming midwife, RM D, who was a new graduate midwife, and RM C. RM E said that Dr I was also present during the handover. RM E stated that she was still concerned about the CTG results despite Dr I's reassurance, so she showed them to the incoming midwives and told them that CTG monitoring should be continued. RM E did not record her instructions to the incoming midwives.

46. RM D said that at 11.30pm Mrs B rang the bell to advise that she was ready for the CTG and BP check. Mrs B's heart rate (80bpm) and temperature (37.2°C) were within the normal range. RM D stated that Mrs B's BP of 158/94mmHg was similar to the BP taken by RM E (150/98mmHg), and at that time Dr A had not initiated any further action. RM D said that Dr A's advice had been to medicate with labetalol if the systolic pressure was over 160mmHg or the diastolic pressure was over 100mmHg and, although close to those levels, it did not meet those parameters.

47. RM D said that the CTG was recommenced and showed tachysystole of five to seven contractions in ten minutes, and that the contractions were lasting around 30–45 seconds.

48. RM D stated that she discussed the tachysystole with RM C and Dr I, but the discussions are not recorded in the notes.

49. RM D stated that RM C explained that Mrs B was experiencing tightening consistent with a Prostin tightening pattern, and that administration of pethidine would help Mrs B to rest. RM C told HDC that she cannot recall discussing the CTG with RM D, but said: "[T]his is not

to say she did not approach me to discuss this." RM D also stated that Dr I looked at the CTG and agreed with the plan, as there had been no cervical change and Mrs B had had a long day. Dr I has no recollection of these discussions, which were not documented.

Day 5

Administration of pethidine

50. RM D made a retrospective entry in the clinical notes the following day[14] that states that she showed the CTG to RM C at 12.00am before administering pethidine. RM D noted that the CTG was reassuring and that RM C recommended administering a partial dose of 25mg pethidine intravenously (IV) with 10mg Maxolon, followed by 75mg pethidine intramuscularly (IM).[15]

51. At 12.05am, RM D administered Mrs B 25mg IV pethidine for pain relief, and 10mg metoclopramide (Maxolon) for nausea. RM D did not perform a VE prior to the administration of the pethidine, and told HDC: "I did not continue the CTG or do a vaginal examination at that time because I did not think that [Mrs B] was in active labour."

52. Hutt Valley DHB told HDC that a VE would be usual practice but was not conducted prior to the administration of pethidine as one "had been conducted 1 hour and 20 minutes prior and the cervix had remained unchanged and unfavourable".

53. RM D told HDC that after she administered the IV pethidine, there was a decrease in the FHR, so she rang the bell and RM C attended. The FHR recovered to baseline and there was normal variability after three minutes. RM D told HDC: "I attributed the drop in FHR to a drop in [Mrs B's] BP as it was 142/76 when I measured it at the time of the prolonged deceleration."

54. RM D said that Mrs B's husband queried whether an IM dose of pethidine should be administered owing to the FHR changes. She said that she decided to leave the CTG on before administering an IM dose to ensure that the FHR remained normal.

55. RM D stated that at 12.25am she took the CTG trace out of the room to consult with RM C before administering the IM pethidine. RM D again documented in the notes retrospectively (the following day) that the CTG was normal and contractions were five to seven in ten minutes. RM D reassured Mr and Mrs B that the CTG trace was now normal, and Mrs B chose to have the IM dose at that time, as the IV pethidine dose was not providing strong enough pain relief. At 12.30am, RM D administered 75mg IM pethidine. Mrs B reported that she was more comfortable and would try to rest.

56. At 12.40am, RM D discontinued the CTG monitoring. The CTG is documented as normal. RM D said that she did not continue the CTG because she did not think that Mrs B was in active labour. In addition, RM D stated that there was no guideline around continued monitoring when administering intrapartum pethidine.

[14] At 11pm.
[15] Administered into a muscle.

57. RM D said that another woman arrived soon after she left Mrs B, and she supported this woman in labour and facilitated the birth. The woman's LMC arrived about 2.10am.

Rupture of membranes

58. At 2.15am, Mrs B rang the bell to report that her membranes had ruptured. RM C attended and relayed to RM D that the liquor was clear and that Mrs B would ring the bell once she had finished in the toilet so that they could put the CTG back on. RM C said that she did not have any reason to view the CTG at that time.

Delivery

59. At 2.30am, Mrs B rang the bell and RM D attended. Mrs B was pushing involuntarily during contractions. RM D conducted a VE and found that Mrs B's cervix was fully dilated and the amniotic fluid was clear with the presenting part at station +1.[16]

60. The CTG was recommenced and showed an FHR of 80bpm with no sign of recovery after one minute. RM D rang the emergency bell. RM G and Dr I responded.

61. RM D said that Dr I did not enter the room, but instructed her to encourage Mrs B to push. Dr I contacted Dr A, and RM G arranged for a paediatric house surgeon to attend the birth because pethidine had been administered within four hours of the birth, and this can affect the respiratory function of a newborn.

62. At 2.45am, RM D recorded in the notes that the FHR was "showing early deceleration on contraction recovering well".

63. The DHB advised that at 2.41am the fetal heart component of the CTG machine was not reliable, and that it would have been advantageous to place a fetal scalp electrode at this point because the CTG depicted accelerations with contractions. The DHB considered that at this stage of labour this should have raised a suspicion that the CTG was monitoring the maternal pulse rather than the fetal heart. RM D stated that she did not apply a fetal scalp electrode because she was sure that what she was hearing was the FHR rather than the maternal pulse. She told HDC: "It appeared to go down with the contractions and recover afterwards."

64. However, an ACC expert advisor considered that at 2.45am the CTG showed a baseline rising from 140bpm to 160bpm with severe variable decelerations to 100bpm lasting two minutes each, and that there was virtually no recovery time between decelerations.

65. At 3.00am, Dr A arrived at the delivery suite and noted on examination that Mrs B was fully dilated and pushing. Dr A attended to the birth, and RM D supported Mrs B. RM G left the room, as Dr A had taken over management of the delivery.

66. Dr A told HDC:

[16] "Station" is an assessment that determines the descent of the fetal head through the woman's pelvis using the ischial spines as an anatomical mark. The station is measured in centimeters above (negative) or below (positive) the ischial spines.

> "I did review the CTG and I did recognise that it was abnormal, however [Mrs B] was at this stage pushing effectively and I felt that the baby would be born quickly following. The CTG was indicating there was compression of the baby's head as it was coming through the pelvis, and not on its own an indication of fetal compromise."

67. Dr A stated that "[t]he fetal heart rate was decelerating with contractions but recovering quickly". Mrs B was encouraged to push, which she did effectively. The maternal pulse was not documented, and the CTG machine used did not record simultaneous FHR and maternal heart rate.

68. Baby B was born at 3.20am.

Postnatal care

69. Baby B weighed only 2,660g and showed asymmetrical intrauterine growth restriction. The paediatrician involved in the care of Baby B stated that the paediatric house surgeon was present at the delivery and noted that Baby B passed meconium around the time of delivery, and the presence of meconium "behind baby" on delivery was documented in the NICU[17] Retrieval — Admission note.

70. Dr A recorded that Baby B had reduced muscle tone and poor respiratory effort, and that care was provided by the paediatric house surgeon, who commenced resuscitation measures. Intermittent positive pressure ventilation (IPPV) was administered via a Neopuff circuit, and oxygen was administered, as Baby B's oxygen saturation levels were sub-optimal.

71. Baby B had Apgar[18] scores of six at one minute, nine at five minutes, and ten at ten minutes. The paediatrician said that Baby B's umbilical cord blood gases indicated severe acidosis[19] with a pH of 6.76, a low bicarbonate of 14, a high base excess of –21, and a high lactate of 16.

72. At 4.21am, Baby B was admitted to SCBU[20] and placed on continuous positive airway pressure (CPAP) because of ongoing respiratory distress. She was passively cooled and then started on active cooling, in order to prevent any further neurological damage due to neonatal encephalopathy.[21]

[17] Neonatal Intensive Care Unit.
[18] Apgar stands for "Appearance, Pulse, Grimace, Activity, and Respiration". Each is scored on a scale of 0 to 2, with 2 being the best score. The five scores are totalled for the Apgar score.
[19] A low pH and high level of lactate indicate acidosis, which is associated with hypoxia.
[20] Special Care Baby Unit.
[21] Neonatal encephalopathy (NE) is defined by signs and symptoms of abnormal neurological function in the first few days of life in an infant born at term. There is difficulty initiating and maintaining respirations, a subnormal level of consciousness, and associated depression of tone and reflexes, and possibly seizures. Encephalopathy is commonly caused by a lack of oxygen during birth.

73. Within 2½ hours of her birth, Baby B was transferred to another district health board (DHB2) for further treatment and active cooling.[22] Dr A arranged for the obstetric team at DHB2 to take over Mrs B's postnatal care while she was with Baby B in DHB2, as Mrs B's pre-eclampsia required further monitoring.

74. Further diagnostic testing revealed that Baby B had a brain injury consistent with hypoxic ischaemic injury.

Further comment — Dr A

75. Dr A said that he kept in telephone contact with Mr and Mrs B while they were in DHB2 after the birth. He said that he attended a meeting with them and family members, to provide support and answer their questions and concerns relating to the events leading up to and during labour, and a further meeting was held.

76. With regard to his estimate of the fetal weight on Day 1, Dr A expressed regret that his assessment was not as accurate as he would have liked. He explained that a USS weight measure in the late stage of pregnancy has a known margin of error of around 15%.

77. Dr A stated that the estimated fetal weight was in the normal range. He said that the birthweight of 2,660g was between the 10th and 25th percentile and, whilst this is in the lower but normal range, it is not considered to be intrauterine growth restriction (IUGR).[23] However, the birthweight of 2,660g is recorded on the NICU Discharge Summary as below the 3rd percentile. Dr A stated that there was no evidence or indication of asymmetrical IUGR when he performed the bedside USS on Day 1, and so he did not request a formal scan.

78. Dr A said that whilst knowing the weight more accurately would have been desirable, it would not have changed Mrs B's management, as she was already being treated as a high-risk pregnancy and labour.

79. Dr A said he believes that he managed Mrs B's pregnancy appropriately, including requesting blood tests, diagnosing early pre-eclampsia, assessing her as high risk once the diagnosis of pre-eclampsia was made, and making the decision to induce her labour the following day.

80. Dr A stated that the midwives were in regular communication with him, and he relied on them for CTG assessment and interpretation, as they were present with Mrs B throughout her labour. Dr A stated that the midwives were aware that Mrs B was "high risk", as all pre-eclamptic women are considered to be high risk.

[22] In babies at risk of neonatal encephalopathy, total body cooling must start within six hours of birth to be effective.

[23] Where a fetus has failed to reach its growth potential. A birthweight less than the 10th customised birth weight centile or a fetus with an estimated fetal weight on a customised growth chart less that the 10th centile, is also defined as small for gestational age. Both IUGR and SGA babies have increased rates of perinatal morbidity and mortality.

81. Dr A said that he has attended collegial sessions on fetal growth and CTGs, with a particular emphasis on Mrs B's case. He said that the main points he took away were the importance of documenting a detailed plan rather than relying on verbal instructions, and the importance of recording the details of fetal biometry performed.

82. Dr A stated that he has made a number of changes to his practice since Mrs B's case:

a) He does not use office ultrasounds as part of screening for fetal growth. He now predominantly uses fundal height measurements as per the Maternal Fetal Medicine guidelines, with referrals for growth scans if indicated.

b) He records a comprehensive written care plan regardless of any verbal communication with staff.

c) He has lowered his threshold for intervention in the case of non-reassuring fetal monitoring.

Medical Council of New Zealand

83. This matter was brought to the Medical Council's attention and, as a result, in 2018 Dr A underwent a performance assessment under section 36 of the Health Practitioners Competence Assurance Act 2003.

84. At a meeting in 2019, the Medical Council considered the information available to it, including the concerns received, Dr A's responses, and the Performance Assessment Committee's (PAC's) report. The Medical Council resolved that Dr A met the required standard of competence for a doctor registered and working in the vocational scope of obstetrics and gynaecology, and that it would not be taking any further action.

Further information — RM E

85. RM E said that she was the only midwife on the afternoon shift in the Birthing Suite. She recalls it being a busy, high acuity shift. She said that there was no ACMM in the maternity unit, and she was the shift coordinator and was overseeing the floor management, in addition to her caseload as a core midwife.

86. RM E stated that there was no CTG monitoring of Mrs B at 8.50pm on Day 4 because Mrs B was not in active labour and wanted to stay in the bath, and RM E had no concerns about her.

87. RM E told HDC that she felt uneasy about Dr A's obstetric plan in that it did not include any new orders following the concerning CTG results at 10.15pm on Day 4, which showed tachysystole.

88. RM E recalls that she discussed with Dr I the CTG and tachysystole, and other observations, and that Dr I reassured her regarding Dr A's plan.

Further information — RM D

89. RM D said that she discussed the CTG, which showed tachysystole, with the senior midwife, RM C, and with Dr I. RM D stated that she did not mention Dr I in her notes, as

she was unsure whether she was "allowed" to consult with Dr I instead of Dr A, who was the LMC. RM D stated that she should have recorded the involvement.

90. RM D said that the responsibilities of the on-call obstetric team were not clear cut when a private obstetrician (such as Dr A) was the woman's LMC. Depending on the obstetrician and the on-call registrar or senior house officer, the involvement differed, with some staff willing to be involved and others not.

91. RM D stated that she did not contact Dr A regarding the continuing tachysystole, as he had already been made aware of it and had not advised any change of plan. Furthermore, as a new graduate midwife, she was still gaining confidence in practice. It was normal for her to discuss most decisions with a colleague, and, on reflection, she acknowledged that these discussions were not always adequately reflected in the notes. She said that she has changed her practice to improve her record of discussions with colleagues.

92. RM D stated that her understanding is that pethidine can be administered in early labour in order for the woman to get a block of sleep before the active phase of labour, and that a CTG is required prior to administration to monitor fetal well-being, but that continuous monitoring is not required after its administration.

