Whanganui District Health Board

Midwife, RM B

Midwife, RM C

Midwife, RM D

A Report by the

Deputy Health and Disability Commissioner

(Case 16HDC00977)

Health and Disability Commissioner

Te Toihau Hauora, Hauātanga

Contents

Executive summary

1. In 2015, Mrs A registered with registered midwife (RM) RM B as her midwife and LMC.[1]

2. Mrs A went into labour and was advised by RM B to meet her at Hospital 1. When Mrs A arrived at 2.20pm she was examined by a core midwife, RM C. RM B arrived at 2.58pm. However, neither midwife carried out an initial assessment of Mrs A's vital signs, and they were recorded once during her labour.

3. RM B had established that Mrs A was positive for Group B Streptococcus (GBS), and the appropriate prophylactic antibiotics were administered at 6.10pm.

4. The fetal heart rate (FHR) was recorded from 3.13pm to 9.06pm. At 9.06pm, RM B recorded that she was having difficulty hearing the FHR. She pressed the "staff assist" button, and two core midwives, RM C and RM D, responded. RM C examined Mrs A and listened to the FHR. A CTG[2] was not used to assess the FHR. At 9.20pm, RM C called the on-call obstetrician, Dr E. Dr E recommended that labour continue.

5. Mrs A's labour progressed, and the midwives continued to have difficulty hearing the FHR. At 9.49pm, RM C attached a CTG, but none of the midwives present in the room monitored the results. At 10.07pm, RM D noticed the lack of variability in the FHR on the CTG. Dr E was called, but the on-call paediatrican was not asked to attend. At 10.10pm, Baby A was born with Dr E's assistance. Baby A was white and floppy, and was making no respiratory effort.

6. The core midwives commenced emergency resuscitation using a Neopuff.[3] However, the device did not function, owing to a displaced tube, and resuscitation continued using an Ambu-bag.[4] An instruction was given to activate the emergency bell, but instead the staff assist button was pressed. Hospital staff responded, and at 10.16pm the emergency bell was pressed. There were further delays in contacting the on-call paediatrician, Dr F. Dr F arrived at the delivery suite at 10.42pm, and assisted with Baby A's resuscitation and transferred him to SCBU[5] at 11pm.

7. Intensive care continued in SCBU. Baby A was transferred to a ventilation machine, but it was not set properly. The NICU[6] team at Hospital 2 was called, and arrived at 2.15am. The ventilator was adjusted to the correct setting, and Baby A was transferred to Hospital 2. Baby A's life support was withdrawn, and he died surrounded by his family.

[1] Lead Maternity Carer.
[2] Cardiotocograph — 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.
[3] A manual resuscitation device.
[4] A manual resuscitation device.
[5] Specialist Care Baby Unit
[6] Neonatal Intensive Care Unit.

Findings

8. The Deputy Commissioner was critical that RM B did not undertake the following:

- Assess Mrs A at home when labour commenced, in view of her GBS status;
- Administer antibiotics within the appropriate timeframe;
- Check that initial maternal observations had been undertaken, and carry out further appropriate maternal monitoring, including over the period when Mrs A was in the birthing pool;
- Auscultate and record the FHR adequately between 3pm and 9.50pm;
- Recognise that a CTG was necessary when she was having difficulty auscultating the FHR;
- Observe the CTG and call for obstetric support before 10.07pm;
- Take responsibility for ensuring that a paediatrician was present at the birth;
- Communicate clearly with the core midwives, and take responsibility for communicating with the obstetric and paediatric teams; and
- Ensure that full and accurate clinical records were kept.

9. The Deputy Commissioner found that RM B failed to provide Mrs A with services with reasonable skill and care and, as a result, breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code).[7]

10. RM C had a responsibility to advocate for adequate monitoring of the FHR, and after commencing the CTG she should have recognised and responded to the fetal distress. The Deputy Commissioner considered that by failing to do, RM C did not provide Mrs A with services with reasonable care and skill and, as a result, breached Right 4(1) of the Code.

11. RM D was not found in breach of the Code.

12. A number of concerning features were noted about how Mrs A and Baby A were cared for by multiple Whanganui District Health Board (DHB) staff:

- The core midwives failed to advocate for the adequate monitoring of the FHR and, after commencing a CTG, failed to recognise and respond to the fetal distress;
- Whanganui DHB staff failed to call the paediatrician prior to Baby A's delivery and, when they did attempt to call the paediatrician, they called the wrong number;
- The staff assist bell was pushed instead of the emergency bell when emergency assistance was required;
- The Whanganui DHB switchboard failed to make contact with the paediatrician or to leave him a message, which resulted in an additional delay in the arrival of the paediatrician;

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

- The equipment required for an emergency resuscitation in the delivery room was not fit for immediate use; and
- The ventilator was set up incorrectly.

13. These failures in the care, communication systems, and emergency equipment at Whanganui DHB resulted in delays in providing care to Mrs A and Baby A. Accordingly, the Deputy Commissioner found that Whanganui DHB failed to provide services with reasonable skill and care, and breached Right 4(1) of the Code.

Recommendations

14. The Deputy Commissioner recommended (a) that the Midwifery Council of New Zealand consider whether any further review of RM B's competence is required; (b) that should RM C apply to return to midwifery practice, the Midwifery Council of New Zealand consider whether a competence review is warranted; (c) that both RM B and RM C provide a written apology to Mrs A and her family for the breaches of the Code identified; and (d) that Whanganui DHB provide a report to HDC on its communication systems for maternity emergencies, and the frequency of the fetal surveillance education being providing to its staff and to LMCs.

Complaint and investigation

15. The Health and Disability Commissioner (HDC) received a complaint about the services provided by RM B at Whanganui DHB.[8] The following issues were identified for investigation:

- *Whether RM B provided Mrs A and Baby A with care of an appropriate standard.*
- *Whether RM C provided Mrs A and Baby A with care of an appropriate standard.*
- *Whether RM D provided Mrs A and Baby A with care of an appropriate standard.*
- *Whether Whanganui DHB provided Mrs A and Baby A with care of an appropriate standard.*

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

[8] Whanganui DHB notified the Midwifery Council of New Zealand (the Midwifery Council) about the midwifery care provided by RM B to Mrs A and Baby A (under s34 of the Health Practitioners Competence Assurance Act 2003). The Midwifery Council referred the notification to HDC under s64 of the Health Practitioners Competence Assurance Act 2003. HDC advised Mrs A of the complaint. Mrs A said that while she was not unhappy with RM B, she would support the investigation.

17. The parties directly involved in the investigation were:

Mrs A	Consumer
RM B	Midwife and Lead Maternity Carer (LMC)
RM C	Midwife (core midwife)
RM D	Midwife (core midwife)
Whanganui DHB	Provider

18. Further information was received from:

Coroner	
Midwifery Council of New Zealand	
Dr E	Obstetrician
Dr F	Paediatrican
RM G	Midwife (core midwife)
RM H	Midwife (core midwife)
RM I	Midwife (core midwife)
Dr J	Paediatrician

Also mentioned in this report:

RM K	Midwife
RM L	Midwife

19. Independent expert advice was obtained from a registered midwife, Emma Farmer (Appendix A); an obstetrician, Dr Celia Devenish (Appendix B); and a paediatrician, Dr Simon Rowley (Appendix C).

Information gathered during investigation

Introduction

20. In 2015, Mrs A registered with RM B as her midwife and LMC. This was Mrs A's first pregnancy.

21. This report concerns the care provided to Mrs A during her labour at Whanganui DHB, and the care provided to her baby, Baby A, at Whanganui DHB.

Pre-labour

22. At about 4am Mrs A's waters broke at home and she started having contractions. She was 39 weeks pregnant. She called RM B at 8.27am. RM B recorded: "Liquor remains clear, baby moving well, to keep me informed." She did not visit Mrs A at her home, and told HDC that there were no clinical indications that Mrs A needed to be seen immediately.

23. At 1.20pm, Mrs A's husband called RM B and advised her that contractions were 1–2 minutes apart and were lasting for 50–60 seconds. They agreed that Mrs A should go to the hospital.

Initial assessment at Hospital 1

24. RM B telephoned the hospital and spoke with a core midwife,[9] RM H. RM B told RM H that she would be delayed by half an hour, and they agreed that the core staff would assess and care for Mrs A until RM B arrived.

25. Mrs A arrived at the hospital maternity unit at 2.20pm. RM B's handwritten labour notes record the fetal heart rate (FHR) at 144bpm.[10] RM B said that she had not arrived at the hospital, and wrote this note retrospectively but did not record it as such.

26. RM C was the core midwife who provided care to Mrs A when she was admitted. RM C performed a vaginal examination and found that Mrs A was 3cm dilated. She provided Mrs A with Entonox[11] for pain relief.

Initial observations and documentation of labour

27. Whanganui DHB's Fetal Surveillance Policy is outlined later in this report. The policy requires the FHR to be monitored by intermittent auscultation every 15–30 minutes in active first stage labour, and at least every five minutes in active second stage labour. If there is any difficulty in auscultating the fetal heart, the midwife must perform a CTG and, if the CTG is abnormal, the midwife must arrange an urgent obstetric consultation.

28. RM B stated that after she arrived at the maternity suite at 2.58pm, she accessed MCIS[12] to obtain the information recorded by the core midwife. She stated:

> "[I] then transcribed this information to the [handwritten labour] midwifery notes. These are essentially the retrospective notes [2.20pm to 2.54pm]. I mistakenly overlooked writing 'retrospective' at the time. I continued to write contemporaneously after arriving on the ward, updating myself on [MCIS] record and transcribing this information."

29. RM B told HDC:

> "During the very brief handover I received, I was informed that [Mrs A] was dilated to 3cm. This being the case, I feel that it was entirely reasonable to believe that normal admission protocol had been followed."

30. RM B did not carry out an assessment of Mrs A's vital signs. Despite having transcribed the MCIS admission record, which did not contain any observations, into her handwritten

[9] Core midwives are employed by the DHB, and are also known as "hospital midwives".
[10] A normal FHR is between 110 and 160bpm.
[11] Entonox (nitrous oxide) is an inhaled gas used to relieve pain.
[12] Maternity Clinical Information System (MCIS) is an electronic record system that was introduced into Whanganui DHB Maternity Unit in 2015. Whanganui DHB said that at the time of these events, clinicians were still learning to use the system. It has since been discontinued.

notes, RM B stated: "I assumed [vital signs and admission work] had been done and continued as if all had been done."