93. RM D said that she is sorry that such an event has occurred. She has reflected on the event extensively with senior staff, mentors, and colleagues, and has made changes to her practice. These include improving her documentation skills, more regimented measurement of vital signs, ensuring that the maternal heart rate is documented hourly on the CTG and within the notes, and building confidence in discussing plans with other health professionals. If there is uncertainty around the FHR, she now recommends applying a fetal scalp electrode, and she now documents tachysystole when she recognises it.

94. RM D said that she has completed two OFSEP[24] courses to increase her knowledge and skill in CTG interpretation, and has completed a postgraduate paper in SGA[25] and IUGR. To improve her documentation skills she has commenced professional supervision, and plans to attend the NZCOM study day.[26]

Further information — RM C

95. RM C noted that she was not the staff midwife caring for Mrs B on that night shift. However, RM C said that she provided "some midwifery care for [Mrs B] on Delivery Suite" during the shift.

[24] Online Fetal Surveillance Education Program (offered by the Royal Australian and New Zealand College of Obstetricians and Gynaecologists).
[25] Small for gestational age.
[26] New Zealand College of Midwives, "Dotting the I's and Crossing the T's: Midwives and record keeping in 2019".

96. RM C said that she can "vaguely recall being asked by [RM D] to assist in providing advice on the administration of IV pethidine", but that she cannot recall "discussing the CTG with her, but this is not to say she did not approach me to discuss this".

Hutt Valley DHB Electronic Fetal Monitoring Policy

97. The policy states:

> "**Intrapartum**
>
> When the woman is admitted a further risk assessment can be undertaken which will help decide the type and frequency of monitoring that is required.
>
> Continuous electronic foetal monitoring is recommended for high-risk pregnancies where there is an increased risk to the baby (NZCOM, 2005)."

98. In Appendix 2 of the policy, a flowchart states: "ASK THE QUESTION! Are there any identifiable risk factors?" If the answer is "YES", then the response is "continuous EFM [electronic fetal monitoring]". The list of antenatal risk factors includes pre-eclampsia, and Mrs B had been diagnosed with pre-eclampsia. The list also includes suspected or confirmed intrauterine growth restriction, which was identified postnatally but had not been identified by Dr A prenatally.

99. The policy contains guidelines for the application of a fetal scalp electrode. It states that "[i]nternal fetal scalp monitoring is recommended when the quality of the external recording is poor despite efforts to reposition the transducer". One such instance is "[w]hen it is difficult to differentiate between the maternal and fetal pulse", such as occurred in Mrs B's case at 2.30am on Day 5.

Hutt Valley DHB Uterine Hyperstimulation Policy

100. This policy defines uterine tachysystole as "the presence of more than 5 active contractions in ten (10) minutes without foetal heart rate abnormalities".

101. The policy defines "uterine hyperstimulation" as applying when the uterine tachysystole or uterine hypertonus leads to an abnormal FHR.

102. The policy states that early recognition of uterine hyperstimulation is essential, as it causes a decrease in fetal oxygenation, leading to fetal compromise. The policy states that in the case of "uterine hyperstimulation", the woman should have continuous CTG monitoring.

103. The RANZCOG[27] Guideline also defines tachysystole as more than five active labour contractions in ten minutes, without fetal heart rate abnormalities, and notes that tachysystole may progress to uterine hyperstimulation. The RANZCOG Guideline recommends continuous electronic fetal monitoring where it is observed.

[27] Royal Australian and New Zealand College of Obstetricians and Gynaecologists.

Hutt Valley DHB Induction of labour guidelines (IOL Guideline)

104. The IOL Guideline states that a normal CTG trace must be obtained prior to prostaglandin induction. The CTG must be continued for one hour post insertion of prostaglandin gel. If repeated administration is needed, at least six hours must be allowed between doses. The Guideline states that no more than 4mg Prostin gel is to be used in a 24-hour period. Subsequent CTG tracings are to be done at four hours post Prostin, and ten hours after the last prostaglandin administration or when contractions commence. The policy states: "Note: Do not use prostaglandin gel if uterine activity is present."

105. The IOL Guideline does not refer to hyperstimulation or tachysystole, but describes "Uterine Hypercontractility" as including excessive uterine activity with or without FHR changes. Excessive activity is described as "5 or more contractions in 10 minutes over a 30 minute period". The Guideline does not advise on what action to take.

106. The IOL Guideline requires a minimum of four-hourly temperature, pulse, and blood pressure recordings. It states that practitioners need to be especially vigilant about the noting and recording of the frequency of contractions for women who are being induced, and states: "[I]n the presence of uterine activity, observation of fetal heart, pulse, BP and frequency and duration of contractions **must be documented** in the clinical notes and on a partogram.[28]"

Event Review

107. Mrs B's case was reviewed by a multi-disciplinary review group, and an adverse event report was completed. Issues and recommendations were identified using the Rapid Multidisciplinary Morbidity Review template.

108. The issues identified were:

1. Inadequate numbers of staff, with the core midwife allocated to two labouring women.
2. Inadequate supervision of staff, with no ACMM to coordinate the floor out of hours.
3. A lack of communication between services, with no clear monitoring plan identified on the obstetric plan.
4. A failure or delay in emergency response, as staff assumed that the fetal heart was being recorded on the CTG at 2.30am on Day 5.
5. An ultrasound not available in a timely manner.
6. Equipment issues, the CTG machines not having the capacity to monitor maternal and fetal heart rate concurrently.
7. A lack of staff knowledge and skills, and Mrs B not being managed as a high-risk pregnancy.

[28] A graph of labour parameters of time and dilation, with alerts and action lines to prompt intervention if the curve deviates from the expected.

8. A lack of recognition of the complexity or seriousness of the baby's condition, as the CTG at 2.30am on Day 5 could have been recording the maternal heart rate.
9. A lack of policies, protocols, or guidelines.

109. The report made the following recommendations:

1. An increase of FTE to address the ongoing staffing issue.
2. Progress a business case regarding ACMM out-of-hours staffing, and develop a clear midwifery escalation plan.
3. The obstetric plan to identify a clear monitoring plan or refer to appropriate policy regarding the fetal monitoring plan.
4. Ongoing education on CTG interpretation.
5. Ultrasound to ascertain fetal well-being to be required as part of the assessment process for IOL, although the induction cannot be delayed if the scan is not done in a timely manner.
6. All CTG machines to have the capacity to monitor maternal and fetal heart rate concurrently.
7. All women being induced for pre-eclampsia are considered high risk and are to be addressed at the secondary care study day. There should be an appropriate response to tachysystole in the clinical context, and CTG interpretation with fresh eyes.
8. A fetal scalp electrode to be used to confirm that the recording is the fetal heart when the CTG may be recording the maternal heart rate.

110. Specific recommendations related to this case were:

1. All women with pre-eclampsia are to be managed as high risk, with a detailed ongoing and updated plan of care from the senior medical officer, including an appropriate fetal monitoring plan.
2. If tachysystole is noted on the CTG, a full clinical review is required, including consideration of tocolysis.[29]
3. All CTG machines are to have the capacity for concurrent recording of maternal and fetal heart rate. The maternity department should have a plan to replace the existing CTGs without this capacity.
4. If the CTG is unable to record the maternal pulse, a manual maternal pulse should be taken and documented on the CTG every 30 minutes. This should occur more frequently in the second stage of labour.
5. If the CTG trace is unclear or looks "different", or it is not possible to distinguish between the fetal and maternal heart rates, a fetal scalp electrode should be applied, if not contra-indicated.

[29] Inhibition of uterine contractions.

6. In the event of an unexpected outcome, the placenta should be sent for histology.
7. An ultrasound is required as part of the assessment process prior to induction. If resources do not allow for it to be done in a timely manner, the induction of labour should not be delayed.
8. The maternity service will investigate the access to, and availability of, urgent maternity ultrasound services.

111. A midwifery education review of the care was also conducted, which identified the following issues:

1. The LMC plan of care did not include a plan for fetal monitoring.
2. No ultrasound was provided to inform clinical care.
3. The uterine activity after the second dose of Prostin was poorly recorded on the CTG trace.
4. The maternal pulse was not always documented on the CTGs.

Further comment — Hutt Valley DHB

112. Hutt Valley DHB said that RM H's decision to stop the CTG 40 minutes after the first dose of Prostin was administered did not constitute a departure from best practice, because the CTG showed "a normal accelerative trace with fetal cycling,[30] there was no uterine activity and the CTG demonstrated that the baby was not hypoxic". The DHB noted that the National Women's Hospital guidance[31] states that "there is no need for a routine post-PGE2 gel CTG in the absence of contractions".

113. The midwifery education review noted that Mrs B's IOL was documented as being for pre-eclampsia, her blood picture was normal, and she had a mildly elevated PCR on Day 1 but the test was not repeated. During her admission, Mrs B's BP was monitored regularly but her hypertension was not treated with antihypertensives[32] because it did not reach the threshold identified in Dr A's plan for treatment. The review also noted that tachysystole and its possible clinical significance for fetal well-being in the context of pre-eclampsia was not documented, and there was no plan to address the tachysystole or to continue fetal monitoring when it was present.

114. Hutt Valley DHB stated that a VE prior to the administration of pethidine would be usual practice, but that RM D did not conduct a VE because one had been undertaken one hour and 20 minutes earlier, and the cervix had remained unchanged and unfavourable.

115. Hutt Valley DHB said that it was RM D's impression that Mrs B was not in established labour, and so RM D did not contact Dr A prior to the membranes rupturing.

[30] Alternating periods of quiescence and activity.
[31] National Women's Health, Induction of Labour (IOL) Guideline 2015, page 15.
[32] Drugs that are used to treat high blood pressure.

116. The DHB said that RM D was reassured by her interpretation of the CTG, and had consulted with a senior colleague, RM C. However, neither midwife documented that they recognised that the CTG showed tachysystole. If recognised, tachysystole would have been an indication to contact Dr A. Although regular CTGs were conducted during Mrs B's labour, the persistent tachysystole was not documented or addressed, and continuous CTG monitoring was not maintained.

117. Hutt Valley DHB stated that it is possible that the CTG recommenced at 2.30am on Day 5 depicts the maternal pulse rather than the FHR. If that possibility had been considered, a fetal scalp electrode could have been applied to provide a more accurate FHR.

118. Hutt Valley DHB said that its Staff Allocation Policy is under review, and that it uses the ISBAR[33] tool for handovers. A handover policy is being considered, and a draft Hutt Valley DHB-wide ISBAR Clinical Communication Guideline is in the authorisation process.

119. Hutt Valley DHB stated that RM H's failure to sign off the post-Prostin administration CTG was a departure from accepted practice.

120. With regard to vital signs and the FHR not being documented for five and a half hours, Hutt Valley DHB said that Hutt Maternity guidance recommends that maternal vital signs are undertaken every four hours during IOL, and a CTG should be conducted at four hours post Prostin and at again at ten hours, or when contractions start. The DHB said that there is no expectation that the fetal heart will be auscultated at particular intervals in between the CTG monitoring (if labour has not started).

121. Regarding continuous monitoring, the DHB stated:

a) Dr A's plan did not specify that he wanted Mrs B to be monitored continuously by CTG after his assessment at 6.40pm. The documented plan was for the midwife to continue monitoring, which she did using intermittent auscultation[34] together with four-hourly BP readings. The midwife assessed and documented fetal well-being, describing good fetal movements, and auscultated a FHR of 145–155bpm while Mrs B was in the bath. Mrs B's BP and pulse were not assessed while she was in the bath, but they were recorded shortly afterwards when the midwife recommenced continuous monitoring of the baby.

b) The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) Guideline recommends continuous monitoring in the presence of tachysystole, which it describes as more than five active labour contractions in ten minutes without FHR abnormalities.

[33] A communication tool — "Identify, Situation, Background, Assessment and Recommendation".
[34] The care provider listens to the FHR for short periods of time at regular intervals. While listening, the care provider also feels the mother's contractions by placing a hand on the abdomen, and documents the frequency, duration, and intensity of any contractions.

c) The documentation does not describe Mrs B as being in active labour when she was offered time in the bath; however, active labour can be difficult to identify after the administration of prostaglandin to induce labour.

122. Hutt Valley DHB said that its hyperstimulation policy and procedures did not apply to the situation at 9.50pm on Day 4 when tachysystole was identified, as hyperstimulation also requires an abnormal CTG, which was not the case at that time. It agreed that continuous CTG is accepted practice in the presence of tachysystole.

123. Hutt Valley DHB does not agree that the midwife should have requested Dr A to attend at 11.30pm on Day 4, because Mrs B was not requiring pain relief, her cervix was posterior, she was not in established labour, and she did not request Dr A's attendance.

124. Hutt Valley DHB said that all of the clinicians involved failed to recognise and address the potential accumulative significance of the tachysystole, especially in the context of pre-eclampsia, which is associated with compromised placental function. It stated that if there had been a pre-induction ultrasound that had shown a growth restricted baby, that may have prompted greater caution throughout the induction process, and earlier action.

125. The DHB told HDC that it is accepted practice to conduct a VE before administering pethidine, but that in Mrs B's case the previous VE, performed by an experienced midwife, had shown the cervix to be very unfavourable, and the midwife had assessed that Mrs B was not in established labour.

126. Hutt Valley DHB does not have a policy for continuous CTG monitoring after the administration of narcotics. It said that the Auckland DHB policy states that opioid administration in labour is not a reason to apply continuous fetal monitoring, and Hutt Valley DHB is not aware of continuous CTG monitoring after the administration of narcotics being accepted or common practice.

127. The DHB advised that at 12.40am on Day 5 Mrs B's assessments did not show her to be in established labour,[35] but that even if she had been in labour there would have been no expectation that Dr A would attend until the second stage of labour, unless there were deviations from the normal or from the parameters that had been specified by Dr A.

128. Regarding whether Mrs B should have been offered an epidural, Hutt Valley DHB stated that an epidural is not usually administered unless there is a diagnosis of established labour.