31. At 5.20pm, RM B recorded Mrs A's vital signs. This was the only time that RM B recorded Mrs A's vital signs during her labour. Repeat observations were due at 9.20pm, but RM B advised that they were not checked then because Mrs A was delivering her baby.

32. RM B also recorded at 5.20pm that she had carried out a vaginal examination, and that Mrs A was 5cm dilated and was helped into the birthing pool.

33. Whanganui DHB's Water-Use for Labour and Water Birth policy (Water Birth Policy) states:

> "Maternal temperature should be monitored regularly throughout labour (literature suggests 1–2 hourly). There is a theoretical risk that prolonged maternal hyperthermia may lead to fetal hyperthermia and affect fetal well-being.
>
> The water temperature will be determined by each individual woman, it will be warm enough for her to be comfortable, yet cool enough for the woman to labour without becoming dehydrated or overheated. Literature suggests water temperature checks 1–2 hourly. [The NICE guidelines 2007 suggest that the temperature should not be above 37.5°C.]"

Management of Mrs A's GBS-positive status

34. RM B had established that Mrs A was positive for Group B Streptococcus (GBS). While this information was available within Whanganui DHB's MCIS system, neither the front page nor the risk assessments were updated to reflect this.

35. GBS is a common bacterium present in 10–35% of all women, and can be detected by taking a vaginal swab. Usually it is harmless to the woman, but it can cause significant and sometimes fatal sepsis in a newborn baby. Whanganui DHB guidelines and a national consensus guideline provide that a woman who is GBS-positive should be given IV antibiotics once active labour is established.

36. At 5pm, RM B attempted to insert a cannula[13] for the IV antibiotics, but was unable to do so and called the RMO.[14] The RMO said that she would come when she had finished her dinner.

37. At 6.10pm, core midwife RM D inserted a cannula. A blood sample was taken and, over an hour later, RM B administered the required prophylactic antibiotics intravenously to Mrs A. RM B told HDC that she believes that the timeframe for administering the antibiotics was not unreasonable or inappropriate.

[13] A cannula is a thin tube that is inserted into a vein to administer fluids or medication, or to take a blood sample.
[14] Resident medical officer.

Fetal monitoring

38. From 3.13pm to 9.06pm, RM B recorded the FHR in her handwritten notes 34 times. However, the FHR was recorded in MCIS only 14 times for the same period.

39. RM D told HDC:

> "I also noted that there was no evidence of the labour being recorded. There was no paperwork on the desk and the laptop computer was off. I did wonder where [RM B] had been recording the FHR's that she said she had been listening to."

40. In response to the provisional opinion, RM C told HDC that she did not see any evidence of the labour being recorded by RM B.

41. The FHR was recorded between 138 and 148bpm. The normal range during labour is between 110 and 160bpm. There was no documentation as to when the FHR was monitored in relation to the contractions,[15] and there was no description of the rhythm, variability, and any accelerations and decelerations, as required by the Whanganui DHB Fetal Surveillance Policy.

42. RM B told HDC that between 8.15pm and 9.06pm, while Mrs A was in the second stage of labour, the FHR was recorded every five to eight minutes. RM B acknowledged that the recommended interval is five minutes during the second stage of labour.

RM C and RM D respond to staff assist call

43. At 8.15pm, Mrs A got out of the birthing pool and started to push. At 8.18pm she was fully dilated and she continued to push, but by 9pm Mrs A was tired and finding it hard to push effectively. The FHR was 142bpm.

44. At 9.05pm, RM B discussed with Mrs A and her husband that she would be calling core staff "for another set of eyes on how to help [Mrs A] with her labour", and then pushed the staff assist call bell.

45. RM B told HDC: "After [9.06pm] there was no clinical indication that there were any problems but I was unhappy with progress and I had sought the advice and guidance of the senior core staff."

46. However, at 9.06pm RM B recorded, "[LMC][16] struggling to get FH," and at 9.07pm, "LMC continues to try to hear FH."

47. In her handwritten labour notes, RM B recorded that at 9.08pm:

[15] The Royal Australia and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) Guidelines recommend that each auscultation episode should commence toward the end of a contraction and be continued for at least 30–60 seconds after the contraction has finished.
[16] RM B refers to herself as "LMC" in her handwritten notes.

> "[RM] enter[ed the room] with new core midwife [RM D]. Difficult to get good FH reading with Doppler[17] as baby has moved into pelvis. LMC requesting second opinion from core staff as feels little progress with contractions and descent."

48. RM B stated that she was then able to obtain an FHR of 132, and she recorded this. She told HDC:

> "After [9.06pm] my records do not show all FHR recording during this time as the experienced core staff who were now in the room were also documenting progress using hospital notes."

49. RM B requested that RM C perform a vaginal examination to check progress. The vaginal examination showed that the fetal head was at "station 0"[18] with "caput+++".[19]

50. RM C told HDC:

> "I heard decel[erations] during [vaginal examination] with [Mrs A] pushing, but recovery back to what I believed to be baseline fetal heart rate, the LMC had informed me she had no concerns regarding the fetal heart, I cannot recall her stating she had any concerns. Her only concern was slow progress in second stage. As far as I was aware she had had no problems regarding the fetal heart up until then."

51. At 9.10pm, RM B recorded the FHR in both her handwritten notes and on MCIS. The entry in her handwritten notes was: "FH 75 ↑ 115 after contraction now as possibly maternal." The entry on MCIS was: "fh75 up to 115 after contraction fhh90." It is unclear what these notes mean. RM B later told HDC: "My notes record that the FHR of 75 was thought to be the maternal heart rate. The FHR was 115. My notes do not record a drop to 90 and therefore I cannot comment."

52. However, RM D recorded the events retrospectively in MCIS as follows: "FH auscultated at 75bpm after contraction, rising to 115bpm. M[aternal] HR 90bpm."

53. RM D told HDC:

> "I had identified that there were abnormal intermittent auscultations of the fetal heart from the time that I entered the room with [RM C]. I acknowledge that this is when the CTG should have been commenced."

54. RM C also told HDC:

> "I agree in hindsight [Baby A's] fetal well-being should [have] been monitored using a CTG after the vaginal assessment and the fetal heart assessment at [9.10pm]. I was

[17] A Doppler is a hand-held ultrasound monitor used to detect the fetal heart rate.
[18] "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.
[19] Caput succedaneum is a diffuse swelling of the fetal scalp caused by pressure during delivery.

> relying on the information given to me by the LMC who told me the fetal heart was fine, plus my findings and hearing the deceleration with the contraction during [vaginal examination] and return to what I thought was normal. On reflection however I should [have] insisted on an FSE[20] and documented that."

55. RM C was referring to the view that decelerations commencing with a contraction, and returning to a normal baseline at the end of the contraction, are usually considered to be a normal physiological response to pressure on the fetal head.[21]

56. At 9.18pm, RM B recorded:

> "After getting [Mrs A] pushing for ten minutes with little progress and difficulty with getting good FHR core midwife made decision to call [Dr E]."

9.20pm — first call to Dr E

57. RM C told HDC that according to the MCIS notes, she left the room to call Dr E, the on-call obstetrician, at 9.20pm. She said:

> "I told him I'd been asked to assess [Mrs A] for the LMC as she was concerned with slow progress in second stage. I told him my findings on VE I confirming [Mrs A] was fully dilated. On pushing with contraction there was noticeable descent of caput with possible movement of biparietals.[22] I included that I heard decelerations during contractions. That I would like him to come in and assess her with the possibility of a ventouse lift out.
>
> [Dr E's] reply to me was that if he came in he would probably take the woman to [operating room] for a C-Section. That he was reluctant to do a ventouse on an untried pelvis.
>
> (To me this sounded more of a threat that regardless of his assessment if he came in [Mrs A] would have a C-Section …)
>
> [Dr E] told me he was happy for a primip[ara][23] to continue pushing, happy for second stage to be more than 2 hours. I told him I would be happier for him to assess now, but just as happy to continue and would ring him again if any further concerns.
>
> My rationale at the time to not insist on [Dr E] coming in was as discussed above; there had been no communication to me from the LMC that the fetal heart had been difficult to auscultate, that there were decel[erations] prior to my [vaginal examination], nor was I informed at the time by the LMC that she had any concerns for fetal well-being. So, from my experience I thought we may be having some

[20] A fetal scalp electrode (FSE) allows fetal heart rate monitoring by way of an electronic transducer attached directly to the fetal scalp and connected to the CTG monitor.
[21] Described in the RANZCOG Guideline as "early decelerations", being the uniform, repetitive decrease of FHR with slow onset early in the contraction and slow return to baseline by the end of the contraction.
[22] Biparietals are the two parietal bones of the fetal head.
[23] A primipara is a woman who is giving birth for the first time.

> progress with decel[erations] due to head compression. My other rationale was because instead of having an obstetrician to support the woman to birth vaginally, he would deliver by C-Section when she could [have] had a ventouse."

58. Dr E said that RM C called him[24] about doing a "lift out". Dr E stated:

> "I reviewed the indications for an operative delivery with [RM C]. After ascertaining that she had been pushing for just one hour, had no fetal distress or maternal exhaustion I recommended that she be allowed to push for an additional 1 to 2 hours if no concerns around exhaustion or distress were noted during that period of time. I also mentioned that I was enroute to the hospital to do an intraoperative consultation should anything change acutely."

59. In response to the provisional opinion, RM C told HDC that Dr E did not tell her that he was en route to the hospital at the time of the telephone conversation.

60. RM D was in her second week of orientation to the maternity unit, and was supernumerary.[25] She stated:

> "[RN C] and I left the room together and [she] made a phone call to Dr E. I could only hear [RN C's] side of the conversations. However, after the call, it was obvious that she was frustrated by the phone call … I heard [RN C] explain to [Dr E] that there were decreases heard in FHR during contractions."