129. Hutt Valley DHB said that there was no saltatory[36] pattern on any part of the CTG. However, Hutt Valley DHB said that it would have been useful to use a fetal scalp electrode at 2.40am on Day 5 when the CTG was recommenced, and that a CTG machine that recorded both maternal and fetal heart may have alerted the clinicians to the actual fetal condition earlier.

[35] However, the Hutt Maternity record documents that labour was established at 12.40am.
[36] A saltatory fetal heart rate pattern is characterised by wide and rapid oscillations of the fetal heart rate.

130. Hutt Valley DHB also told HDC the following:

- It no longer has any private obstetricians with access agreements to its facility. Should this change, it will consider using an onsite obstetric team with core midwives in attendance for IOL, with the private LMC being called once labour is established.
- It is not aware of any reluctance by the core midwives to call an off-site LMC obstetrician, and it believes that better communication is the result of good process and unit culture.
- It considers that the midwives were clear about their role with an LMC obstetrician.
- It does not have senior clinical midwifery oversight at night. An ACMM on night shift may have highlighted the tachysystole and thus requested the obstetrician to attend to address this.
- The CTG equipment was not fit for purpose at that time. As a result of Mrs B's case it has accelerated the replacement of its CTG stock with CTGs that can trace the maternal and fetal heart rate concurrently.
- The midwife recognised tachysystole during the CTG that commenced at 9.46pm on Day 4, and referred appropriately to Dr A.
- It will organise a review for all the midwives involved in Mrs B's case and use it as an opportunity for learning and improvement in the safety and quality of care provided, and to assist all the midwives to assess their practice in relation to their scope.
- It will organise a review for all the midwives to assess their practice in relation to current legislation.
- Weekly CTG education and discussion meetings have been rescheduled to enable more midwives to attend. The maternity service has undertaken to provide for RANZCOG Fetal Surveillance training for all midwives annually (alternating online and face to face).
- It is building the confidence of its midwifery workforce to enable robust clinical discussion. However, it does not think there was an issue with the midwife's ability to be assertive in Mrs B's case.

Actions taken — Hutt Valley DHB

131. Hutt Valley DHB has taken the following actions:

- Commenced CTG education during primary midwifery interface meetings.
- Escalated the need to replace CTG machines with ones that simultaneously monitor the maternal and fetal pulse. So far, four CTG machines have been replaced, and a further two will be replaced in 2019.
- Identified the need to increase the FTE ACMMs and increase the position to 24/7 cover, and submitted a business case to enable after-hours senior midwifery clinical oversight. In June 2019, the ACMM role over 24 hours had been successfully signed off, and was in the process of recruitment.

- Submitted a business case in 2019 to increase the midwifery staffing FTE.
- Arranged with the radiology service a space every day for urgent maternity ultrasound services.
- Moved the formal team handover from a clinical area to a private area closed to interruptions. All MDT members are required to attend so that multi-disciplinary perspectives are fed into the clinical picture, to inform a plan of care and highlight any concerns or gaps in clinical care. Care decisions are also informed by the Obstetrics & Gynaecology team and the Associate Clinical Midwifery Manager to ensure that the resourcing of care required can be managed safely. There is a handover sheet that holds information about the patient, and the senior medical officer on duty completes a physical assessment of all the women having an IOL in the morning.
- It manages all women with pre-eclampsia as high risk with a detailed ongoing and updated plan of care from the senior medical officer, including an appropriate fetal monitoring plan.

132. Regarding CTG monitoring:

- If tachysystole is noted, a full clinical review is undertaken by the senior medical officer, including consideration of tocolysis.
- If CTG is unable to record maternal pulse, a manual maternal pulse is taken and documented on the CTG every 30 minutes, with more frequent checks in the second stage of labour.
- If the CTG trace is unclear, looks "different", or is not able to distinguish fetal and maternal heart rate, a fetal scalp electrode is applied if not contra-indicated.

133. Hutt Maternity has four representatives who are involved nationally in the Neonatal Encephalopathy Taskforce, which is establishing key interventions to reduce the number of babies born with hypoxic ischaemic encephalopathy, including fetal surveillance, fetal lactates, a growth assessment protocol, and the neonatal early warning score.

134. In November 2018, Hutt Valley DHB commissioned an independent external review of its maternity services. The review identified several areas of risk that threatened the safety of the service, including a severe staff shortage, and made a number of recommendations. In June 2019, Hutt Valley DHB accepted the majority of these recommendations.

Further information — ACC

Dr K

135. ACC obtained expert advice from obstetrician and gynaecologist Dr K, who stated that Mrs B was clearly at increased risk of poor fetal growth, abruption, and pre-eclampsia owing to her booking BP of 145/89mmHg, which indicated that she had pre-existing hypertension, and she also had a strong family history of hypertension and pre-eclampsia.

136. Dr K stated that most obstetricians would have advised:

- Low dose aspirin from the booking visit, or at least from 12 weeks' gestation;
- Uterine artery Doppler studies at 20 to 24 weeks' gestation;
- Baseline liver and renal function tests and baseline urine protein creatinine ratio to further define risk;
- Serial growth scans from 26 to 28 weeks' gestation;
- Provision of advice to Mrs B about the warning symptoms of pre-eclampsia and reduced fetal movements; and
- More frequent monitoring of Mrs B's BP.

137. Dr K noted that Dr A's estimate of fetal weight on Day 1 was 3,375g but Baby B's birthweight was 2,660g. She said that the difference is well over the accepted 15% error rate in estimated scan weight. In addition, when Mrs B's BP was elevated at 148/94mmHg on Day 1 and she had proteinuria, there is no record of whether her reflexes were normal or abnormal, and how much swelling she had.

138. Dr K advised ACC that Mrs B's obstetric management during the induction process and during her labour and delivery was "far from reasonable", and in her view was concerning in the following respects:

- There is no record of any clinical assessment of Mrs B's PET status — there is no record of the presence of PET symptoms or of a clinical examination of her reflexes and swelling.
- Mrs B developed very frequent tightenings following the first dose of Prostin. The CTG done before Dr A's assessment at 2.30pm showed uterine activity occurring five to six times every ten minutes, but Dr A administered a further dose of Prostin.
- Dr A was advised of the increased uterine activity present at 9.50pm but did not review Mrs B himself or require continuous monitoring of the FHR by CTG.
- At 2.45am the CTG showed a baseline rising from 140bpm to 160bpm with severe variable decelerations to 100bpm lasting two minutes each. There was virtually no recovery time between decelerations, but when he arrived at 3am Dr A did not appear to recognise that the CTG was severely abnormal.

RM J

139. ACC obtained expert midwifery advice from RM J, who advised that the midwifery staff kept Dr A informed during labour. She said that if he had been concerned then it was his responsibility to attend to Mrs B and to order further tests, investigations, or procedures.

140. RM J said that the midwives involved in the care of Mrs B during her labour had not been alerted to the possibility of IUGR, as this had not been identified by Dr A. Although diligence was required, the midwives did not fully anticipate the degree of potential compromise that IUGR presented in this labour.

141. RM J advised that the rationale for continuous monitoring is that the woman is in established labour, and the findings from the VEs were that Mrs B was not in established labour.

Responses to provisional opinion

142. Mrs B was given an opportunity to comment on the "information gathered" section of the provisional report, and Hutt Valley DHB and Dr A were given an opportunity to comment on the relevant parts of the report. Their comments have been incorporated where appropriate.

143. Mrs B, Hutt Valley DHB, and Dr A acknowledged the provisional findings. Hutt Valley DHB acknowledged the recommendations and accepted them. Hutt Valley DHB also stated:

> "Hutt Valley District Health Board Maternity Services has taken [Mrs B's] complaint very seriously, and has already undertaken a number of improvement activities. … Hutt Valley District Health Board is also working to complete a number of recommendations following an external review of Hutt Valley District Health Board's Women's Health Services. This work will further strengthen the systems and processes required to ensure we provide a safe service for mothers and babies."

144. Hutt Valley DHB said that it "sincerely apologises for [Baby B's] HIE injury and acknowledges [its] systems and processes failed to protect [Mrs B and Baby B]".

145. Dr A told HDC that he has reflected on what he could have done differently, and has taken time to review and change his practice to avoid such an outcome in the future. He stated:

> "[W]hile there are some factual findings and comments that I do not agree with, I have taken on board the comments made regarding my care of [Mrs B], the advice around the appropriate standard of care in this situation and recommendations, and record keeping requirements, and have changed my practice accordingly."

146. Mrs B told HDC that she was encouraged to use the bath for pain relief, and was never told that she was a high-risk patient and/or needed continuous monitoring.

Relevant standards

147. The Medical Council of New Zealand publication "Maintenance and Retention of Patient Records" (August 2008) states:

> "(a) You must keep clear and accurate patient records that report:
>
> relevant clinical findings
>
> decisions made
>
> information given to patients

any drugs or other treatment prescribed.

(b) Make these records at the same time as the events you are recording or as soon as possible afterwards."

148. The RANZCOG publication *Intrapartum Fetal Surveillance Clinical Guideline — Third Edition 2014* makes recommendations and provides good practice guidelines.

- The Guideline lists antenatal and intrapartum risk factors that increase the risk of fetal compromise, and recommends intrapartum cardiotocography. The risk factors include essential hypertension or pre-eclampsia, induction of labour with prostaglandin/ oxytocin, and tachysystole (more than five active labour contractions in ten minutes without fetal heart rate abnormalities).

- Recommendation 7 states: "Continuous CTG should be recommended when either risk factors for fetal compromise have been detected antenatally, are detected at the onset of labour or develop during labour."

    - The good practice notes state:

    "Where continuous electronic fetal monitoring is required, and if the electronic fetal monitoring to date is considered to be normal, monitoring may be interrupted for short periods of up to 15 minutes to allow personal care (e.g. shower, toilet). Such interruptions should be infrequent and not occur immediately after any intervention that might be expected to alter the fetal heart rate (e.g. amniotomy, epidural insertion or top-up etc.)."

- The good practice notes for the management of fetal heart rate patterns considered suggestive of fetal compromise state:

    "**The normal CTG is associated with a low probability of fetal compromise and has the following features:**

    - Baseline rate 110–160 bpm.
    - Baseline variability of 6–25 bpm.
    - Accelerations of 15 bpm for 15 seconds.
    - No decelerations.

    All other CTGs are by this definition abnormal and require further evaluation taking into account the full clinical picture."

149. Recommendation 9 states:

"Excessive uterine activity in the absence of fetal heart rate abnormalities.

In the presence of excessive uterine activity (defined as either):

- tachysystole (more than five active labour contractions in ten minutes, without fetal heart rate abnormalities), or
- uterine hypertonus (contractions lasting more than two minutes in duration or contractions occurring within 60 seconds of each other, without fetal heart rate abnormalities)

Appropriate management of uterine hypertonus or tachysystole should include:

- continuous cardiotocography;
- consider reducing or ceasing oxytocin infusion;
- maternity staff remaining with the woman until normal uterine activity is observed;
- tocolysis may be considered."

150. Recommendation 10 states:

"Uterine hyperstimulation is defined as tachysystole or uterine hypertonus in the presence of fetal heart rate abnormalities. Appropriate management of uterine hyperstimulation should include:

- continuous cardiotocography;
- reducing or ceasing oxytocin infusion;
- maternity staff remaining with the woman until normal uterine activity is observed;
- consideration of tocolysis; or
- consideration of urgent delivery."

151. Maternity care providers should be familiar with, and have a protocol for, acute tocolysis (relevant to the level of service) in the event that uterine hyperstimulation occurs.

152. Recommendation 13 states that delivery should be expedited where:

- There is clear evidence of serious fetal compromise (FBS should not be undertaken).
- CTG abnormalities are of a degree requiring further assessment, but FBS is contraindicated, clinically inappropriate, or unavailable.
- The decision to delivery interval may be prolonged by virtue of location, clinical staff availability, patient factors, or access to clinical services.

Opinion: Introductory comment

Intrapartum fetal surveillance

153. Primarily, CTG monitoring during labour is undertaken to assess fetal well-being, and is recommended particularly if there is concern about the fetal response to labour, or some other concern about the labour process that may have an impact on the baby's well-being. CTG monitoring involves continuous recording of the fetal heart rate and the woman's contractions via two separate transducers. The CTG machine provides a paper print-out for interpretation of the baby's well-being, and an assessment of the fetal heart rate in relation to the contraction pattern. Components for assessment include the variability of the heart rate, whether the baseline rate is within normal parameters, whether there are accelerations or decelerations of the fetal heart rate, and the length, timing, and frequency of contractions.

154. In 2014, following multidisciplinary review and endorsement, the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) published a third edition of its Intrapartum Fetal Surveillance Clinical Guideline (the RANZCOG Guideline), which I consider sets the accepted standard for intrapartum fetal surveillance in New Zealand. The RANZCOG Guideline provides that the principal aim of intrapartum fetal surveillance is to prevent adverse perinatal outcomes arising from fetal metabolic acidosis/ cerebral hypoxia related to labour. However, RANZCOG notes:

> "[M]any factors contribute to the development and severity of an asphyxial injury (e.g. tissue perfusion, tissue substrate availability, the duration and severity of the insult, the fetal condition prior to the insult) such that the relationship between metabolic acidosis and cerebral damage is complex. Therefore, the degree of tissue damage and subsequent injury does not necessarily relate directly to the extent of fetal metabolic acidosis arising during labour. Furthermore, it is clear that most often damage is actually sustained during pregnancy, prior to labour, rather than arising de novo during labour and delivery."

155. The RANZCOG Guideline also states:

> "[I]t is now widely appreciated that the visual interpretation of continuously generated signals from the fetal heart, however derived, is subject to shortcomings in interpretation. Review of cases with poor outcomes repeatedly demonstrate that abnormal CTGs were misinterpreted and the resulting management inappropriate. This likely arises, at least in part, because health care professionals have not been supported by comprehensive ongoing education and credentialing programs."

156. The antenatal events leading up to Baby B's induction and the interpretation of the CTG — both the recordings of the fetal heart rate and the maternal contractions — are factors in the tragic circumstances of this case.