61. RM G, a core midwife, also heard RM C speaking to Dr E. She stated:

> "My recall of the conversation is that [RM C] was wanting him to come and assess [Mrs A]. She said that the [FHR] was good and she had no concerns with that, but [Mrs A] was not progressing well. She finished up the conversation agreeing that because [Mrs A] was a primip[ara] and the FH was good the time allowed for pushing could be extended."

62. RM B's records state that at approximately 9.20pm RM C returned to the room and reported: "[Dr E] happy for [Mrs A] to continue to push for longer."

63. RM B stated:

> "I was somewhat surprised that the consultant chose not to attend in person … In hindsight, I expect my inexperience and reluctance to insist on his presence resulted in my accepting the core midwife's report of [Dr E's] advice. Upon reflection, I should have questioned the core midwife to report what she had informed [Dr E] and asked her to request his presence."

64. Mrs A continued to push. The FHR was next recorded as 128bpm at 9.25pm.

[24] Dr E stated that the call was made at 9.00pm.
[25] "Supernumerary" means "present in excess of the requisite number of staff".

65. At 9.40pm, RM B's handwritten records state:

> "Difficult to get a good fetal heart reading. Possibly 112bpm. Continue to attempt to hear [fetal heart] while [Mrs A] on toilet but too difficult."

66. RM D recorded in MCIS:

> "Due to continued drops in FHR and slow progress of second stage the decision was made to attach an FSE [fetal scalp electrode]."

67. RM B stated that she had not used an FSE previously, and was happy for RM C to attach the FSE to the baby's head. RM B said that she did not transfer the care of Mrs A to RM C, but said: "If she had said to me, are you handing over to me, I would have said yes, but we did not have that conversation."

9.49pm to 10.06pm — CTG trace commenced

68. At 9.49pm, RM C attached the FSE to the baby's head, and a CTG was commenced for the first time. The DHB advised that it was not possible to determine the FHR baseline on the CTG, and that the CTG showed no variability, deep decelerations, and 5–6 maternal contractions in 10 minutes.

69. The RANZCOG Guideline[26] sets out that absent baseline variability (<3 bpm); complicated variable decelerations with reduced or absent baseline variability; or late decelerations with reduced or absent baseline variability are likely to be associated with significant fetal compromise and require immediate management, which may include urgent delivery. In addition, the RANZCOG Guideline defines more than five active labour contractions in ten minutes as tachysystole. When there is tachysystole with fetal heart rate abnormalities, the RANZCOG Guideline recommends that management should include consideration of tocolysis[27] and urgent delivery.

70. RM D told HDC:

> "I remember checking that the machine was recording, and not looking at it again for a while … I recall hearing the CTG, and hearing that baby's [heart rate] would drop down when [Mrs A] was pushing and then return to the higher rate it had been heard at before. I didn't have a clear line of sight of the CTG monitor.
>
> …
>
> In relation to not viewing the CTG properly after I had attached the fetal scalp electrode leads to the machine, I accept that this was an oversight that may have caused further delay to the birth of [Baby A]."

71. RM D was concerned about the lack of progress, and communicated to RM C her intention to find a pair of episiotomy scissors. RM D left the room to find the scissors.

[26] The RANZCOG Intrapartum Fetal Surveillance Clinical Guideline, 3rd ed, 2014.
[27] The inhibition of uterine contractions with medication.

72. RM C told HDC:

> "My complete focus was on verbally encouraging effective pushing with my fingers inside the woman's vagina, I was not looking at the CTG machine which was not in my focal range. LMC [RM B] was standing in front of it, and I did think she was checking it, but I didn't check with her."

73. RM B stated:

> "[W]e could hear the heart rate, I did not turn round to look at the heart rate. [RM D] left the room to get something (episiotomy scissors), when she came back in, she noticed there was no variability[28] and that is when things happened."

10.07pm — absent variability noted

74. RM D returned to the room at 10.07pm.[29] She looked at the CTG monitor and noticed the lack of variability in the FHR. RM C told her to call Dr E immediately.

75. RM D said:

> "I was aware that there was a phone in the room, however, I did not have [Dr E's] mobile number with me, and so I thought the best place was to call from the nurses' station (I now know that I could have called Switch[board] from the room, by dialing 0, and they would have put me through."

76. RM D called the on-call obstetrician, Dr E, but the on-call paediatrician[30] was not called.

77. RM C told HDC:

> "I acknowledge the paediatrician should [have] been called at the same time as [Dr E] as is usual practice. I have no excuse expecting someone else to make that call. As a team member, I should [have] checked that this was done."

10.08pm — second call to Dr E

78. RM D called Dr E at 10.08pm and explained that there was absent variability on the CTG. Dr E told her that he would be there immediately.

79. RM D returned to the room and advised RM C and RM B that Dr E was on his way. She told HDC that she checked the resuscitaire,[31] the Neopuff,[32] and the Ambu-bag,[33] and they were working normally.

[28] Absent variability is associated with fetal hypoxia (deficiency in the amount of oxygen).
[29] The Critical Systems Analysis says that RM D returned to the room between 10.04pm and 10.08pm.
[30] Specialist in medical care of children.
[31] A resuscitaire combines an effective warming therapy platform along with the components needed for clinical emergency and resuscitation.
[32] A Neopuff is a mechanical device used for neonatal resuscitation.
[33] An Ambu-bag is a hand-held face mask or endotracheal tube used for artificial ventilation.

80. Dr E arrived at 10.09pm. At 10.10pm he attached a ventouse[34] to Baby A's head, and at 10.12pm Baby A was delivered with a cord around his neck.[35] He was white and floppy, and making no respiratory effort. Apgar[36] scores were assessed at 0 (at 1 minute), 2 (at 5 minutes), and 4 (at 10 minutes) after birth.[37]

Emergency procedures

10.12pm

81. At 10.12pm, RM C placed Baby A on the resuscitaire and set up the airway with the Neopuff. Dr E inserted a Geudel airway.[38]

82. RM D stated:

> "I took the stethoscope and listened to [Baby A's] chest. I could not hear the heartbeat clearly, however I think there may have been a very faint one, at less than 60bpm."

83. RM B remained with Mr and Mrs A and comforted them.

84. RM D said:

> "[RM C] had attempted to commence Intermittent Positive Pressure Ventilation (IPPV),[39] however she was having a lot of difficulty obtaining a good seal due to [Baby A's] lack of facial tone. In the meantime, I was putting the oxygen saturation monitor onto [Baby A's] right hand to record his saturations and heart rate. It recorded a heart rate of 59bpm and oxygen saturations (SaO_2) of 44%. When I listened again to his chest, I could not hear his heartbeat at all. The saturation monitor was also no longer recording a heart rate, despite being well attached to [Baby A]. [RM C] stated that the Neopuff was not working. I explained that I had checked it and it had been working prior to the birth. [RM C] immediately changed to the [Ambu]-bag at [10.12] (still within the first minute from birth). This continued until [10.30pm]. [RM C] continued to have difficulty maintaining a good seal on [Baby A's] face."

10.13pm — RM G and RM K respond to staff assist call

85. At 10.13pm, RM C asked for the hospital's emergency bell to be activated for immediate medical and nursing assistance from within the hospital. Instead, only the staff assist bell was pushed. RM D stated:

[34] A ventouse is a cup-shaped suction device applied to the baby's head to assist with birth.
[35] Dr E noted that there was shoulder dystocia, which was resolved within 30 seconds.
[36] The APGAR score is a test given to newborns soon after birth. The test checks a baby's Appearance (skin colour), Pulse (heart rate), Grimace response (reflexes), Activity (muscle tone), and Respiration (breathing rate and effort).
[37] A score of 8 to 10 is normal.
[38] A device used to establish or maintain an airway.
[39] IPPV is a form of assisted or controlled respiration produced by a ventilator apparatus in which compressed gas is delivered under positive pressure into a person's airways until a preset pressure is reached.

> "[RM C] asked for the emergency [bell] to be pressed at [10.13pm] (1 minute). I think the staff assist button may have been pushed instead of the emergency [bell]. I do not know who pushed it, however [RM B] was standing closest to where the alarm bells are."

86. Core midwives RM K and RM G responded to the staff assist call bell.

87. RM G said that when she arrived, RM C, RM D, and Dr E were at the resuscitaire with Baby A.

10.14pm

88. RM D said that she commenced chest compressions, as Baby A did not have a heartbeat and the airways procedures were not effective.

> "Oxygen was also increased to 100% via the blender. At some point I was aware of more people in the room. [RM G and RM K] had come in immediately and other staff followed. [A] SCBU[40] staff [member] was also present and she took over from [RM C] with the IPPV, while [RM C] helped maintain [Baby A's] position to ensure a patent airway."

10.16pm — emergency bell pushed and paediatrician called

89. RM C stated:

> "I did not realise the emergency bell had not been pushed earlier, that it was only the staff assist bell that had been rung until [I was] resuscitating the baby and wondered where everyone was. It was then I told [RM B] to push the emergency bell."

90. The emergency bell was pushed at 10.16pm.

91. RM C also asked for the on-call paediatrician to be called, and called out that the number to call was 7000. She said:

> "I acknowledge that I called out the wrong number to my colleague to ring. I have worked with the other number as our emergency number for many years."

92. RM G told HDC that she rang 7000 and got a disconnected sound on the telephone. She stated:

> "I [then] rang 777 and requested urgent paediatric assistance, and stated paediatrician, RMO, [Emergency Department doctors] and SCBU staff to attend."

93. The call was made at 10.16pm, and it went to the hospital switchboard. RM D told HDC:

> "I do remember being told that Switch[board] could not get hold of the paediatrician, [Dr F]. I remember it being stated that we urgently needed him and could he be tried again."

[40] Specialist Care Baby Unit.

94. In a case review conducted by Whanganui DHB in 2016,[41] Dr J found:

> "It appears that it took a further 6 minutes [10.22pm] for the first call to be made to the paediatrican on call … It appears that three calls to the paediatrician between [10.22pm and 10.23pm] went unanswered. Why this happened is unclear … whatever the reason for missing the initial calls in those two minutes, no message was left, and no further attempts were made to call the paediatrician until the RMO contacted him at 10.34pm. There was at least one other paediatrician in Whanganui that night who was not on call, but who could have [been] contacted for assistance. He was not contacted."

95. RM L responded to the emergency bell and arrived in the room at 10.18pm. She auscultated Baby A's chest and was not able to hear a heartbeat.

10.23pm — additional staff respond to emergency bell

96. At 10.23pm, two RMOs arrived. The duty nurse manager also arrived, and requested that an incubator be placed outside the room ready to transfer Baby A to SCBU. Chest compressions were stopped, as Baby A's heart rate was increasing.

10.24pm — RM I arrives

97. At 10.24pm, core midwife RM I entered the room. She said that RM D, RM C, and RM L were actively participating in Baby A's resuscitation. RM G was scribing on the whiteboard. RM K, RM B, and Dr E were at Mrs A's bedside. Two RMOs and the duty nurse manager were also in attendance.

98. RM I fixed the Neopuff by reattaching a tube that had been displaced. She said:

> "[RM L] was administering IPPV with a bag and a mask and RM D was inserting a feed tube into [Baby A's] stomach to relieve air distension (stomach distended with air from resuscitation/ventilation). Oxygen saturations and [Baby A's] heart rate were being monitored via a portable SpO_2 machine attached to the baby's right wrist. I noted that the oxygen saturations were falling and that a good seal was not evident on the mask and suggested a change from one person method of ventilation to a 2 person IPPV method; I noted the baby had no tone. I completed jaw thrust holding the Neopuff mask and [RM L] administered IPPV. The oxygen saturations improved and the amount of oxygen (percentage via blender) being administered was reduced accordingly. … I requested that cord blood gases be taken and requested a staff member to prepare a trolley and equipment for umbilical catheterisation."

10.28pm

99. Baby A's saturations were recorded as 96% at 10.28pm, and at 100% at 10.30pm.

10.30pm

100. RM B had been attempting to deliver Mrs A's placenta. At 10.28pm, RM B asked Dr E to take over, and Dr E delivered the placenta and sutured Mrs A's perineum.

[41] Whanganui DHB conducted a paediatric case review and a Critical Systems Analysis.

10.42pm — paediatrician arrives

101. At 10.42pm, Dr F, the on-call consultant paediatrician, arrived. He stated:

> "At approximately 10.34 on that evening, while I was at home, I received a call on my cellular phone from one of the junior doctors at the hospital, requesting my assistance with a baby who had been born more than 20 minutes earlier, who was requiring resuscitation. At the time of the phone call, the baby was receiving assisted ventilation via a mask with positive pressure, and was reportedly well oxygenated, and had a good heart rate.
>
> Apparently, according to the hospital switchboard record, the switchboard tried to contact me by cellular phone about ten minutes before the call I received at 10.34pm. However, I did not hear my telephone ringing prior to this call, and no messages were left for me, and I can provide no explanation for why the switchboard did not contact me before 10.34pm."

102. Dr F arrived at the delivery suite at 10.42pm. Baby A had a good pulse but was limp and flaccid and was making no respiratory effort.

103. At 10.44pm, Dr F intubated[42] Baby A and ventilated him using the Neopuff.

11.00pm — transfer to SCBU

104. Baby A was transferred to SCBU in an incubator at 10.55pm. He was admitted at 11.00pm, and resuscitation and intensive care continued.

105. Initially, Baby A was ventilated manually. By 11.15pm he had been connected to the neonatal ventilator,[43] which had been configured by the neonatal nurse.

106. The ventilator has numerous ventilation modes, including SIMV with Volume Guarantee (VG). VG prevents the ventilator from giving any more than the set amount of air/oxygen blend with each breath. This mode is the correct setting for small, premature babies, but it is "less useful in large, full-term infants who have a primary neurological problem, as was the case with [Baby A]".[44]

107. The VG mode was set to "VG on".

108. Dr F stated:

> "The initial focus with [Baby A] was to secure the breathing tube and to connect him to the ventilator. The ventilator had been used on a very small premature baby just hours before [Baby A's] birth, and in some haste it was again pressed into service to manage his breathing. With hindsight, this contributed to an error being made in the ventilator set-up."

[42] Enabling mechanical ventilation via a tube inserted into the trachea.
[43] The Drager Babylog 8000 was the ventilator used in SCBU.
[44] Case review by Clinical Director of Paediatrics at Whanganui DHB.

109. Whanganui DHB told HDC:

> "Normally it takes about 10 or 15 minutes to set the ventilator from scratch. There are approximately 30 steps in the process, and these are detailed in a comprehensive step-by-step set-up guide."

110. The 30-step process was not followed.

111. Baby A's oxygen saturation levels were low. Dr F increased the oxygen concentration levels on the ventilator and ordered an X-ray and a capillary blood gas test.[45] As a result, the tube that had been inserted into Baby A's trachea was repositioned. This visibly improved his chest wall movement, and there was an audible improvement in air entry into the chest.

12pm — communication with Hospital 2

112. At 12.00am, Dr F called the Neonatal Intensive Care Unit (NICU) at Hospital 2 and spoke to a neonatologist.

113. The neonatologist gave instructions for the care of Baby A. Whanganui DHB stated:

> "[The neonatologist] recommended adjusting the tube position, increasing the ventilator pressure, increasing the ventilation rate, but did not inquire about the … settings."

114. The respiratory rate of the ventilator was increased, but there was no discussion about the ventilator settings. The NICU retrieval team was mobilised to take Baby A to Hospital 2.

115. The neonatologist spoke to Dr F again at 1.00am and made further recommendations for Baby A's care. Therapeutic cooling was discussed and was initiated by Dr F soon afterwards.

116. The Hospital 2 NICU team arrived at 2.15am and adjusted the ventilator to the correct setting for Baby A's weight.

117. Whanganui DHB stated:

> "The incorrect ventilator settings should have been recognised by the nursing and medical staff. However, once the opportunity to set the [ventilator] correctly at the outset had been missed, it was easy to overlook the limiting effect [of the setting] … and to fail to recognise this as an easily correctable problem."

118. Dr F stated:

> "There was an error in the ventilator settings, which went unnoticed at first. Although the effects of this were not significant in changing the outcome for [Baby A], and the effect of the low tidal volume setting were compensated for by increasing the breathing rate and administering muscle relaxants."

[45] A capillary blood gas test measures the amount of oxygen and carbon dioxide in the blood.

119. Dr J stated in his case review that the increase in the rate of ventilation only partially corrected the low tidal volumes given with each breath.

120. Baby A was transferred to Hospital 2 and received further intensive care. However, Baby A's life support was withdrawn, and he died surrounded by his family.

121. The post-mortem examination found that Baby A had suffered hypoxic ischaemic encephalopathy.[46]

Whanganui DHB Fetal Surveillance Policy

122. The policy provides:

> "In the absence of any identifiable risk factors, IA [intermittent auscultation][47] is the most appropriate form of FHR [fetal heart rate] monitoring …
>
> - … Ausculation every 15–30 minutes in active first stage labour and at least every 5 minutes in active second is recommended.
> - The fetal heart rate should be observed for rate, rhythm, variability,[48] accelerations[49] and decelerations.[50]
> - The findings should be recorded in the partogram,[51] MCIS or clinical record.
> - The fetal heart should be recorded as a number. Baseline variability[52] cannot be accurately measured using a sonicaid.[53]
> - As long as the labour remains low risk, intermittent auscultation is the most appropriate method of fetal monitoring. The RANZCOG[54] guidelines on fetal surveillance outline the appropriate course of action should concern arise. Discussion with the obstetric team should occur if indicated.
> - Continuous EFM [Electronic Fetal Monitoring] should commence as soon as risk factors become identified during any stage of labour.
> - If the health care practitioner/LMC has difficulty auscultating the fetal heart they must:

[46] Hypoxic ischaemic encephalopathy is a brain injury caused by oxygen deprivation to the brain.
[47] Intermittent auscultation (IA) is listening to the fetal heart using a hand-held Doppler at regular intervals for a pre-defined duration during labour.
[48] Normal fetal heart rate baseline variability is 6–25bpm.
[49] Accelerations are defined in the RANZCOG Guideline as transient increases in FHR of 15bpm or more above the baseline and lasting 15 seconds.
[50] Decelerations are defined in the RANZCOG Guideline as transient episodes of decrease of FHR below the baseline of more than 15bpm lasting at least 15 seconds.
[51] Partogram is a composite graphical record of key maternal and fetal data during labour entered against time on a single sheet of paper.
[52] Baseline variability is defined in the RANZCOG Guideline as the minor fluctuations in baseline FHR. It is assessed by estimating the difference in beats between the highest peak and the lowest trough of the fluctuations in one-minute segments of the trace between contractions.
[53] A Sonicaid is a hand-held device used to listen to the fetal heartbeat.
[54] RANZCOG Intrapartum Fetal Surveillance Clinical Guideline, 3rd ed, 2014.

— Perform a CTG if gestation >24 weeks, if the trace is:

— Abnormal — arrange an urgent obstetric consultation."

123. The RANZCOG Guideline states that where the FHR pattern is considered to be abnormal, the immediate management should include the initiation of CTG and the escalation of care to a more experienced practitioner.

Reviews conducted by Whanganui DHB

124. Whanganui DHB conducted two reviews of the care provided to Mrs A and her baby. Dr J completed a case review of the care provided to Baby A, and Whanganui DHB completed a Critical Systems Analysis.

125. The Critical Systems Analysis made the following findings:

- "The documentation [at the time of Mrs A's initial assessment at Hospital 1] does not seem to indicate awareness [by the core midwives] of the need for vital signs assessment (especially maternal pulse) of the woman at onset and during labour."
- There was no documentation of the call by the core midwife about [Mrs A's] admission.
- There was "no indication if FH assessed by intermittent auscultation or noted on CTG or who undertook the auscultation".
- "Identification of fetal heart decelerations about 1 hour into second stage did not lead to commencement of a CTG trace to clearly identify all the parameters that may signal the need to escalate consultation. This seems to be because these second stage decelerations were regarded as normal with the head being deeply in the maternal pelvis."
- "The information received by the [on-call obstetrician] seems to be inconsistent with the core midwife note that the [on-call obstetrician was] called after decelerations noted."
- The wrong emergency number was called.
- "Despite the absence of FH variability and the [on-call obstetrician] being called there was delay in calling for paediatric attendance at the birth."
- "The ventilator which was connected to support the baby's breathing was incorrectly set."