Opinion: Dr A — breach

Introduction

157. Mrs B was expecting her first baby and she chose self-employed obstetrician and gynaecologist Dr A to be her LMC. I have a number of concerns about the care Dr A provided to Mrs B, including the antenatal care, care during the labour and delivery, and his record-keeping.

Antenatal care

Management of antenatal risk factors

158. Mrs B attended her first antenatal appointment with Dr A. Dr A told HDC that Mrs B was healthy with no obvious risk factors to her pregnancy. However, the booking form states that her BP was 145/89mmHg (which is raised) and her family history included her father and grandfather having hypertension and her mother having had pre-eclampsia.

159. My clinical advisor, obstetrician and gynaecologist Dr Ian Page, said that Mrs B had elevated BP at the time of her booking and at her 18-week visit. Dr Page stated:

> "Whilst the initial episode could well have been managed conservatively, the second episode should have been noted and a further plan for risk management instituted."

160. Obstetrician and gynaecologist Dr K advised ACC that Dr A should have identified at the antenatal stage that there were risk factors, and taken steps to manage them. She stated:

> "[Mrs B was] at increased risk of poor fetal growth, abruption and pre-eclampsia due to her booking BP of 145/89 which indicates she had pre-existing hypertension and due to her strong family history of hypertension (father) and pre-eclampsia (mother)."

161. Dr K stated that in her view, most obstetricians would have advised:

- Ordering low-dose aspirin from the booking visit, or at least from 12 weeks' gestation;
- Arranging uterine artery Doppler studies at 20 to 24 weeks' gestation;
- Arranging baseline tests of liver and renal function and baseline urine PCR to further define risk;
- Arranging serial growth scans from 26 to 28 weeks' gestation;
- Advising Mrs B about the warning symptoms of pre-eclampsia and reduced fetal movements; and
- Arranging more frequent monitoring of Mrs B's BP.

162. I note Dr K's view and the advice from Dr Page, and I am concerned that Dr A did not institute a written plan, shared with Mrs B, to manage her antenatal risk factors.

Assessment of fetal growth

163. The presence of asymmetrical IUGR in the fetus was not detected by Dr A, and therefore the degree of potential compromise that IUGR could present was not anticipated during Mrs B's labour.

164. Dr A said that he used a customised fetal growth chart, and that the estimated fetal weight for the baby fell within normal growth parameters, based on the measurements he performed at the time. However, there is no chart in Mrs B's records, and no documentation of any growth measurements or biometric assessments.

165. Dr A estimated the fetal weight as 3,375g, which was a discrepancy of 715g compared to Baby B's actual birth weight of 2,660g. Dr A explained that an ultrasound weight measure in the late stage of pregnancy has a known margin of error of around 15%. He stated that there was no evidence or indication of asymmetrical IUGR when he performed the scan, so he did not request a formal scan.

166. Dr Page stated:

> "The discrepancy of 715g is 21.2% of the EFW or 26.8% of the actual birthweight. This is well outside the margin-of-error figure [Dr A] quoted of 15%. This does, therefore, raise some concerns about the assessment and his practice in this area."

167. Dr Page noted that most obstetricians would not rely solely on ultrasound assessment of estimated fetal weight, but would also include fundal height measurements as part of their assessment. Dr Page advised that he would regard it as a moderate concern "if scan alone is [Dr A's] normal practice" for assessing fetal growth, as this is "outside recommended practice". In response, Dr A advised HDC that he did assess fetal growth by fundal height. However, there is no record of fundal height measurements, and Mrs B told HDC that Dr A "never performed a fundal measurement".

168. Dr Page advised HDC that he would have expected a customised growth chart to have been used, as it is recommended for all maternity care. It is particularly concerning that given Mrs B's risk factors, and in light of the asymmetrical growth retardation, there is no evidence of a customised growth chart, and no record of fundal height measurements, to support the ultrasound growth assessment.

169. I am critical of the growth assessment carried out by Dr A, which was suboptimal and resulted in the asymmetrical IUGR not being detected.

Management of pre-eclampsia

170. On Day 1, at 37+5 weeks' gestation, Mrs B attended an antenatal appointment with Dr A and was found to have an elevated BP of 148/94mmHg with proteinuria "+++". Dr A performed an ultrasound and considered that the fetal position, movements, and amniotic fluid were all reassuring. He ordered blood tests to check for pre-eclampsia. The PCR result was elevated at 41mg/mmol (normal range <30). Based on the raised BP and abnormal PCR result, Dr A made a diagnosis of early pre-eclampsia. He telephoned Mrs B to explain the results and booked her for an IOL on Day 4.

171. Dr A stated that he then managed Mrs B's pregnancy as high risk, requiring close monitoring to manage any complications. However, Mrs B told HDC: "At the time, my labour, induction, and delivery was never classed as high risk. I was never told I was a high risk patient."

172. Dr K was critical that on Day 1 there is no record of whether or not Mrs B's reflexes were normal or abnormal, and how much swelling she had. Mrs B told HDC that she had "swollen calves and ankles for multiple visits to [Dr A] throughout the third trimester". Dr Page advised that many LMCs would have admitted Mrs B on Day 1 for monitoring when her pre-eclampsia was first suspected. However, Dr Page advised that there was no indication for earlier pre-eclampsia assessment, as blood pressures and urinalysis were normal apart from a single episode.

173. I note Dr Page's advice that many LMCs would have admitted Mrs B on Day 1, and I am concerned that Dr A did not discuss that option with Mrs B, and that Mrs B has said that at that stage she was unaware that her pregnancy was high risk. I consider that this was a missed opportunity to monitor Mrs B more closely prior to the induction, and to ensure that Mrs B understood the diagnosis and risks.

Labour and delivery

Tachysystole

174. At 8.30am on Day 4, Mrs B had her first dose of Prostin to induce labour. By 2.30pm she had developed very frequent tightenings and the CTG showed uterine activity occurring five to six times every ten minutes. RM H said that she commented to Dr A that "there [was] a lot of uterine activity".

175. Dr K stated that in her view this frequency indicated hyperstimulated uterine activity secondary to the effects of the Prostin administered earlier. According to Dr K: "A second dose of Prostin at 1430 was contraindicated due to the frequent uterine activity."

176. Dr A noted at 2.30pm that there was increased uterine activity, but was not concerned, noting that there was mild uterine activity and that the CTG was reassuring.

177. Dr A reviewed Mrs B again at 6.40pm and noted that there were frequent mild contractions and that the FHR was normal. There had been no CTG monitoring since 3.40pm. Dr A's plan did not specify that he wanted Mrs B to be monitored by CTG continuously. Dr A stated that he discussed continuous monitoring with the midwives, and said that they were aware that Mrs B was "high risk", as all pre-eclamptic women are considered to be high risk.

178. At 9.50pm, Dr A spoke to the midwives by phone and was advised that Mrs B's BP was 150/98mmHg, she was having frequent contractions "5:6/10" lasting 30 seconds, and there were shallow decelerations. Dr A told HDC that there was tachysystole rather than "hyperstimulation syndrome", as "the CTG was normal and the baby was coping well".

179. Dr A stated that the midwives were in regular communication with him, and he relied on them for CTG assessment and interpretation as they were present with Mrs B throughout her labour. However, the Event Review found that there should have been a full clinical review at this time, and Dr K was also critical that one did not take place. I agree, and I consider that this was a missed opportunity to consider the tachysystole within the full clinical picture.

180. At 3am on Day 5, Dr A was present at the hospital. Both Dr Page and Dr K stated that they would have expected Dr A to review the CTG on arrival and recognise that it was quite abnormal.

181. Dr Page advised: "Had the CTG abnormality been recognised an urgent instrumental delivery could have been considered, although it could only have delivered [Baby B] about 10 minutes earlier."

182. Dr K stated that in her view, the CTG showed a baseline rising from 140bpm to 160bpm with severe variable decelerations to 100bpm lasting two minutes each, and virtually no recovery time between decelerations.

183. Dr A told HDC that while he recognised that the CTG was "abnormal", the CTG was "indicating there was compression of the baby's head as it was coming through the pelvis, and not on its own an indication of fetal compromise", and he felt that the baby would be born quickly.

184. I am critical that Dr A failed to record the need for continuous monitoring in the care plan, and that he failed to recognise the fetal distress and act urgently on the CTG abnormalities.

Conclusions

185. Dr A failed to provide services of an appropriate standard to Mrs B in the following ways:

a) He did not institute a written plan, shared with Mrs B, to manage her antenatal risk factors.

b) The growth assessment carried out by Dr A was suboptimal and resulted in the asymmetrical IUGR not being detected.

c) He did not discuss with Mrs B the option of admitting her for monitoring when pre-eclampsia was first identified, and I note with concern that Mrs B has said that at that stage she was unaware that her pregnancy was high risk. I consider that this was a missed opportunity to monitor Mrs B more closely prior to the induction, and to ensure that Mrs B understood the diagnosis and risks.

d) His expectation that there should be continuous FHR monitoring was not documented in the care plan.

e) He did not recognise the cumulative risk of the ongoing tachysystole, or the fetal distress at 3.00am, and act urgently on the CTG abnormalities.

186. As a consequence of these failings, Dr A did not identify that Baby B was compromised. Cumulatively, I consider that these failings are seriously suboptimal, and that Dr A failed to provide services to Mrs B with reasonable care and skill and, accordingly, that he breached Right 4(1) of the Code.

Record-keeping

187. Dr A told HDC that he took individual measurements of fetal biometry at each visit, which included both symphysial fundal height measurements and ultrasound biometry to monitor for fetal growth. However, he did not record the fetal biometry measurements at each antenatal visit. He stated that this was because he felt that they were normal. I note Mrs B's comment to HDC that Dr A "never performed a fundal measurement".

188. Dr Page advised that he would have expected the individual measurements of fetal biometry to have been recorded and reviewed at each visit, and that the failure to do so was a departure from the recommended standard of care.

189. In my view, Dr A's records are scant. He should have recorded his findings even if they were normal. The records do not meet the Medical Council of New Zealand standards. Accordingly, I find that Dr A did not provide services that complied with professional standards, and that he breached Right 4(2) of the Code.

Opinion: Hutt Valley DHB — breach

Introduction

190. As I have emphasised in previous cases, DHBs are responsible for the operation of the clinical services they provide, including any service failures.[37] It is incumbent on all DHBs to support their staff with systems that guide and support good decision-making and promote a culture of safety. It is also essential that staff think critically. In addition, teams need to communicate well, both within the team and with external providers, and when concerns arise, clinical staff should advocate on behalf of their patients and escalate concerns if necessary.

191. Hutt Valley DHB carried out a review of these events and noted that all of the clinicians involved failed to recognise and address the potential accumulative significance of the tachysystole, especially in the context of pre-eclampsia, which is associated with compromised placental function.

192. The DHB also stated that had there been a pre-induction ultrasound showing a growth restricted baby, this may have prompted greater caution throughout the induction process, and earlier action. While I acknowledge that the asymmetrical growth restriction was not identified, Mrs B was being induced for pre-eclampsia, and I note Dr A's comment

[37] Opinion 14HDC01187 (30 June 2016). See also Opinion 16HDC01010 (12 March 2018).

that the midwives "were aware that [Mrs B] was high risk as all pre-eclamptic women are considered high risk".

193. I am concerned at the failure at times by numerous Hutt Valley DHB staff to follow the Hutt Valley DHB policies in relation to monitoring a woman undergoing a high-risk induction of labour, and to recognise on several occasions throughout the afternoon and night that the abnormal CTG required escalation. I also consider that the Hutt Valley DHB policies were unclear at times, and did not provide adequate guidance. It is disappointing that a midwife in her first year of midwifery practice was not more closely supervised when caring for a high-risk woman, and that the midwives did not call Dr A again before 2.30am despite their disquiet with the CTG and the frequency of contractions.

FHR monitoring and assessment of tachysystole

194. The DHB's IOL Guideline states that the CTG should be continued for one hour post insertion of prostaglandin gel, and that subsequent CTG tracings are to be done at 4 hours post prostaglandin and at 10 hours after the last prostaglandin administration, or when contractions commence. The IOL Guideline notes that for healthy women with uncomplicated pregnancies, intermittent monitoring can be used once a normal trace has been obtained, which suggests that continuous monitoring would have been appropriate in Mrs B's case.

195. Only a 40-minute CTG was carried out after the initial 2mg of Prostin gel was administered at 8.30am, and the CTG was satisfactory and there were no contractions. There was no repeat CTG at 4 hours post Prostin, as required by the IOL Guideline, and instead a CTG was recommenced at 1.50pm.

196. Although there was uterine activity on the CTG at 2.30pm and the IOL Guideline states, "[D]o not use prostaglandin gel if uterine activity is present," Dr A elected to give a further 1mg of Prostin gel. A one hour post Prostin CTG was undertaken, and Associate Clinical Midwifery Manager RM F documented that Mrs B was experiencing moderate "period cramps" and backache, and that uterine activity was occurring five to six times every ten minutes. RM F then discontinued the CTG, and although she said that she recognised that there was "tachysystole", she did not contact Dr A to discuss the finding.

197. My independent advisor, RM Linda Burke, advised that good practice would have been to continue with the CTG monitoring when an anomaly had been found, even if not in labour.

198. I note that while the IOL Guideline provides that uterine hyercontractability without FHR changes includes excessive uterine activity, described as five or more contractions in ten minutes over a 30-minute period, it does not say what action should be taken. In addition, the Hutt Valley DHB Uterine Hyperstimulation policy is silent on action to be taken if tachysystole is recognised. This is concerning, as the RANZCOG Guideline recommends continuous CTG in the presence of tachysystole. I am concerned that the Hutt Valley DHB guidelines did not provide clear guidance on this issue, and did not reflect the RANZCOG Guideline.

199. No CTG was undertaken at four hours post Prostin. Dr A reviewed Mrs B at 6.40pm and discussed with her and her husband that monitoring would continue overnight, but he did not document in the care plan the need for continuous monitoring by CTG. Dr A stated that he discussed continuous monitoring with the midwives, and said that they were aware that Mrs B was "high risk".