126. Dr J made the following findings in his case review:

- Initial attempts at resuscitation by the midwifery staff, and the initial resuscitation by the paediatrician, were performed effectively.
- The ventilator in SCBU should have been set up correctly from the beginning, using the step-by-step guide.

- The step-by-step guide had approximately 30 steps and took about 15 minutes to complete. This was easy to achieve when there was prior warning of a baby needing ventilation, but more difficult when the situation is unexpected.
- The ventilator had very recently been used on a baby that was much smaller than Baby A.
- The default setting on the ventilator was "VG on" but a default setting of "VG off" would be safer.
- The incorrect settings on the ventilator should have been recognised by the nursing and medical staff.
- "Dozens of infants of many different sizes and conditions have been safely and effectively ventilated in Whanganui [DHB] over the past few years by the same staff, using the same equipment. We have never encountered a mistake of this nature. The staff have trained diligently and have taken all reasonable steps to maintain their professional skills."
- Although it did not cause Baby A's death, a serious error was made in the setting of the ventilator. The ventilator should have been set up correctly from the beginning, using the step-by-step guide. Instead, the setting, which had recently been used for a much smaller baby, was not changed for Baby A, who was a larger baby. Dr J stated: "This error occurred because of a 'perfect storm' of circumstances and a number of mistakes, which, although each was relatively minor when considered in isolation, they combined to create a situation where the minute volume of ventilation was less than what would have been optimal."
- "The current 777 emergency call system is imperfect. An improved alternative is needed, although exactly what that should look like is not immediately apparent. My personal opinion is that a direct call from delivery suite to the paediatrician on call is the safest and most effective way to ensure that urgent help is summoned in an emergency. This method has the advantage of establishing the urgency of the situation, allowing interim advice to be given over the phone, and verifies for those involved that the call for help has been received and is being responded to. A proper examination of the processes involved needs to be undertaken by the DHB."

127. Dr J offered an apology:

> "[Dr F], the nursing staff, and our other colleagues join me in expressing our profound sorrow and regret for having made errors in delivering intensive care to [Baby A]. He, and his family, deserved and should have received the very best possible intensive care, and in one very important respect, our care fell short of the required standard. We are very sorry for this, we apologise for our errors, and we promise to make sure that we never make the same mistake again."

Changes made by Whanganui DHB

128. Whanganui DHB told HDC that the following changes have been made:

- All calls between the LMC and core midwives regarding a woman's impending admission are to be documented.
- Where an LMC is delayed, the core midwifery staff should undertake all assessments of the woman and her baby. An audit of the documentation of the calls has been undertaken.
- The default setting on the ventilator has been changed to "VG off".
- The step-by-step guide to the neonatal ventilator has been revised.
- Junior doctors in SCBU now contact Hospital 2 NICU so that the paediatrician can continue with resuscitation.
- In emergencies, a second consultant paediatrician will be called.
- A new form to audit the neonatal transfers from SCBU to Hospital 2 NICU has been created.
- MCIS has been discontinued.
- Regular neonatal training sessions are conducted within Whanganui DHB.
- Hospital 2 NICU commenced outreach programmes for training provincial SCBU units in order to improve communication, guidelines, relationships, and familiarity with equipment.
- Regular case reviews are performed. The first review was of the care provided to Baby A.
- A full training session in ventilation and therapeutic cooling was conducted, and was attended by almost all of the neonatal and paediatric nursing staff.
- Fetal assessment and surveillance education is provided to all midwives (core and LMC) and obstetricians.

Changes made by RM B

129. RM B was nearing the completion of the Midwifery First Year of Practice Programme (MFYP) at the time of these events. MFYP is a mandatory 12-month programme designed to support all newly qualified midwives as they transition from students to registered midwives, regardless of their place of work. Health Workforce New Zealand (HWNZ) contracts with the New Zealand College of Midwives (NZCOM) to provide the MFYP nationally according to the Service Specification. The MFYP has four key components — one-to-one mentoring by an NZCOM-approved mentor; midwifery practice; preparation and support for a Midwifery Standards Review at the end of the year; and continuing education and professional development activities. In addition, Midwifery Practice Skills Support is offered.

130. The Midwifery Council told HDC that it undertook a competence review of RM B in October 2016 following these events. As a result, RM B was required to complete further courses, including courses in documentation and fetal surveillance. In addition, RM B was required to undertake a period of supervision in order to reassure the Midwifery Council that she was practising safely. The competence review was completed satisfactorily in July 2018, and RM B advised that she has attended a RANZCOG Fetal Surveillance Course, an NZCOM documentation workshop, and a New Zealand College of Midwives Special Midwifery Standards Review.

131. RM B told HDC that all her clients now have a partogram once they are in established labour. She also said that she records all calls to and from hospital staff, and she insists that "proper handovers" are given and that all GBS-positive women have this highlighted in red on their hospital notes.

Responses to provisional opinion

Mrs A

132. Mrs A was given an opportunity to comment on the "information gathered" section of the provisional opinion. She advised HDC that she had no comments to make.

Whanganui DHB

133. Whanganui DHB was given an opportunity to comment on the provisional opinion. Whanganui DHB acknowledged the findings in the provisional opinion and supported the recommendations.

RM B

134. RM B was given an opportunity to comment on the provisional opinion, as it relates to her. RM B advised that she agreed with the provisional opinion and recommendations.

RM C

135. RM C was given an opportunity to comment on the provisional opinion, as it relates to her. Where relevant, her response has been incorporated into the "information gathered" section above. In addition, RM C stated:

> "Even if my view [of the CTG monitor] hadn't been blocked … I would not have been able to see the monitor clearly, the bright birthing lights weren't on, only the muted ones. Yes, I acknowledge and take responsibility for my part in not asking about what the CTG was looking like."

136. RM C also stated: "I acknowledge the oversight from me and [RM B] for not making sure the Paediatrician was called at the same time as [Dr E]."

Opinion: RM B — breach

137. Although RM B was just completing the Midwifery First Year of Practice Programme at the time of these events, she was Mrs A's LMC, and therefore had primary responsibility for her care during pregnancy and childbirth.

Home visit

138. At 4.00am Mrs A's membranes ruptured and she started to have contractions. She contacted RM B by telephone but was not assessed until 2.20pm the next day. RM B said that there were no clinical indications that Mrs A needed to be seen immediately.

139. RM B identified that Mrs A remained GBS-positive late in her pregnancy. Mrs A's GBS status meant that there was a risk to the baby of infection, and that antibiotics would need to be administered once labour was established.

140. Independent clinical advice was obtained from RM Emma Farmer. RM Farmer advised:

> "Whilst a home visit to check on progress would not be routine for all women at this stage, given the history of GBS most midwives would make a clinical assessment to confirm ruptured membranes and to check the maternal temperature when GBS is known to be present …
>
> Not making a home visit at this time would be viewed as a departure from accepted practice and would be viewed with mild disapproval from peers."

141. I agree, and I am concerned that in view of Mrs A's GBS status, RM B did not visit Mrs A at her home to assess her.

Administration of antibiotics

142. Mrs A arrived at the maternity unit at Whanganui DHB at 2.20pm and was examined by RM C.

143. RM Farmer advised that from this assessment it would be reasonable to conclude that Mrs A was now in "active labour", and therefore eligible for intrapartum antibiotics. However, DHB staff were not aware of Mrs A's GBS status, as RM B had not highlighted this in the clinical notes.

144. RM B arrived at the maternity unit and took over the care of Mrs A at 2.58pm.

145. RM Farmer said that it would be usual practice for the incoming midwife to assess maternal and fetal well-being and to orientate the support people to the new environment. She said that for most practitioners this would take up to one hour, and for that reason it would have been reasonable to expect the administration of IV antibiotics any time from around 4pm.

146. At 5.00pm, RM B attempted to insert a cannula to enable the administration of antibiotics. She was unsuccessful, and the cannula was not inserted until 6.10pm and the antibiotics

were not administered until 7.21pm. RM B advised that she did not consider the timeframe to be unreasonable or inappropriate. However, RM Farmer advised that the delay would be considered a departure from accepted practice and viewed with moderate disapproval by peers.

147. While I note that Baby A showed no evidence of infection, in my view it is concerning that RM B appears to have had little insight into the risks to the baby of early-onset neonatal sepsis. I accept RM Farmer's advice and am critical that antibiotics were not administered until five hours after Mrs A was admitted in active labour.

Maternal monitoring

148. When RM B arrived at the maternity unit at 2.58pm, she did not undertake a full set of maternal observations. She said that she assumed that the core midwife had done so. RM B did not record her first set of maternal observations until 5.20pm, and no other maternal observations were recorded after that time.

149. RM Farmer advised:

> "[I]t would be usual practice to undertake a full set of observations within the first hour of admission in labour … [RM B stated] that she was of the opinion that the DHB staff had completed this assessment, however as the responsible clinician she would be expected to check that the vital signs were normal and had she done so she would have noted that they had not been completed.
>
> It is usual practice to recheck the vital signs every 4 hours … [observations] should have been rechecked at 9.20pm … Not repeating vital signs in this situation would be viewed with mild disapproval."

150. RM B failed to review the core midwife's notes to see whether observations had been undertaken and to familiarise herself with the results if they had been undertaken. As a result, she did not notice that Mrs A's vital signs had not been recorded at admission.

151. Whanganui DHB's Water Birth Policy recommends that the maternal temperature should be monitored regularly throughout labour, and that the water temperature should also be checked. The policy suggests that 1–2 hourly checks are appropriate. Mrs A was in the birthing pool for three hours, and her temperature was not taken. There is no record of the water temperature.

152. I am critical that RM B did not ensure that baseline observations had been undertaken and recorded at admission for Mrs A, especially with her knowledge of Mrs A's GBS status. I am also critical that only one set of maternal observations were undertaken during Mrs A's labour, and that Mrs A's temperature was not monitored while she was in the birthing pool.