200. Despite the frequency of contractions and Mrs B's high-risk status, DHB midwifery staff did not consider that continuous FHR monitoring was required at this stage. This approach is reflected in the DHB's response that "there is no expectation that the fetal heart will be auscultated at particular intervals in between the CTG monitoring (if labour has not started)". However, the DHB also advised HDC that the failure here was that the tachysystole and its possible clinical significance for fetal well-being in the context of pre-eclampsia was not recognised, and that there was no plan to address the tachysystole or to continue fetal monitoring when it was present. In my view, there was no clarity in the DHB policies about the expectations of monitoring in these circumstances.

201. Following time in the bath, a further CTG was commenced at 9.50pm. Two decelerations were noted, and the contraction frequency was 5–6:10. Dr A was informed that Mrs B's BP was elevated at 150/98mmHg and that there was tachysystole. He requested a VE. There was no change on VE and no new instructions. RM E told HDC that she "felt uneasy about [Dr A's] plan, that did not include any new orders, given the concerning CTG results". She said that she discussed the CTG, the tachysystole, and her findings with registrar Dr I, who reassured her.

202. Ms Burke advised that owing to the changes in BP and pulse, and the recognised tachysystole, DHB staff should have requested that Dr A come in for an assessment at this time. I agree, and consider that this was a missed opportunity to have a senior review of Mrs B's clinical picture, and I am concerned that despite feeling "uneasy", the midwives did not ask Dr A to attend.

203. At 10.30pm, Mrs B returned to the bath, and at 11pm RM E completed a verbal handover to the incoming midwives, RM D and RM C. Dr I was present during the handover. RM E said that she was still concerned about the CTG results despite Dr I's reassurance, so she showed the CTG trace to the incoming midwives and told them that CTG monitoring should be continued. Despite these discussions and the ongoing concerns, Dr A was still not contacted.

204. At 11.30pm, the CTG was recommenced and showed tachysystole of five to seven contractions in ten minutes, and contractions lasting around 30–45 seconds. RM D stated that she discussed the tachysystole with RM C and Dr I, and RM C told her that Mrs B was experiencing tightening consistent with a Prostin tightening pattern, and that the administration of pethidine would help Mrs B to rest.

205. RM D stated that Dr I looked at the CTG and agreed with the plan, as there had been no cervical change and Mrs B had had a long day. The pethidine was then given without a further VE, based on RM D's assessment that Mrs B was not in labour.

206. Ms Burke is critical that the pethidine was given without a VE. I note that the DHB agrees that it is accepted practice to conduct a VE before administering pethidine, but said that the previous VE, performed by an experienced midwife, had shown the cervix to be very unfavourable, and RM D assessed that Mrs B was not in established labour. I am concerned that neither RM C nor Dr I reviewed Mrs B to see the entire clinical picture and ensure that RM D's assessment and their advice was correct. I am particularly critical of this considering that RM D was in her first year of midwifery practice and was seeking support.

207. There was a further FHR deceleration, and despite the contractions being recorded as 4–5:10, RM D was reassured by the advice she had been given, and the CTG was considered normal and discontinued at 12.40am. Mrs B was not reviewed again until she rang the bell at 2.15am.

208. Ms Burke advised that in her opinion, Mrs B needed more care at this time, as her medical picture was starting to change with her BP going up, her need for pain relief, and her husband's anxiety. In Ms Burke's view, RM D should have called Dr A and requested attendance. I note that RM D followed the advice of more senior staff, but I am concerned that this was a further missed opportunity for a senior review and an assessment of the impact of the tachysystole.

CTG interpretation from 2.30am

209. At 2.30am, Mrs B was assessed as fully dilated. The CTG was recommenced and an FHR of 80bpm was noted. Dr A was called. At 2.45am, the CTG was interpreted reassuringly by the midwives as showing early fetal heart decelerations occurring with contractions with the FHR recovering well.

210. The DHB advised that at 2.41am the fetal heart tracing on the CTG machine was not reliable, and that it would have been advantageous to place a fetal scalp electrode at this point because the CTG depicted accelerations with contractions. The DHB considered that at this stage of labour this should have raised a suspicion that the CTG was monitoring the maternal pulse rather than the fetal heart.

211. Dr Page advised that from 2.40am the CTG was quite abnormal, with late decelerations and an increasing baseline. Dr K advised ACC that at 2.45am the CTG showed a baseline rising from 140bpm to 160bpm with severe variable decelerations to 100bpm lasting two minutes each, and that there was virtually no recovery time between decelerations.

212. Dr A attended at 3.00am and considered that the CTG was indicating head compression, with the FHR decelerating with contractions but recovering quickly, and not indicating fetal compromise.

213. I note the conflicting interpretations of the CTG — by the DHB as a possible maternal pulse, by the clinicians present at the time as showing a non-compromised baby, and the shared view of the independent advisors that it showed a rising baseline and late or variable decelerations — signs of fetal distress. This highlights the complex nature of CTG interpretation and the need to escalate to senior review if there are any concerns. While I

am concerned that the midwives mistakenly interpreted the CTG as reassuring at this time, I consider it reasonable that they continued with that interpretation after Dr A arrived and confirmed their assessment. I am critical that the CTG equipment in use at the time did not record both the maternal and fetal heart rate.

Conclusion

214. In my view, the Hutt Valley DHB guidelines were not clear that continuous fetal monitoring was necessary in the circumstances of Mrs B's induction for pre-eclampsia and the ongoing tachysystole, and I am critical of this. The DHB multi-disciplinary review of this case recommended that where tachysystole is noted on the CTG, a full clinical review is required, including consideration of tocolysis. In addition, the DHB review recommended that all women with pre-eclampsia are managed as high risk with a detailed ongoing and updated plan of care from the senior medical officer, including an appropriate fetal monitoring plan. I agree with those changes, and will seek confirmation that they have been implemented.

215. I note that the DHB labour record states that Mrs B was established in labour at 12.40am, and that she was fully dilated at 2.30am. Noting the DHB advice that active labour can be difficult to identify after the administration of prostaglandin to induce labour, I am concerned that the two more experienced staff on the labour ward that night did not support RM D by reviewing Mrs B themselves before the CTG was discontinued at 12.40am. I consider this to have been a missed opportunity to reassess Mrs B and the full clinical picture, and to recognise that she was establishing in labour at the time the CTG was discontinued.

216. I am critical that staff on the afternoon and night shift did not call Dr A again or require him to attend before 2.30am, despite their disquiet with the CTG and the frequency of contractions. In my view, this in part reflects the tendency for people who are working in groups to be influenced by others in the group to interpret information in a way that confirms previous assessments and diagnoses. The midwives involved accepted that Dr A was not concerned about the ongoing tachysystole, and allowed this adverse situation to evolve over the evening and into the night, without appreciating the seriousness of the situation. However, I consider that this also reflects a lack of confidence by the DHB staff to raise concerns. 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.[38]

217. I note that although the DHB does not consider that in Mrs B's case there was an issue with the midwife's ability to be assertive, it has advised that it is building the confidence of its midwifery workforce to enable robust clinical discussion.

218. The Event Review of Mrs B's case in 2017 identified a number of contributory factors. One of these was inadequate numbers of staff, with the midwife allocated to two labouring

[38] 14HDC01187 and 17HDC00384.

women. The recommendation at that time was to "[i]ncrease FTE (CMM). Ongoing staffing issue." The recommendation noted that a business case was in progress, and this was reported to HDC to still be the case in January 2019. I am critical that staffing issues that were identified in 2017 were still identified as an issue in the external review in November 2018,[39] but acknowledge with approval that the staffing recommendations are now being progressed.

219. The Event Review in 2017 also identified inadequate supervision of staff as a contributory factor, stating that there was "[n]o ACMM to coordinate floor out of hours". The recommendation in 2017 referred to a business case being in progress. Again I am critical that this issue was still outstanding at the time of the external review in November 2018, which identified the need to increase ACMM positions to provide 24-hour cover as an immediate priority.

220. The 2018 review noted that the ACMM role has enabled a focus on risk assessment, triage, ongoing prioritisation of workload, identification of clinical risks, and management of these risks in a timely manner, including escalation of urgency if required. It is appropriate that Hutt Valley DHB confirmed in June 2019 that the ACMM role over 24 hours has been successfully signed off in response to this case, and is in the process of being recruited.

221. I agree with Hutt Valley DHB that there was a failure of all the clinicians involved to recognise and address the potential accumulative significance of the tachysystole, especially in the context of pre-eclampsia, which is associated with compromised placental function. I consider that there were systemic failures on the part of the DHB, as identified in the 2018 review. These failures left staff without clear instructions and support, and resulted in a failure to monitor Mrs B and her baby adequately during the induction process, and to recognise the significance of the ongoing tachysystole, or, where it was recognised, to escalate the abnormal CTG by requiring Dr A's attendance prior to 2.30am. As a result, Hutt Valley DHB failed to provide services to Mrs B with reasonable care and skill and, accordingly, breached Right 4(1) of the Code.

Recommendations

222. In the provisional opinion, I recommended that Dr A:

a) Provide a written apology to Mrs B, to be sent to HDC for forwarding.

Dr A has provided an apology, which will be forwarded to Mrs B by HDC. I accept that Dr A has now met this recommendation.

[39] Hutt Valley DHB Women's Health Services External Review November 2018, Meates J, Arthur J.

b) Undertake further training on the identification of risk factors, including IUGR, antenatal assessments, induction of labour, and interpretation of CTGs, and provide evidence of having attended the training, and the content of the training.

Dr A advised that he has undertaken training and made changes to his practice as follows:

- He has reviewed the best practice and NZMFM SGA guidelines relating to the screening and management of low gestational age babies.
- He uses only symphysial fundal height measurements for screening for fetal growth problems.
- He has attended seminars/conferences to update his knowledge and practice on fetal growth monitoring and intrapartum fetal monitoring.
- He completed a course specifically on CTG interpretation.

I accept that Dr A has now met this recommendation.

223. I recommend that the Medical Council of New Zealand consider whether a further competence review of Dr A is necessary on consideration of the information in this report.

224. I recommend that Hutt Valley DHB provide a written apology to Mrs B, to be sent to HDC within three weeks of the date of this report, for forwarding.

225. I recommend that within three months of the date of this report being issued, Hutt Valley DHB:

a) Develop a policy that, should the DHB again have private obstetricians working as LMCs with access agreements, IOLs are to be carried out by the on-site obstetric team, and once labour is established the LMC is to be called in to take over the care.

b) Provide further training to hospital midwives about their responsibility to advocate for women and seek advice from senior clinicians should concerns arise.

c) Review CTG equipment to ensure that all are able to trace and record the maternal and fetal heart rate.

d) Provide further training to all midwifery staff on recognition of tachysystole and uterine hyperstimulation, and the steps to be taken in that case, including continuous monitoring.

e) Confirm that all hospital midwives have undertaken a midwifery review relating to current legislation and the midwifery scope of practice.

f) Provide evidence that all hospital midwives are undertaking annual fetal surveillance training.

g) Provide HDC with a detailed update report on the steps taken to carry out the external reviewers' recommendations, with specific reference to the following recommendations:

i. DHB midwifery base staffing levels be increased significantly

ii. Care Capacity Demand Management be implemented to identify staffing levels in response to demand, occupancy, and acuity

iii. The ACMM positions be increased immediately to cover overnight shift to provide 24-hour cover

iv. Ensure regular review of clinical guidelines to support evidence-based safe practice

v. Ensure all clinical staff involved in antenatal and intrapartum care attend the RANZCOG Fetal Surveillance Education Programme (FSEP) at least once every three years — this should be mandatory, as well as completion of the online package in the intervening years. For LMCs, consider making attendance a condition of their access agreement

vi. Undertake an audit of all babies transferred to DHB2 SCBU for cooling

vii. Undertake a review of all babies with suspected neonatal encephalopathy, including babies born with an umbilical cord pH of less than 7.0

viii. Identify any critical equipment deficiencies and address these immediately.

Follow-up actions

226. A copy of this report with details identifying the parties removed, except the experts who advised on this case and Hutt Valley DHB, will be sent to the Medical Council of New Zealand, and it will be advised of Dr A's name.

227. A copy of this report with details identifying the parties removed, except the experts who advised on this case and Hutt Valley DHB, will be sent to the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG), the Midwifery Council of New Zealand, the New Zealand College of Midwives, the Ministry of Health, the Neonatal Encephalopathy Taskforce, and the Health Quality & Safety Commission, and will be placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Neonatal Encephalopathy Taskforce

228. The Perinatal and Maternal Mortality Review Committee (PMMRC) has identified that incorrect use and interpretation of intrapartum fetal heart rate monitoring are important contributors to adverse perinatal outcomes, and that providing education and training in areas of critical obstetric care can improve patient outcomes. The PMMRC stated:

> "All practitioners involved in the care of newborn babies are encouraged to participate in regular education and skills updates to maintain their competence and

confidence with managing initial neonatal care. This should include fetal surveillance education."

229. However, the Neonatal Encephalopathy Taskforce[40] has stated that despite the PMMRC recommendation, not all practitioners are participating in regular fetal heart rate monitoring education, and there is a need to improve access to fit-for-purpose fetal heart rate monitoring education so as to reduce the incidence and severity of neonatal encephalopathy.

230. One of the action plans for the Neonatal Encephalopathy Taskforce has been to support the development and implementation of a regular standardised interdisciplinary training programme on fetal surveillance for all health professionals involved in intrapartum care, by evaluating:

- The extent of fetal surveillance education programmes in New Zealand;
- The effectiveness of training programmes on fetal surveillance for all health professionals involved in intrapartum care in New Zealand; and
- The logistics of rolling out a national fetal surveillance education programme to all healthcare professionals involved in intrapartum care.

231. I will continue to engage with the Neonatal Encephalopathy Taskforce on these issues, and on the development of the national fetal surveillance education programme.

[40] The Neonatal Encephalopathy Taskforce was set up in November 2015 to bring together expert representatives from healthcare providers, clinicians, professional bodies, government agencies (including ACC), and patient advocacy groups to work together to reduce neonatal encephalopathy.

Appendix A: Independent obstetric advice to the Commissioner

The following expert advice was obtained from obstetrician and gynaecologist Dr Ian Page:

"Thank you for your letter of 19 December 2017 and the enclosed documents, requesting expert advice to the Commissioner on the care provided by [Dr A] to [Mrs B] between [Day 1] and [Day 5]. I have read and agree to follow the Commissioner's Guidelines for Independent Advisors.

I am a practising Obstetrician & Gynaecologist and have been a consultant for 29 years. I obtained my MRCOG in 1985, my FRCOG in 1998 and my FRANZCOG in 2002. I have been employed for the past 17 years by Northland DHB. I have been a member of the RANZCOG Expert Witness register since 2012.

Background
[Dr A] was [Mrs B's] private obstetrician. On [Day 1], at 37.5 weeks, she saw [Dr A] for a routine antenatal visit. He scanned the baby and assessed her weight to be approximately 3375g. He also diagnosed [Mrs B] with pre-eclampsia which led to her induction of labour on [Day 4]. Upon delivery, the baby was 2660g and was subsequently diagnosed with asymmetrical intrauterine growth restriction and hypoxic ischaemic encephalopathy stage two.

Advice Requested
You asked me to review the documents and advise whether the care provided to [Mrs B] by [Dr A] was reasonable in the circumstances and why. You noted that you were obtaining separate advice about the midwifery care provided to [Mrs B]. You also asked me to comment specifically on:

1. Whether the standard of documentation associated with the sequential estimates of fetal weight was consistent with expected standards, and in particular would I expect the biometric parameters used in the estimate process to be recorded separately.
2. Whether or not I would expect a customised fetal growth chart to have been used in this case.
3. Whether the discrepancy between estimated fetal weight on [Day 1] and the actual birthweight on [Day 5] raises any concerns regarding [Dr A's] assessment.
4. Whether the apparent failure by [Dr A] to detect the presence of asymmetrical IUGR in [Mrs B's] fetus raises any concerns regarding his antenatal assessments.
5. Whether I had any further comments on the antenatal or intrapartum care provided to [Mrs B] by [Dr A].

Sources of Information
In assessing this case I have read:

- Letter of complaint dated [2017]
- [Dr A's] response dated [2017]
- [Mrs B's] antenatal record

- Clinical records from Hutt Valley DHB covering [relevant dates]
- Clinical records from [DHB2] covering [relevant dates] in relation to [Baby B]
- Comments from [Mrs B] dated [2017] regarding [Dr A's] response

Summary of the Case

[Mrs B] booked with [Dr A] at 9 weeks' gestation in her first pregnancy, with an estimated date of delivery of […]. She had a normal BMI and no significant medical history. [Dr A] performed an ultrasound scan showing a single, live intrauterine pregnancy consistent with her dates. Her Blood Pressure (BP) was 145/89. The usual antenatal blood tests were arranged, along with the Harmony test for aneuploidy.

She was reviewed by [Dr A] [at 13 weeks' gestation], when her BP was 129/77. Her Harmony test result was normal. A scan was performed showing the baby's size was consistent with dates, that it was moving and had a normal amniotic fluid volume (AFV). She was next reviewed by [Dr A] [at 18 weeks], when her BP was 141/85. A scan was performed showing the baby's size was consistent with dates, that it was moving and had a normal amniotic fluid volume (AFV).

[Mrs B] had a morphology scan of her baby which was normal. She was next reviewed by [Dr A] [at 22 weeks] when her BP was 130/84. A scan was performed showing the baby's size was consistent with dates, that it was moving and had a normal AFV. Her routine second trimester blood tests were organised.

Her continuing antenatal care was recorded as:

Date	Gestation	BP	Urine protein	EFW (g)	Presentation	FH/FM	A F
[2017]	27	137/83		1050	C	+/+	N
[2017]	28	147/93		1255	B	+/+	N
[2017]	29	132/86	Neg	1700	C	+/+	N
[2017]	31	127/76	Neg	1918	C	+/+	N
[2017]	34	138/82	Neg	2600	C	+/+	N
[2017]	36	137/89	Neg		C	+/+	N
[Day 1]	37	148/94	+++	3375	C	+/+	N
[Day 3]		145/93	++				

Note: C = cephalic; B = breech; FH = fetal heart, FM = fetal movement, + = present, N = normal

Good fetal movements were noted at each visit from [27 weeks]. [At 28 weeks] [Dr A] diagnosed her as having a viral URTI and prescribed Amoxil. [At 36 weeks] she had a RVS done (recto-vaginal swab for culture) and Umcs (urine culture). The urine specimen showed E.coli, and she was given a course of Augmentin.

[At 37 weeks] bloods and a urine PCR were taken to assess PET (pre-eclampsia), and a planned review 2 days later. The PCR was elevated at 41 (normal range <30). There were no other notes made at the visit [two days later].

On [Day 4] [Mrs B] was admitted to the delivery suite for induction of labour for pre-eclampsia. Her BP was 148/98, and her CTG was noted as normal. She was seen by [Dr A] at 8.30am, when her BP was 150/90. Vaginal examination showed her cervix to be shut and 2cm long, so [Dr A] administered 2mg Prostin gel PV. He noted [Mrs B] should have BP monitoring, Labetalol 200mg if her BP was ≥160/ or /100, and repeat PET bloods. She was also to have IV access and could have epidural analgesia if required, with a plan to review in 5–6 hours if not in labour.

At 2.30pm that day [Dr A] reviewed [Mrs B], noting the CTG was normal and finding her cervix unchanged on examination. 1mg Prostin gel was administered vaginally with a plan to review in 4–6 hours. At 3.40pm the CTG was viewed as normal and discontinued. Uterine activity (5 episodes in 10 minutes was noted). At 6pm the notes record [Mrs B] was feeling frequent irregular uterine tightenings. Her BP was 142/96, and the fetal heart was heard at 118–30bpm. She was reviewed by [Dr A] at 6.40pm, who noted the FH to be normal and planned for continued monitoring and Pethidine if required.

At 8.50pm [Mrs B] was in the bath and having contractions that were lasting 30 seconds and getting stronger. The fetal heart rate was recorded as being 145/155, and she was advised to summon assistance if necessary. [Dr A] contacted the unit at 9.50pm asking that a vaginal examination be performed if [Mrs B] was contracting or requiring analgesia. Shortly afterwards [Dr A] was telephoned as [Mrs B] was having increasing contractions — tachysystole, with decelerations present on the CTG. At his request a vaginal examination was performed and the cervix was said to be 1cm long and undilated.

[Mrs B] returned to the bath at 11pm, when she was having variable tightenings about 2–3 in 10 minutes, lasting 30–45 seconds. At 11.30pm she got out of the bath requesting analgesia. Her BP was 158/94, the CTG was viewed as normal and the tightenings were recorded as consistent with Prostin pains. She was given an injection of Pethidine and Metoclopramide IV at 00.05am, following which there was a reduction in the baseline fetal heart rate. This returned to normal after 3 minutes, and the whole CTG was viewed as normal at 00.20am after which she was given Pethidine IM. The CTG was viewed as normal and discontinued at 00.40am.

At 2.30am [Mrs B's] waters broke (her liquor was said to be clear) and her cervix was found to be fully dilated. The fetal heart rate dropped to 80bpm with slow recovery, and assistance was requested. At 2.45am the notes recorded early decelerations with contractions, recovering well. [Dr A] attended at 3am. The midwife's notes record infiltration of the perineum with local anaesthetic at 3.10am with performance of an episiotomy at 3.15am. [Dr A] documented the delivery of a live female infant at 3.20am, with the paediatrician present to resuscitate the baby. He then documented his delivery of the placenta and repair of the episiotomy. The labour record documents Baby B as weighing 2660g, with Apgar scores of 6 at 1, 9 at 5 and 10 at 10 minutes. It notes that the birth was facilitated by [Dr A], with [RM D] and [Mrs B's] husband also present.

[Baby B] was admitted to the Special Care Unit at [the] Hospital, and subsequently transferred to the Neonatal Intensive Care Unit at [DHB2] where she was diagnosed as having asymmetrical intra-uterine growth restriction and hypoxic ischaemic encephalopathy grade 2.

My Assessment
You asked me to review the documents and advise whether the care provided to [Mrs B] by [Dr A] was reasonable in the circumstances and why. You also asked me to comment specifically on:

1. *Whether the standard of documentation associated with the sequential estimates of fetal weight was consistent with expected standards, and in particular would I expect the biometric parameters used in the estimate process to be recorded separately.*

The frequency of assessment of fetal growth was appropriate. I would have expected the individual measurements of fetal biometry to have been recorded and reviewed at each visit, and there is no documentation to this effect. I think this is a departure from the recommended standard of care which would be viewed with mild disapproval by [Dr A's] peers.

2. *Whether or not I would expect a customised fetal growth chart to have been used in this case.*

I would have expected a customised fetal growth chart to be used in this case (as is recommended[1] for all maternity care). It is intended for use in the normal situation of measuring symphysio-fundal height (SFH) as the screening test for fetal growth, and then allows customised assessment of growth scans if indicated. I think the failure to follow the guideline is a departure from the recommended standard of care which would be viewed with mild to moderate disapproval by [Dr A's] peers.

3. *Whether the discrepancy between estimated fetal weight on [Day 1] and the actual birthweight on [Day 5] raises any concerns regarding [Dr A's] assessment.*

The discrepancy of 715g is 21.2% of the EFW or 26.8% of the actual birthweight. This is well outside the margin-of-error figure he quoted of 15%. I could not determine what training he has had for ultrasound assessment of EFW, nor what audit or continuing peer review he undertakes in this regard. This does, therefore, raise some concerns about the assessment and his practice in this area. (Addendum from email 6 February 2018 quantifying level of departure: It is difficult to quantify the concern for Q3, as I don't know if this was a one-off outlier or a reflection of frequent inaccuracies.)

4. *Whether the apparent failure by [Dr A] to detect the presence of asymmetrical IUGR in [Mrs B's] fetus raises any concerns regarding his antenatal assessments.*

I have already noted that most obstetricians would not rely solely on ultrasound assessment of EFW but would also include SFH as part of their assessment[1]. This does, therefore, raise some concerns about the completeness of his assessments. (Addendum from email 6 February 2018 quantifying level of departure: For Q4 I would

quantify it as moderate concern, as if scan alone is his normal practice it is outside recommended practice (as per the reference).

5. *Whether I had any further comments on the antenatal or intrapartum care provided to [Mrs B] by [Dr A].*

Whilst not relevant to obstetrics *per se* I was surprised to see that [Dr A] chose to treat a viral respiratory tract infection with antibiotics, as that would not be usual practice.

Although areas of the antenatal care provided can be criticised it is not clear that a different care plan would have altered the timing of induction of labour. Many LMCs would have admitted [Mrs B] for monitoring when her pre-eclampsia was first suspected ([Day 1]) but it would not have altered the outcome. There was no indication for earlier investigations, as her BP and urinalysis were normal. The single episode of raised BP at 28 weeks' gestation had returned to normal two weeks later.

At the beginning of the labour induction process [Baby B] had a normal CTG, which supports the decision to induce labour rather than deliver by caesarean section, and was presumably well.

You are obtaining separate advice about the midwifery care provided to [Mrs B] so I will not comment on that. [Dr A] was available for consultation as required during [Mrs B's] induction, and also telephoned in to ascertain her condition.

The use of Pethidine for analgesia was appropriate, as it does not cause fetal hypoxia.

When [Dr A] attended [Mrs B] in the second stage of labour I would have expected him to review the CTG and recognise that it was quite abnormal, with late decelerations with an increasing baseline since 2.40am. That does not appear to have happened. Had the CTG abnormality been recognised an urgent instrumental delivery could have been considered, although it could only have delivered [Baby B] about 10 minutes earlier. The impact this would have had on [Baby B]'s acidotic state would not be great, and may not have altered her diagnosis or prognosis. I think the failure to recognise the CTG abnormalities is a departure from the expected standard of care which would be viewed with mild to moderate disapproval by [Dr A's] peers.

I do not have any personal or professional conflict of interest to declare with regard to this case. If you require any further comment or clarification please let me know.

Dr Ian Page MB BS, FRCOG, FRANZCOG
Consultant Obstetrician & Gynaecologist
Whangarei Hospital

[1] https://www.asum.com.au/wp-content/uploads/2015/09/NZMFM-SGA-Guideline-September-2013.pdf"

The following additional advice was received from Dr Page:

> "Thank you for your letter of 11 September 2018, and the further documents you have provided, namely:
>
> - [Dr A's] response to my report dated [2018]
> - Hutt Valley DHB's responses dated [2017] and [2018]
> - [Dr K]'s ACC Treatment Injury Advice date [2017],
>
> all of which I have read. You asked if the new information changes my opinion or raises other issues.
>
> I note that [Dr A] did not initiate the antibiotics for [Mrs B's] respiratory infection, and so withdraw the relevant sentence in my answer to your original question 5. He has also clarified the training he undertook with regard to his practice of ultrasound scanning.
>
> My other comments stand, and those to questions 1, 3 and 5 are supported by the comments from [Dr K] when she reviewed the case for ACC. She also noted, which I hadn't, that [Mrs B] did have elevated BP at both her booking (9 weeks' gestation) as well as her 18 week visit. Whilst the initial episode could well have been managed conservatively, the second episode should have been noted and a further plan for risk management instituted."

Appendix B: Independent midwifery advice to the Commissioner

The following expert advice was obtained from RM Linda Burke:

"I have reviewed the Documents provided and have analysed and synthesised on the evidence given. I will address each question as numbered below:

(a) what is the standard of care/accepted practice?

The expected standard of care for commencement of an Induction of Labour (IOL) would be from a Midwifery Perspective:- Baseline Vital signs, blood tests with PET bloods if required along with a Mid-stream urine (MSU) should be taken after the insertion of an intravenous (IV) cannula.

Abdominal palpation to confirm presentation and descent of the presenting part.

A Cardiotocography (CTG) monitor is done prior to the commencement of an IOL to obtain a fetal baseline which would need to have good variability, this would also pick up any uterine activity present. CTG should last at least **30–60** minutes, irrespective of what type of management to be administered for IOL. A Vaginal Examination (VE) is done to determine the Bishop Score. This score determines what method is used to begin the induction process and should always be prescribed on the drug chart.