Fetal monitoring

153. The Whanganui DHB Fetal Surveillance Policy, which reflects the RANZCOG Guideline 2014, provides for monitoring of the FHR by intermittent auscultation. In the absence of any

identifiable risk factors, the policy requires auscultation every 15–30 minutes in active first stage labour, and at least every five minutes in the second stage of labour. The policy required the FHR to be observed for rate, rhythm, variability, accelerations, and decelerations, and for the findings to be recorded in a partogram, on MCIS, or in the clinical record.

154. The policy also states that if there is any difficulty in auscultating the fetal heart, the midwife must perform a CTG, and if the CTG is abnormal, the midwife must arrange an urgent obstetric consultation.

155. From when Mrs A began pushing at around 8.15pm until the CTG was commenced at 9.50pm, the FHR was not recorded every five minutes, and there was no description of the heartbeat. At times, RM B struggled to detect the FHR at all, but did not request assistance or commence a CTG.

156. At 9.06pm, RM C was asked to attend to provide "fresh eyes" on the delay in progress and to check progress with a vaginal examination. While RM C heard the FHR and noted what she believed to be early decelerations, she said that RM B had expressed no concerns about the FHR. RM B confirmed that she was not concerned about the FHR despite having had difficulty hearing it.

157. At 9.10pm, RM B recorded the FHR in both her handwritten notes and on MCIS. The entry in her handwritten notes was: "FH 75 ↑ 115 after contraction now as possibly maternal." The entry on MCIS was: "fh75 up to 115 after contraction fhh90." It is unclear what these notes mean. RM B advised that she meant that the maternal pulse was 75; however, the maternal pulse was not recorded by RM B. RM D recorded retrospectively in MCIS that the FHR was auscultated at 75bpm after a contraction, then rose to 115bpm, and that the maternal heart rate was 90bpm.

158. RM Farmer advised:

> "At 9.10pm [RM B] records that the fetal heart was heard at 75bpm with a recovery to 115bpm and then a possible deceleration to 90bpm after the contraction, this is a change to the previous recordings and should have prompted further investigation. It would be usual in this situation to commence continuous CTG to observe the pattern of decelerations, and seek obstetric consultation."

159. Despite her difficulties in detecting the FHR and the abnormalities heard on auscultation, RM B did not commence a CTG until this was recommended by RM C at 9.50pm.

160. Whanganui DHB advised that when the CTG was commenced at 9.50pm, it showed no variability with deep decelerations. RM Farmer advised that the CTG was uninterpretable, and therefore abnormal, and should have resulted in an immediate obstetric consultation. However, RM B did not raise any concerns about the CTG.

161. RM C said that she was assisting Mrs A with focused pushing, and was not looking at the CTG, which she said was not in her "focal range". She said that RM B was standing in front

of the CTG monitor, and she thought that RM B was checking the FHR. However, RM B stated that she could hear the heart rate, but did not turn around to look at the monitor. I am highly critical that RM B did not observe the FHR on the monitor until RM D returned at 10.07pm and immediately noted the abnormal heart rate and called for obstetric assistance.

162. I am critical of RM B's failure to auscultate and record the FHR adequately between 3pm and 9.50pm; her failure to recognise that a CTG was necessary when she was having difficulty auscultating the FHR; and her failure to observe the CTG and call for obstetric support before 10.07pm. While I acknowledge that there were other experienced midwives in the room at times, RM B remained the LMC throughout, and was responsible for her own actions.

Request for paediatric support

163. RM Farmer advised that the need for an assisted birth for suspected fetal compromise would usually result in a request for paediatric presence at the birth.

164. Contact with the on-call paediatrician was not made until 22 minutes after the birth. The midwives involved in Mrs A's care, including RM B, did not communicate with each other and decide who was to be responsible for making the call.

165. RM Farmer advised that RM B's failure to communicate with the paediatrician would be viewed with moderate disapproval by her peers, and I accept this advice.

Roles and responsibilities

166. The Ministry of Health Guidelines for Consultation with Obstetric and Related Medical Services 2012 (Referral Guidelines) set out the process for transfer of clinical responsibility for care. Under "Communication", the guidelines state that this requires a three-way conversation between the LMC, the woman, and the specialist to determine that the transfer of care is appropriate and acceptable. RM B did not request a transfer of Mrs A's care, and remained responsible until Dr E attended at 10.09pm.

167. Although RM B quite reasonably sought support from the core midwives when she felt that there was a delay in progress in the second stage of labour, there seemed to be some confusion about her ongoing responsibilities. RM B did not check her assumption that a core midwife had conducted the initial assessment, she did not communicate directly with Dr E or monitor the FHR on the CTG, and she did not appear to take responsibility for escalating the situation to the obstetrician or to the paediatrician.

168. The New Zealand College of Midwives consensus statement states:

> "All midwives, whether employed or self employed, have a responsibility to communicate and decide their respective roles and responsibilities in relation to each woman's care while in the hospital setting."[55]

[55] NZCOM 2001 Consensus Statement — Roles and Responsibilities in a Hospital setting.

169. RM Farmer advised:

> "The blurring of responsibility for care often leads to care deficiencies as it is easy to make the false assumption that someone else is taking responsibility."

170. I agree with RM Farmer and am critical that RM B did not communicate clearly and effectively with the core midwives and with the obstetric and paediatric teams.

Documentation

171. The events in this case were recorded in two sets of notes — electronically in MCIS, and by hand in RM B's labour notes. The MCIS notes were recorded contemporaneously except where they were noted to be in retrospect. The handwritten labour notes were partially recorded in retrospect, but were not recorded as such. The number of FHR recordings between the two documents differ.

172. I note that RM D and RM C expressed concern about whether RM B was taking notes because they could see no evidence of this. RM B says that from 2.54pm she recorded the events in her handwritten notes, and then transcribed the notes into MCIS.

173. RM Farmer reviewed RM B's handwritten labour notes and advised:

> "It would be usual practice for midwives to document clearly when they are making a retrospective note. I also found [RM B's] documentation scant at times and difficult to read due to her handwriting style. This would be a departure from recommended practice and would be viewed with mild disapproval."

174. Health providers have an obligation to ensure that full and accurate clinical records are kept. I accept my expert's advice that RM B's notes were scant in places and her handwriting was difficult to read, and that notes made in retrospect were not marked as such. I am concerned that because of this, neither set of notes is a full and accurate reflection of the events.

Conclusion

175. RM B was Mrs A's LMC and responsible for her care until Dr E arrived to carry out the ventouse delivery of Baby A. I am critical that RM B did not perform the following:

- Assess Mrs A at home when labour commenced, in view of her GBS status;
- Administer antibiotics within the appropriate timeframe;
- Check that initial maternal observations had been undertaken and carry out further appropriate maternal monitoring, including over the period when Mrs A was in the birthing pool;
- Auscultate and record the FHR adequately between 3pm and 9.50pm;
- Recognise that a CTG was necessary when she was having difficulty auscultating the FHR;

- Observe the CTG and call for obstetric support before 10.07pm.
- Take responsibility for ensuring that a paediatrician was present at the birth;
- Communicate clearly with the core midwives and take responsibility for communicating with the obstetric and paediatric teams; and
- Ensure that full and accurate clinical records were kept.

176. For the reasons above, I find that RM B failed to provide Mrs A with services with reasonable skill and care and, as a result, breached Right 4(1) of the Code.

Other comment

177. The Ministry of Health will be provided with a copy of this report so that it can take into account the findings from the investigation in its review of the Midwifery First Year of Practice Programme.

Opinion: RM C — breach

178. It is usual practice in a maternity unit for an LMC midwife to ask core midwives for assistance. When this occurs, the core midwives are responsible for the care they provide, even if overall responsibility for the care is not handed over to the core midwives.

179. At 9.08pm, two core midwives responded to RM B's call for assistance. RM C was one of the midwives who responded. She said that the LMC did not express any concerns about the FHR but was concerned about the progress of the labour. RM C performed a vaginal examination and heard decelerations with contractions.

180. RM Farmer advised that from 9.10pm onwards there was sufficient information to commence CTG monitoring. RM C acknowledges that, on reflection, she should have insisted on a CTG at this time. I am critical that RM C, as an experienced midwife in the room, did not advocate for CTG monitoring before 9.50pm.

181. At 9.20pm, RM C was sufficiently concerned following her assessment of Mrs A that she called Dr E. Several staff members have provided their accounts of the discussion between RM C and Dr E. The accounts conflict in part, and I am unable to make a finding on the exact nature of the discussion. However, I accept that RM C heard what she considered to be early decelerations and that she advised Dr E of this and the delay in progress. RM C told Dr E that she would be happier for him to assess Mrs A immediately, but also that she was "just as happy to continue". Based on the information provided, I accept that it was reasonable for Dr E to allow further time for progress in labour to occur.[56] However, I consider that this was a missed opportunity for RM C to advocate more strongly for an obstetric review.

[56] Independent obstetric advice is attached as Appendix B.

182. RM C attached the FSE at 9.50pm. She said that she was then actively engaged in assisting with the delivery of the baby, and that she could not see the CTG machine. Instead, she understood that RM B, who was in front of the monitor, was observing the FHR.

183. RM Farmer advised that from 9.50pm the CTG trace was uninterpretable, and should have resulted in immediate obstetric referral. She advised:

> "Not referring to an obstetrician with an abnormal CTG trace would be viewed with significant disapproval by peers."

184. The CTG was commenced because there were concerns about the FHR. However, RM C did not monitor the FHR on the CTG, and the abnormal trace went unnoticed for 17 minutes. RM C was one of the midwives present in the delivery suite for this period, and I am critical that she did not notice the abnormal trace and call for an obstetrician.

Conclusion

185. I acknowledge that the LMC held ultimate responsibility for Mrs A's care. However, not only did RM C provide midwifery care to Mrs A, she also had a responsibility as a midwife in the room to advocate for adequate monitoring of the FHR, and after commencing the CTG she should have recognised and responded to the fetal distress.

186. I consider that by failing to do, RM C did not provide Mrs A with services with reasonable care and skill and, as a result, breached Right 4(1) of the Code.

Opinion: RM D — no breach

187. As outlined above, it is usual practice in a maternity unit for an LMC midwife to ask core midwives for assistance. When this occurs, the core midwives are responsible for the care they provide, even if overall responsibility for the care is not handed over to the core midwives.

188. RM Farmer advised that from 9.10pm onwards, there was sufficient information to commence CTG monitoring. RM D acknowledged that a CTG should have been commenced at that time. I consider that RM D, as an experienced midwife in the room, should have advocated for CTG monitoring before 9.50pm.

189. RM Farmer advised that from 9.50pm, when the CTG commenced, the CTG trace was uninterpretable, and should have resulted in immediate obstetric referral. However, RM D said that she could not see the CTG monitor clearly, and she then left the room to find episiotomy scissors. On her return, she noticed immediately that the CTG was abnormal, and obstetric assistance was summoned.

190. While I consider that RM D had a responsibility to advocate for appropriate FHR monitoring, I note in mitigation that RM D had been working as a registered midwife in

New Zealand and at Whanganui DHB for a short time, was working with RM C in a supernumerary capacity at the time of these events, and was absent from the room for at least some of the time.

Opinion: Whanganui District Health Board — breach

Introduction

191. District health boards are responsible for the operation of the clinical services they provide, and can be held responsible for any service failures. Whanganui DHB had a duty to ensure that the services Mrs A received were provided with reasonable care and skill.

192. In this case, although the responsibility for Mrs A's care remained with the LMC, RM B, the core midwives also had a responsibility for her care. In particular, they were required to follow Whanganui DHB policy on intrapartum fetal surveillance, and to advocate for adequate monitoring of the FHR. In addition, the systems in place at Whanganui DHB also meant that there were delays in contacting additional staff for assistance, and providing the equipment that was necessary for an emergency resuscitation.

Care by core midwives

193. The core midwives who were providing care to Mrs A should have recognised that the FHR was abnormal at 9.10pm, and should have commenced continuous FHR monitoring. After commencing a CTG, the midwives did not assess the CTG and recognise the fetal distress for 17 minutes. RM Farmer advised that this would be viewed with significant disapproval by her peers.

194. At 10.08pm, RM D called the on-call obstetrician when fetal distress was recognised on the CTG. No attempt was made by any of the midwives in the room to contact the on-call paediatrican.

195. RM Farmer advised:

> "The need for an assisted birth, for suspected fetal compromise, would usually result in a request for paediatric presence at birth. Not calling a paediatrician in anticipation of a complex birth would be viewed with mild disapproval by peers."

196. I share RM Farmer's concerns, and am critical that the core midwives did not advocate for the adequate monitoring of the FHR or respond appropriately when fetal distress was recognised.

Obstetric care

197. Dr E was contacted by the midwives for the first time at 9.20pm. The midwives and Dr E do not agree on the precise nature of that conversation. Dr E says that he was not told that there was fetal distress or maternal exhaustion, and made his decision not to attend accordingly.

198. Independent expert advice was obtained from an obstetrician, Dr Celia Devenish. Based on the information that Dr E says he received from RM C, Dr Devenish advised that Dr E's decision not to attend Mrs A at 9.20pm was appropriate.

199. Dr Devenish also advised that the advice Dr E provided to RM C about continuing with the labour, and the possibility of a Caesarean section, was appropriate for the situation that was described to him. Dr Devenish also advised:

> "A reluctance to do a ventouse at zero station, ie mid-cavity, in a primiparous woman after inadequate time for descent, is good practice and is understandable in an untried pelvis."

200. Dr Devenish advised that the standard of care provided by Dr E in the delivery of Baby A was appropriate. I accept that advice.

Communication systems at Whanganui DHB

201. At 10.13pm, one minute after Baby A was delivered, staff in the delivery suite attempted to activate the emergency bell. The staff assist button was inadvertently pressed instead. At 10.16pm, when staff attempted to call the paediatrican, the wrong number was called.

202. At 10.16pm, RM G rang the hospital switchboard and asked for assistance from the paediatrican. A switchboard operator made the first call to the paediatrican six minutes later, at 10.22pm. Two further calls were made by a switchboard operator, but the paediatrician's phone was not answered, and the switchboard operator did not leave a message for him. No explanation was provided for why Dr F was not able to be contacted.

203. At 10.34pm, an RMO who was present in the delivery suite called the paediatrician directly. Dr F arrived in the delivery suite at 10.42pm, eight minutes after he was contacted.

204. Independent expert advice was obtained from a neonatal paediatrician, Dr Simon Rowley. Dr Rowley advised: "The standard recommendation for attendance for off-site paediatricians to attend in emergencies is 20 minutes drive from the hospital."

205. The hospital switchboard operator failed to make contact with Dr F or to leave him a message, and eighteen minutes passed from the time that the staff in the delivery suite asked for the paediatrician to be called and contact was made with Dr F. Dr F responded quickly to the call from the RMO. However, I am critical of the communication systems at Whanganui DHB that resulted in a delay in Dr F being contacted.

Neonatal care

206. Neonatal care was provided to Baby A by Dr F and nursing and medical staff at Whanganui DHB. When Baby A was delivered, he was resuscitated by the midwives in the delivery suite.

207. Dr Rowley advised: "Regarding the resuscitation in delivery suite — standard care was provided with good midwifery support for the initial resuscitation of [Baby A]."

208. Dr Rowley noted that the Neopuff was not connected properly despite a midwife saying that she had checked that it was in working order. However, he said that there would have been only a short period of time that Baby A was ventilated without oxygen, and it would not have made a difference to his overall condition. However, I am concerned that the equipment required for an emergency resuscitation in the delivery room was not fit for immediate use.

209. Dr F arrived at 10.42pm and immediately intubated Baby A. After a period of stabilisation, Baby A was transferred to SCBU. At SCBU, Baby A was ventilated manually for 15 minutes, and then he was connected to a neonatal ventilator.

210. Prior to Baby A's arrival at SCBU, the ventilator had been used to ventilate a much smaller baby, and the settings for that baby were still in place. The VG mode should have been changed to "off" to accommodate a larger baby, but neither the doctor nor the nurses noticed that the setting was incorrect.

211. Dr Rowley advised:

> "As a result the settings were inappropriate for [Baby A] who was much larger and term and needed greater volumes than the previous baby had received. He was not adequately ventilated as result."

212. Dr Rowley noted that other adjustments were made to the ventilator, which partially ameliorated the incorrect ventilator settings. He also noted that the ventilator that was used was complicated, and should not be used in non level 3 settings. SCBU is a level 2 unit.[57] He said:

> "It would be unreasonable to expect a general paediatrician and the level 2 nursing staff to manage this type of ventilation without specialist input and training."

213. Staff training had been provided for the use of the ventilator at SCBU, but it is clear that none of the staff involved in the care of Baby A at SCBU recognised that the ventilator had not been set correctly.

214. At 12.00am, Dr F called NICU in Hospital 2 and discussed Baby A's care. The ventilator settings were not discussed. Another discussion took place at 1.00am, and therapeutic cooling was discussed and then initiated. The NICU team from Hospital 2 arrived at 2.15am, and the ventilator was adjusted to the correct setting for Baby A's weight.

215. Dr F contacted the Hospital 2 NICU team within an hour of Baby A's arrival at SCBU. Dr Rowley advised that this was within the expected timeframe. He advised:

[57] Level 2 neonatal units are expected to be able to stabilise and manage sick infants for short periods of up to a few hours. Level 3 neonatal units are capable of providing continuous life support and ongoing medical and surgical care.

> "Level 2 Neonatal units are expected to be able to stabilise and manage sick infants for short periods of up to a few hours. In addition as [Dr J] pointed out it is not easy to remove oneself from directing a resuscitation to make phone calls."

216. Dr Rowley noted that therapeutic cooling was initiated, and that "other management suggestions [made by Hospital 2 NICU] were made and carried out appropriately".

217. Dr Rowley said that the timeframe for initiating the therapeutic cooling was acceptable, and the four blood gas measurements taken within two hours of arrival at SCBU were appropriate.

218. Dr Rowley also advised:

> "It is not an easy task to chase up the laboratory results and then communicate them back to the level 3 [Hospital 2] team when at the same time struggling to adequately ventilate an extremely sick baby.
>
> …
>
> [T]he local consultant paediatrican managed the very difficult resuscitation of [Baby A] relatively well given the number of systems issues that he had to deal with."

219. I am satisfied that the care that Baby A received was appropriate and to the accepted standard. However, I am critical that the ventilator was set up incorrectly, and I am concerned about whether staff were adequately trained to use the ventilator.

220. I note that since these events, regular training sessions on the use of the ventilator have been conducted by Whanganui DHB and Hospital 2 NICU.

Conclusion

221. There are a number of concerning features about how Mrs A and Baby A were cared for by multiple Whanganui DHB staff:

- The core midwives failed to advocate for the adequate monitoring of the FHR and, after commencing a CTG, failed to recognise and respond to the fetal distress.
- Whanganui DHB staff failed to call the paediatrician prior to Baby A's delivery and, when they did attempt to call the paediatrician, they called the wrong number.
- The staff assist bell was pushed instead of the emergency bell when emergency assistance was required.
- The Whanganui DHB switchboard failed to make contact with the paediatrician or to leave him a message, which resulted in an additional delay in the arrival of the paediatrician.
- The equipment required for an emergency resuscitation in the delivery room was not fit for immediate use.

- The ventilator was set up incorrectly, and notwithstanding the comments made by Dr J in his case review about the diligent approach taken to staff training, I am concerned about whether staff were adequately trained to use the ventilator.

222. There were several failures in the care, the communication systems, and the emergency equipment at Whanganui DHB. This resulted in delays in providing care to Mrs A and Baby A. Whanganui DHB failed to provide services with reasonable skill and care and, accordingly, breached Right 4(1) of the Code.

Recommendations

223. I note that RM B participated in a competence review as required by the Midwifery Council of New Zealand. The review concluded in July 2018. I also note that she has attended various education programmes. I recommend that the Midwifery Council consider whether any further review is required based on the information contained in this report.