Post prostaglandin (PG) should have continuous CTG monitoring for **60** minutes if normal (Hutt Valley Labour Induction Guidelines) or longer if the CTG is not normal and consultation should be sought by either the Obstetric Team on call or the Obstetrician LMC or LMC Midwife. CTG needs to be signed off as seen and sighted.

If CTG is normal after 60 minutes the women is free to mobilise. She may not leave the hospital. Reassessment would occur six hours later, unless uterine activity starts or SROM occurs prior to this time.

Intermittent auscultation method of intrapartum surveillance should be carried out where fetal heart rate is heard for short periods of the time specified intervals (each Area Health Board has recommendations) until the next CTG is scheduled.

Vital signs should be taken 4–6 hourly until established labour. If vital signs outside the norm of (140/90) a Modified Early Obstetric Warning Score (MEOWS) should be started (this tool is used to identify women with a worsening clinical condition guiding decision making).

Intrapartum risk factors for IOL

- Induction of labour with Prostaglandin
- Abnormal CTG
- Tachysystole
- Uterine Hyperstimulation

Continuous CTG would be recommended at the onset of labour or when any anomaly occurs, whether in established labour or not.

E.g **Tachysystole Definition:** The presence of more than 5 active contractions in 10 minutes without foetal abnormalities

(a) Good Practice

*Continuous CTG should occur.

* Maternity Staff remain with the women until normal uterine activity is observed, so that documentation can occur either written on the CTG or clinical notes or electronic entry every 15–20 minutes.

* Vital signs documented every hour if risk factors.

* Tocolysis may be considered (anti-contraction medications)

* Consult with Obstetric Team onsite, LMC Obstetrician or LMC midwife.

(Hutt Maternity Uterine Stimulation Policy)

*Provide safe and effective care for women and their babies experiencing this condition

*Inform good decision making

* Establish a local approach to care, that is evidence based and consistent

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

[Day 4]

0748hrs Pre PG/CTG within normal time frame lasting 36 minutes. **(accepted practice)**

0800 Baseline Vital Signs taken. IV Luer in situ and PET bloods taken. Await LMC arrival. **(accepted practice)**

0830 LMC consults. Commences IOL with PG and writes a small management plan. It was noted that no PG dosage was entered onto the drug chart. **(not accepted practice — MODERATE departure from best practice and IOL guidelines of Hutt Maternity)**

0841 hrs Post 2 mg PG/CTG only records for 40 minutes and taken off when variability has reduced slightly. (Hutt Valley IOL Protocol recommendations are 60 minutes post prostin minimum). **(not accepted practice — MODERATE departure from best practice and IOL guidelines of Hutt Maternity)**

Another 10 minutes or so would have been ideal to ensure good fetal variability continued as on earlier CTG at the start of the session. (CTG pages 1 and 2). CTG not signed off when completed. **(not accepted practice — MODERATE departure from best practice and IOL guidelines of Hutt Maternity)**

No entry in clinical notes from Midwifery Staff E.g. Vital signs or fetal heart heard (FHH) for 5 1/2 hours. **(not accepted practice — MODERATE departure from best practice and IOL guidelines of Hutt Maternity)** as IOL for PET.

No entry on clinical notes till 1400 hours. **(not accepted practice — MODERATE departure from best practice and IOL guidelines of Hutt Maternity)**

1348 hrs Pre PG/CTG. Variability reduced with few accelerations over 26 minutes. **NOTE:** Tachysystole evident and had baseline reduced variability **(not accepted practice — MODERATE departure from best practice and Uterine Hyperstimulation Policy of Hutt Maternity) —** should have been kept on longer and consider delay in inserting another PG, even if cervix unchanged.

1437 hrs Post PG/CTG — 1mg PG assessed by LMC. Signed off by LMC 34 minutes later when variability normal. CTG continued as variability reduced again and was left on for 1 hour 17 minutes. Taken off when 6 minutes of normal variability occurred with accelerations — should have been kept on another 30 minutes or so to make sure uterine activity not influencing variability. **Note** uterine activity still active, but CTG machine looks like it is not picking the uterine activity correctly. (CTG pages 3, 4 and 5).

1540 hrs B/P recorded. No further entry till 2hrs 20minutes later.

1800hrs B/P and pulse recorded.

1840 LMC review. VE deferred. B/P Asymptomatic. **PLAN:** Continue monitoring — Pethidine okay if requested. No further entry till:-

2050 [Mrs B] in the bath. LMC plan continue monitoring. No documentation of FHH. **(not accepted practice — with PET — MODERATE departure from best practice and IOL Guidelines of Hutt Maternity)**

2146hrs CTG in progress. *Stopped* 45 minutes later even though Tachysystole continued. (CTG pages 6 and 7) — **(not accepted practice — MODERATE departure from best practice and IOL/Hyperstimulation Guidelines Hutt Maternity)**

2150hrs B/P 150/98. (Admission: B/P 148/98am) Pulse: 88 (Admission: 80 am). LMC notified of change in B/P and requested VE — Not dilated and 1 cm long, cervix posterior. Consent for Pethidine. * was this the right choice of pain relief with reduced variability noted on the CTG and Systolic B/P rising, also Tachysystole continues! LMC's original Plan was consent for an epidural*

2230hrs [Mrs B] back in the bath after CTG stopped it was noted that reduced variability had occurred over 14 minutes, should have been left on longer as B/P had risen and Tachysystole continued and LMC notified and gave no new orders. **(not accepted practice from both the core midwife and LMC — MODERATE departure from best practice and IOL Guidelines/Electronic Fetal Monitoring/Hyperstimulation**

Policies of Hutt Maternity) even though the midwife recognised the changes in B/P, pulse and Tachysystole she should have requested that the LMC come in for an assessment.

2330 Now out of the bath. [Mrs B] feels like she is not coping. CTG commenced: FHH good variability in the first 10 minutes, the variability reduced with the odd quick decel. Tachysystole continues. 34 minutes later CTG discontinued at 00:04 hrs on [Day 5]. (CTG page 8) **(not accepted practice as CTG needed to continue — MODERATE departure from best practice and IOL Guidelines/Electronic Fetal Monitoring Policy/Uterine Stimulation Policy of Hutt Maternity**)

2330hrs B/P 158/94 Pulse: 80 Temp: 37.2 (Admission [Day 4] Temp: 36.4) ***(May have benefitted from some Paracetamol and fluids)***

[Day 5]

0005hrs Pethidine administered 25mg IV. CTG has just commenced. Fetal heart recordings changed from 130 to 110 over period 4 minutes before returning to 130. It was reactive. However, discontinued 26 minutes later. Tachysystole continues. **NO VE done —** usual practice even if been done earlier as this gauges the amounts of pethidine that can be given safely. Pethidine has the most impact on a baby when administered to the mother **2–4 hours prior to delivery** as it crosses the placenta and can cause breathing difficulties after birth due to depressive effects on the baby's respiratory centre. **(not accepted practice as needed to have continuous monitoring once narcotics given — Moderate departure from best practice and IOL Guidelines/Electronic Fetal Monitoring Policy/Uterine Stimulation Policy of Hutt Maternity)** (CTG page 9)

0020 [Mrs B's] husband voiced concerns about discontinuing the CTG. Noted B/P has gone down.

000 Pethidine 75mg given IM and CTG recommenced. NOTE: CTG left on for 11 minutes after this. FHH variability really changing now and movements noted on CTG. Tachysystole continues. **(not accepted practice as continuous monitoring should have continued — Moderate departure from best practice and IOL Guidelines/Electronic Fetal Monitoring Policy/Uterine Stimulation Policy of Hutt Maternity).** (CTG page 10)

0040 it was documented that labour established. Tachysystole continues and there has been 10 minutes since Pethidine was given. The **LMC** at this stage **should have been called to come in** if it was thought that [Mrs B] was in established labour. **(No VE documented as being done.)**

[Mrs B] had no further Midwifery input for 1 hour 45 mins even though it was documented she was in established labour. Her LMC should have been called (not accepted practice — Moderate departure from best practice and IOL

Guidelines/Electronic Fetal Monitoring Policy/Uterine Stimulation Policy/Prescribing by Midwives Guidelines of Hutt Maternity).

0215hrs The Bell was rung by [Mrs B] to inform staff of SROM. No mention of colour of liquor. **(LMC still not contacted)**

0230hrs VE — fully dilated. FHH decel noted to be 80bpm. Emergency bell rung.

0241 CTG commenced: **NOTE:** Tachysystole continues and baby movements are almost mirroring the contractions. No vital signs taken. CTG remained on for 60 minutes. **Fetal Scalp Electrode (FSE) should have been applied at time of fetal decel and remained in situ till delivery.** (CTG pages 11 and 12)

0300hrs LMC present **(2hrs 20mins after documented labour established on partogram, but not entered in the clinical notes)**

0320 Birth female infant. **(2.50 minutes after Pethidine was given right in the middle of 2–4 [hour] time frame where baby is most likely to have central cyanosis effect.**

0340 B/P 160/100 (post-partum)

0345 Labetolol charted by LMC and given to [Mrs B]. Baby required Paediatric Input.

TAKEN INTO CONSIDERATION BEFORE RECOMMENDATIONS

*Was there adequate staff experienced on duty overnight

*Was [the] Hospital's equipment needing to be updated in Delivery Suite E.g. CTG machines

*Was there enough vital signs equipment to make the midwives' job easier in each delivery room

*Did the ward have a high acuity of other patients that night

*Was the staff being kind to the LMC Obstetrician in not calling earlier to come in and make another plan

*The LMC plan did not include a plan for fetal monitoring

*No ultrasound was performed prior to the IOL

*Vital signs were not done enough or recorded for a woman with PET

*Did the Midwifery staff get confused about their role in the IOL process (the dynamics of Midwife/Obstetrician which happens often diluting a midwife's decision making

*Was it a systems fault — the fact being that the LMC was an Obstetrician who identified Tachysystole earlier in the day, but continued on with the Induction process, making this the 'norm'

*If the LMC had been a midwife would the Core staff have called the on call Obstetric team to review the CTG tracing so another plan could be made!

*It is almost impossible for an LMC who is off site to make safe decisions when not on the spot. They rely on the core staff to report accurate findings and express their concerns.

*Should Core staff be responsible for IOL in conjunction with the on call Obstetric team with regards to clinical management of an IOL until the woman is in established labour.

*My understanding is that Tachysystole can occur 4–6 hours after the IOL commences, but should have resolved before continuation of the next round of IOL.

*[Mrs B's] Tachysystole carried on I believe for more than 13 hours.

*A Midwifery staff member phoned the LMC with concerns — perhaps should have insisted the LMC come in for reassessment and to update the plan.

*I noted that at the end (CTG pages 12–13) that baby's heart rate had Fetal Heart Rate (FHR) is present when the oscillations exceed 25bpm. This pattern is sometimes called a **saltatory pattern** and is usually caused by acute hypoxia or mechanical compression of the umbilical cord and cause placental abruption.

*That the LMC is responsible for the education of IOL by way of verbal discussion and written information. Surely a woman must be aware that an IOL before term would be due to reasons which indicated early delivery, example in this case PET.

*CTG monitoring was not left on long enough in most cases during the induction processes, as IOL was for PET with Tachysystole identified pre-prostin at 13:48 hrs on [Day 4]

*I believe that the midwifery staff did recognise a problem overnight E.g increase B/P, Temperature and the continuation of Tachysystole. This was relayed to the LMC but again the management plan was not effective and the seriousness of the situation not fully understood by the LMC.

*Perhaps repeat PET bloods should have been done as B/P rising and this was not ordered by the LMC.

*The communication between the midwifery staff and LMC was not reasonable. Was this due to inexperience or was the midwife unable to adequately verbalise the seriousness of the situation. She may well have been trying to manage high acuity on the ward and [Mrs B] was one of a few women needing care that night.

* A VE examination was not carried out before the administration of Pethidine, which would be normal standard practice, even if an examination had been done an hour and a half [earlier].

*PET women can sometimes dilate up very quickly once labour establishes. However, a VE at the time of Pethidine would have been an advantage to both the core staff and the LMC.

*Was Pethidine the right choice of pain relief when B/P was not normal although symptomatic. Perhaps epidural would have been a better choice.

*[Mrs B] after an explanation of her condition may have consented to an epidural if she had been aware of the implications of her rising B/P, temperature and her Tachysystole. After all it had been consented to earlier the day before.

*The scalp clip (FSC) was not attached to the earlier VE as [Mrs B] was not dilated to be able to insert this.

*However an FSC should have been attached once the SROM occurred and the FH rate dropped when fully dilated.

Was the Standard of care accepted practice?

([Mrs B] says she was never told that her IOL was high risk.)

When a woman presents to delivery suite for an IOL she should be fully informed as to why an IOL is happening before term and what is likely to happen at the start of the day and throughout the entire IOL process. This conversation should have taken place at the time of booking an IOL with her LMC.

However, midwives working on a shift should have found out how much [Mrs B] knew about the events that were about to occur with her IOL and if [Mrs B] understood the reason why she was being induced at 38 weeks. This information may have changed the way [Mrs B] acted towards her pain relief during her IOL. E.g in the bath, declining pain relief and not being aware of her ongoing Tachysystole.

(NZCOM Midwives Handbook of Practice — the Scope of practice for a midwife)

'The midwife works in partnership with women, on her own professional responsibility, to give women the necessary support, care and advice during pregnancy, labour and the post-partum period.'

Good Practice would be:- The LMC to provide a comprehensive care plan for [Mrs B] for the core midwives to follow and [Mrs B] to be aware of the risk factors of PET and the type of pain relief that would be beneficial for her B/P.

I believe the midwives understood that the responsibility remained with them to provide midwifery care, but feel that their judgment was hindered due to the LMC being an Obstetrician and the lack of a comprehensive care plan. **The principle of cooperative planning and professional actions remains the same regardless of who shares the care** (NZCOM Consensus Statement — Roles and Responsibilities).

Charting of the Prostaglandins for IOL: This was not charted by the LMC or documented in the Drug Chart.

Good Practice: Chart and enter time given.

Recommendation: Follow Hut Valley Maternity Protocol for **IOL** charting and entering time of dose given.

The frequency of CTG monitoring of [Mrs B] and baby during IOL

The Hutt Valley Maternity protocol on IOL was not carried out as stated in their policy for the length of time a CTG should remain in situ after the administration of Prostin. (1 hour — or longer if risk factors evident)

Continual CTG monitoring was not carried out when Tachysystole was identified in the afternoon and continued for more than 13 hours.

Good Practice:- Consult with the LMC again. Ask for a review and care plan updated.

Documentation of vital signs and Tachysystole not recognised as a risk factor. Regular vital signs were not done on a regular basis for a PET client.

Documentation was sparse throughout the entire time.

Good Practice: CTG Follow protocol for continuous monitoring and vital signs even if not in labour when an anomaly has been found. **(RANZCOG CLINICAL GUIDELINES —** Ask the question are there intrapartum risk factors developing? E.g. Can be IOL with prostaglandin and Tachysystole).

Recommendations: Consult with LMC or Onsite Obstetric Team. Stay with the woman until normal uterine activity resumes. Tocolysis may be considered. Continue with all vital signs as per protocol for PET IOL.

Good Practice for CT monitoring: The CTG should be reviewed at least every 15–30 minutes, and should be acted upon if anomalies continue. These findings should be regularly recorded, either by written or electronic entry, that the CTG has been reviewed. (RANZCOG)

Vaginal Examination

VEs were not timely enough for an IOL on a PET woman. After all [Mrs B] was being induced for PET, so this should have been treated as a high risk IOL.

No VE done before administering Pethidine.

Good Practice/Recommendations: Check VE and vital signs before administering Pethidine.

Options of pain Relief:

Bath: Although this provided [Mrs B] with some relief at the time. This delayed continual CTG monitoring.

Pethidine: Not a good choice when VE was not done. If a VE had been done the choices of pain relief may well have been different and [Mrs B's] LMC would have been called in.

Epidural: Although charted was never used.

Good Practice: An epidural would have helped with elevated B/P by lowering it. I believe [Mrs B] would have taken this option if she knew the extent of her risk factors of PET and her continued Tachysystole. A VE would have needed to be done first especially when [Mrs B] requested pain relief. An epidural may have slowed down the contractions, so that the baby had time to recover in-between contractions. IV fluids would have been needed and this may have helped lower temperature and pulse. [Mrs B] may have felt she had a more positive birth experience.

Attachment of Fetal Scalp Clip (FSC)

It was reasonable to not attach a FSC earlier on VE findings as the cervix was not dilated to be able to do this. However, once fetal heart rate dropped at fully dilated it would have been advantageous to put one on to determine ongoing wellbeing of the baby right until delivery.

Good Practice/Recommendations: Earlier attachment of a FSC was not possible due to the lack of dilatation. HOWEVER — definitely one should have been applied when fetal bradycardia occurred after SROM.

Recommendations:

(1) That IOL be carried out by onsite Obstetric Team with core midwives in attendance. Decision making to be between the in-house Obstetrician and core Midwife in attendance. Once labour is established then the LMC may be called in to take over the care.

(2) Inductions of labour is a secondary care procedure. This procedure cannot be performed in a primary unit. A LMC Midwife is a primary health service provider (NZCOM Midwives Handbook for practice — Competency Three).

(3) LMC is theoretically contracted to the Ministry of Health (MOH) to provide a Primary Care Service. IOL is not a primary service.

(4) If the Hospital was responsible for the induction process there would be no room for miscommunication, reluctance to make the call to the LMC who is off site. Information may not be relayed as well as it should be depending on the experience of the core midwife, and the ward acuity at the time.

(5) I believe the core midwives were not really clear about their role with a LMC Obstetrician. After all [Mrs B] was paying for the luxury of a private obstetrician to provide her with good care.

(6) Does the Hutt Valley have enough skill mix of midwifery staff at one time on duty to deal with high acuity?

(7) Was the equipment of CTG and B/P monitoring up to date.

(8) That early detection of a problem should be relayed to the LMC immediately and a request for consultation be sought, so that an updated plan can be made.

(9) Did the midwife concerned recognise she is an autonomous practitioner, regardless of her setting and is accountable for her practice? That she must clearly document her decisions and professional actions. (Standard 7 — NZCOM Midwives Handbook for Practice).

(10) The midwife concerned identifies deviation from the normal, after a discussion with the woman, consults and refers appropriately — which would be the LMC in this case. (Standard 6 — NZCOM Midwives Handbook for Practice).

(11) That all the midwives have a Midwifery Review who were involved in [Mrs B's] care so that they can reflect and learn about themselves and what they can do to improve their practice, by way of recognising their strengths and limitations in their skill, knowledge and experience.

(12) That all the midwives assess their practice in relation to current legislation, the Midwifery Scope of Practice — Handbook for Practice and Code of Ethics.

(13) A CTG workshop with a documentation component included for every midwife.

(14) Develop skill so that they become assertive in requesting a review from the LMC and not try to make all the decisions on their own, especially when they are also looking after other women on the ward at the same time

References:

NCZOM Midwives Handbook for Practice

RANZCOG	http://ranzcog.edu.au
MOH — Section 88	http://www.health.govt.nz
MOH Referral Guidelines	http://www.health.govt.nz
Hutt Valley Maternity Protocol for IOL	http://www.huttmaternity.org.nz
Transfer Guidelines/protocol:- NZCOM	http://midwife.org.nz
HDC — code of rights	hdc.org.nz

NZCOM Consensus Statement for Roles and Responsibilities in the Hospital Setting

Linda Burke
(LMC Midwife)
1511395"

Additional advice from RM Linda Burke

"I have read Hutt Valley District Health Board's response to my comments for Complaint: [Mrs B], Ref: C17HDCO1376.

I am confident that Hutt Valley has now addressed the improvement of safety and quality care to provide further education for all midwives, this will build midwives' confidence to enable robust clinical decisions for the future.

I would like to congratulate Hutt Valley District Health for putting in such a robust education programme for the improvement in the safety and quality of care."

Further additional advice from RM Linda Burke

"It would have been most helpful in the first instance to be made aware that the midwife who wrote in retrospect was in her first year of practice.

I believe she did consult with another midwife who was on shift with her that night and did follow the Obstetrician LMC's plan.

However, I do want to point out that I believe it was the midwife's lack of experience and perhaps her lack of understanding about the role of an Obstetrician LMC when an induction of labour is in progress.

It is not the midwifery workforce on duty to continually nurture a woman for hours on end when [Mrs B] and her husband had employed an Obstetrician LMC to oversee and deliver her baby safely.

I believe that [Mrs B] did need more care, as her medical picture was starting to change a little with her B/P going up, her husband's anxiety about the CTG and the need for pain relief.

The new graduate midwife should have called the Obstetrician LMC and requested attendance which was required by [Mr and Mrs B] who had employed a private service which they expected to be more personalised.

This procedure would have been perfectly acceptable and would have helped alleviate the anxiety that [Mr and Mrs B] were experiencing, and most likely the midwifery staff as well (this is again an example of the midwife's inexperience).

I believe the midwifery staff did their best to deal with the situation at the time, however, by calling in the Obstetrician LMC earlier would have made all the difference to everyone concerned.

It was never made clear if the ward was adequately staffed that night! Were there other inductions of labour happening also?

Was the skill mix adequate that night for the acuity. If there are one or two factors mentioned above then the problem is also a systemic one.

However, if the staffing level was adequate, the skill mix good and the acuity safe then I believe the midwife in her first year of practice was lacking experience and confidence to be able to assert herself more in requesting the Obstetrician LMC be in attendance earlier. This skill comes with many years of experience and clinical practice."

Further additional advice from RM Burke

"**RECOMMENDATIONS**

LMC Private Obstetrician [Day 4]

- Documentation of PGs at time of insertion were not documented on the drug chart.
- More detailed care plans to be outlined to the Core Midwifery staff.
- Continuity of Care would lessen the risk of things getting overlooked.
- Consider own senior midwifery team to help with high risk inductions. Which will provide continuity of care.
- All scans in the future to be done in the Community.
  (a) Utilize their expertise
  (b) Use customized growth charts to plot growth E.g. 'Grow and Biometric Charts'. This will avoid further undiagnosed IUGs and SFDs babies.
  (c) Show and share this information to the client during her pregnancy
  (d) Consider serial scans.
- Explain to [the family] the changes in your practice that will be made in the future to detect early IUGRs and SFDs baby with the grow and biometric charts.
- Listen to the midwives when they recognise and are concerned about their clinical findings. e.g. early detection of Tachysystole.

Acting Charge Midwife Manager Clinical Entry 0830 on [Day 4]

- Documentation
  - If not written, does not exist
  - More information was forthcoming on 4.2.19 however, this was not documented at the time on the clinical notes.
  - There is no entry of whom you handed the clinical responsibility over to after your shift had finished.
- Your early recognition of Tachysystole to be commended.
- However, it was not documented on your initial clinical notes at 1400hrs when you say no uterine activity. Your letter dated 4.2.19 says otherwise, that you had indeed pointed this out to the LMC (but if not documented at the time, does not exist).

- You have a duty of care to be the woman's advocate in this instance. Your findings were correct with your early detection.

  (a) Attend workshop 'Dotting the l's and Crossing the T's'.

Associate Charge Midwife Manager Clinical Entry 1540 hrs on [Day 4]

- Documentation

  - There is no entry of whom had handed over clinical responsibility, nor was there documentation of how you handed over to after your shift had finished.

- Your early recognition of Tachysystole to be commended.
- You have documented — contracting 5:10
- However, have a duty of care to be the woman's advocate in this instance. Your findings were correct with your early detection, however, it would have been prudent to notify the LMC again of this.
- This would have shown and also been recorded that two senior midwives had detected early signs of Tachysystole.
  - Attend workshop — 'Dotting the l's and Crossing the T's'.

Midwife Clinical Entry 1800 [Day 4]

- Documentation

  - No report received by this midwife. Ineligible hand writing when signed name but this midwife. Signature and name was clear on the drug sheet. Clinical notes written with a two hour fifty-minute gap.

Attend workshop 'Dotting the l's and Crossing the T's'.

(a) Attend Hydrotherapy workshop.

- Who is appropriate to have this type of pain relief.
- A bath can mask frequency of contractions and rising B/P for women with pre-existing risk factors.
- VE was deferred by LMC at 1840 as client in the bath.

- Tachysystole

  Your detection of this to be commended.

  - It has been documented.

  Three midwives how have recognised Tachysystole.

  - Your duty of care to be the woman's advocate has been documented and relayed to the LMC

Core Midwife Clinical Entry 0215hrs

- It appears communication between the two practitioners not documented well. The Clinical responsibility should be documented when taking over and handing back care from each other.

  (a) Attend 'Dotting the l's and Crossing the T's' workshop.

Midwife Clinical Entry 2300 hrs [Day 4]

- New Graduate Midwife
- Documentation
  - This was more detailed compared to her colleagues.
  - To be commended as 'Dotting the I's and Crossing the T's' has completed this.
- Clinical handover at each shift needs to be documented better or when someone steps in and takes over the clinical responsibility even for a short time.
- Attend Hydrotherapy workshop

  Although took over care from previous midwife when [Mrs B] was in the bath.
  - Learn who is appropriate for this type of pain relief and who is not.
  - B/P rising and the frequency of contractions can be masked.
- Attend Prescribing workshop
  - to learn the importance of giving Narcotics without doing a VE first.
- Attend a CTG surveillance workshop.
  - Continuous monitoring for high risk women is imperative especially after Narcotics have been administered.
- Tachysystole has been mentioned as prostin tightening.
  - Learn the difference and the long term consequences of prolonged Tachysystole which had been undetected for hours.

[The hospital]

E.g. Senior Midwife or Charge Midwife on every shift to coordinate and facilitate the running of the ward smoothly and safely.

- No Junior or New Graduate midwives to be left on shift while looking after high risk women.

- Adequate staff be present with skill mix relevant to the work load on every given shift.

That the minimum amount of staff be involved with each IOL

- In [Mrs B's] case there was a total of five midwives who had made clinical entry over the time of IOL.
- Continuity of care as much as possible to obtain good outcomes for mother and babies, and job satisfaction for the midwife.
- Hutt Valley must accept responsibility that the two midwives who were covering a shift from 2300 hours were not senior midwives.
- This is a systemic problem which needs to be addressed.
- One midwife had had four years' experience and only relieved the new graduate midwife for a short time while the new graduate midwife left the room to attend to another birth.
    - This scenario is an indication to me that [the] Hospital did not have enough experienced midwives on night shift as the new graduate midwife had to leave [Mrs B] to attend another birth. This is totally unacceptable.
    - I believe that [Mrs B] required one on one care long before her LMC arrived and this should have been relayed to the LMC much earlier that attendance was required and this comes from a lack of experience.

    More support is needed for New Graduate Midwives and those midwives who are not yet senior. Each one needs to be nurtured and cherished in a safe workplace, so that they remain in the profession.
- There were a total of three midwives who recognised Tachysystole and had voiced their concerns to the LMC.
    - Why did the LMC not take notice of these midwives who from their vast experience had recognised this many hours before the birth of [Mrs B's] baby. Their concerns were either voiced or documented.
    - Charge Midwives on every shift would have to be mindful about their duty of care and be strong advocates for the woman and her whānau.
- That the staff mentioned need to attend the workshops:-

    (a) Dotting the I's and Crossing the T's.

    (b) CTG surveillance workshop

    (c) Tachysystole workshops

    (d) Hydrotherapy workshops

    (e) Pharmaceutical workshop

(f) All staff be familiar with Hutt Valley protocols

- Charge Midwives and Senior Midwives:-

(a) Be more assertive with your clinical findings when dealing with the LMC and be the woman's advocate.

(b) Be familiar with Section 88 referral guidelines — the LMC's role.

(c) Ensure that everyone's workloads or client numbers are not so large as to compromise the quality of care when in charge."