224. In my provisional opinion, I recommended that RM B provide a formal written apology to Mrs A and her family. RM B has provided a written apology for her breach of the Code, and this will be forwarded to Mrs A.

225. I note that RM C is no longer working as a midwife. I recommend that should she apply to return to midwifery practice, the Midwifery Council of New Zealand consider the issues raised in this report to determine whether a competence review is warranted.

226. I recommend that RM C provide a written apology to Mrs A and her family, for RM C's breach of the Code. The apology should be provided to HDC within three weeks of the date of this report, for forwarding to Mrs A.

227. I recommend that within three months of the date of this report, Whanganui DHB provide a report on its communication systems for maternity emergencies (including but not limited to the 777 call system for the on-call paediatrician).

228. I recommend that within three months of the date of this report, Whanganui DHB provide HDC with a report on the content and the frequency of the fetal surveillance education that it is providing to its staff and to LMCs.

Follow-up actions

229. A copy of this report with details identifying the parties removed, except the experts who advised on this case and Whanganui DHB, will be sent to the Midwifery Council of New Zealand and the Coroner, and they will be advised of the names of RM B, RM C, and RM D.

230. A copy of this report with details identifying the parties removed, except the experts who advised on this case and Whanganui DHB, will be sent to the Ministry of Health, so that it can take into account the findings from this investigation in its review of the Midwifery First Year of Practice Programme.

231. A copy of this report with details identifying the parties removed, except the experts who advised on this case and Whanganui DHB, will be sent to the Health Quality & Safety Commission and the Royal Australasian College of Physicians, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix A: Independent advice to the Commissioner

The following expert advice was obtained from RM Emma Farmer on 19 February 2017:

"I, Emma Farmer, have been asked to provide an opinion to the commissioner on case number 16HDC00977; I have read and agree to follow the Commissioner's Guidelines for independent advisors.

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

You have asked me to provide an opinion on the following matters regarding standard of care provided by:

1. [RM B]
2. [RM H]
3. [RM C]
4. [RM D]
5. [RM I]
6. [RM K]
7. [RM G]

You have also asked me to make comment on the timeliness of the involvement of the paediatric team, the appropriatemess of Whanganui DHB guidelines and the adequacy of the changes proposed as a result of this incident.

Firstly I would like to acknowledge the tragic death of [Baby A] and the grief experienced by his parents and family.

Care provided by [RM B]

1. [RM B's] antenatal management of [Mrs A's] GBS positive status.

Group B Streptococcus (GBS) is a common pathogen present in 10–35% of all women. This pathogen is predominantly harmless in the host however it can cause significant and sometimes fatal sepsis in the newborn. There is a national consensus guideline for the prevention and management of GBS, which often forms the basis of local DHB guidelines, and I note this consensus statement is referenced in the Whanganui DHB guideline (p4).[1]

As per the National Consensus statement [RM B] repeated the GBS swab in the third trimester and as a positive test was returned … she notes that antibiotics will be required in labour.

[1] NZCOM, RANZCOG, NZ Paediatric Society, and Australasian Society for Infectious diseases 2014 CONSENSUS GUIDELINE 2014 THE PREVENTION OF EARLY-ONSET NEONATAL GROUP B STREPTOCOCCUS

[RM B's] antenatal management of [Mrs A's] GBS positive status was consistent with the National Consensus statement, and the accepted standard of care.

2. [RM B's] Management

a) Management of GBS-positive status

The National Consensus statement says: 'Intrapartum antibiotic prophylaxis (IAP) is recommended for all women with GBS risk factors **in active labour, or at the commencement of intervention e.g. induction of labour,** whether or not they have ruptured membranes.' The document does not give any further definition of 'active labour' so this is open to clinical interpretation.

[RM B's] clinical records [at] 08.27 record 'Message from [Mrs A] reporting she is 90% sure her waters broke at 4am this morning. Has been having small contractions since but nothing much at this point.' At 08.31 she adds 'Contact with [Mrs A], liquor remains clear, baby moving well, to keep me informed'. It would be reasonable to conclude from these two short entries that [Mrs A] was in early labour, but not in 'active labour' and therefore not eligible at this point for intrapartum antibiotics.

Whilst a home visit to check on progress would not be routine for all women at this stage, given the history of GBS most midwives would make a clinical assessment to confirm ruptured membranes and to check the maternal temperature when GBS is known to be present. The New Zealand College of Midwives 'Midwives Handbook for Practice'[2] recommends that when a woman or her support person first lets the midwife know she is in labour the midwife should review the whole background from the history and records (p34). Had [RM B] done this she would have been alert to the GBS status and this may have led her to a more conservative approach.

Not making a home visit at this time would be viewed as a departure from accepted practice and would be viewed with mild disapproval from peers.

[At] 14.20 [Mrs A] arrives at Whanganui DHB maternity unit, and is assessed by [RM C] as [RM B] is delayed in her arrival until 14.58. In the interim [Mrs A] is examined and found to be 3cms dilated and having regular painful contractions lasting 30 seconds, and needing entonox for pain relief. From this assessment it would be reasonable to conclude that [Mrs A] was now in 'active labour' and therefore eligible for intrapartum antibiotics.

[RM B] arrives to take over care at 14.58. It would be usual practice when taking over care to spend some time with the woman asssessing contractions and her ability to manage, assessing fetal wellbeing in response to contractions and ensuring your client and their support people were orientated to the new environment. For most practitioners this would take up to one hour. So unless labour was progressing very rapidly it is reasonable to delay the administration of antibiotics while this assessment

[2] INFECTION Accessed from: https4/www.midwife.org.nzfquality-practice/multidIscipnaty-guiclelines NZCOM 2008 Midwives Handbook for Practice — NZCOM Christchurch ISBN 978-0-473-12992-7

and aclimitisation was occcuring. For this reason it would be reasonable to expect the administration of IV antibiotics anytime from around 16.00hrs. In this case IV antibiotics were not administered until 19.21hrs.

This delay would be considered a departure from accepted practice and viewed with moderate disapproval by peers.

I note that this departure did not have an impact on the outcome for this baby. [The] postmortem report records clearly that 'No evidence of infection was found in the infant'. ([Baby A Report] p3)

b) Maternal monitoring

[RM B] records the first full set of maternal observations at 17.20, it would be usual practice to undertake a full set of observations within the first hour of admission in labour, NZCOM Handbook for practice recomends a blood pressure and pulse be recorded as soon as the woman requires intermittent midwifery support in labour[3] (p35). I understand from [RM B's] statement that she was of the opinion that the DHB staff had completed this assessment, however as the responsible clinician she would be expected to check that the vital signs were normal and had she done so she would have noted that they had not been completed. The vital signs taken at 17.20 were the only systemic observations taken in labour. It is usual practice to recheck the vital signs every 4 hours, and [RM B] confirms this in her statement to the Midwifery Council 'It is my standard practice to carry out obs at regular 4 hourly intervals unless circumstances require otherwise' (p5), it is dissappointing then that observations that should have been rechecked at 21.20pm were not. Not repeating vital signs in this situation would be viewed with mild disapproval.

c) Fetal monitoring

On admission [RM B] commenced intermittent auscultation of the fetal heart, according to the RANZCOG Intrapartum fetal surveillance gudelines[4] and Whanganui DHB Fetal surveillance guideline there were no absolute indications to commence a continuous CTG or an admission trace (see Appendix 1). The fetal heart was recorded in the first stage of labour at between 8 and 22 minute intervals. This is consistent with the guidelines which recommends an interval 15–30 minutes. In the second stage of labour the fetal heart is recorded at 5–15 minute intervals this is less frequent than the recommendation of between contractions and at least every 5 minutes. At 21.10 [RM B] records that the fetal heart was heard at 75bpm with a recovery to 115bpm and then a possible deceleration to 90bpm after the contraction, this is a change to the previous recordings and should have prompted further investigation. It would be usual in this situation to commence continuous CTG to observe the pattern of decelerations, and seek obstetric consultation. If unable to obtain an abdominal trace

[3] NZCOM 2008 Midwives Handbook for Practice — NZCOM Christchurch ISBN 978-0-473-12992-7

[4] RANZCOG 2014 Intrapartum fetal surveillance guidelines https://www.ranzcog.edu.au/RANZCOG SITE/medieRANZCOG-MEDIA/Women%27s%201-lealthiStatement%20and%20p,uidelines/Ctinical-Obstetric_s/Intrapartum-Fetal-Survelllance-Guideline-Third-edition-Aug-2014.pdf?exfr.Pdf

then a fetal scalp electrode should have been commenced at this time. From 21.50 after the fetal scalp electrode was placed the resultant trace was uninterpretable and therefore abnormal and should have resulted in an immediate obstetric consultation.

Fetal monitoring in the second stage of labour was below the accepted standard of care and would be viewed with significant disapproval.

d) Documentation

[RM B] took an unusual approach to documentation in that she documented events when she was not present and transcribed events from the electronic record into her own clinical record. I am aware that Whanganui DHB is a trial site for the new Maternity Clinical Information system (MCIS). Having two sources of information is clearly problematic. It would be usual practice for midwives to document clearly when they are making a retrospective note. I also found [RM B's] documentation scant at times and difficult to read due to her handwriting style. This would be a departure from recommended practice and would be viewed with mild disapproval.

e) Communication with DHB staff Midwives and obstetric team

Overall there were some significant lapses in communication in the following regard:

- Clear communiation that an obstetric consultation was requested at 9.20pm
- Clear communication that a transfer of care was requested (if that was intended)
- Clear communication that a paediatrician was to be called to attend the birth

The blurring of responsibility for care often leads to care deficiencies as it is easy to make the false assumption that someone else is taking responsibility. The New Zealand College of Midwives has a consensus statement which states:

> *'All midwives, whether employed or self employed, have a responsibility to communicate and decide their respective roles and responsibilities in relation to each woman's care while in the hospital setting.'*[5]

Failure to communicate effectively would be viewed with moderate disapproval by peers.

3. [RM H's] actions in response to [RM B's] telephone call at around 1.34pm and whether it was reasonable for [RM H] not to identify [Mrs A's] GBS positive status

It is common practice for LMC midwives to call ahead when they anticipate that their clients are transferring to a maternity unit. This allows the staff to identify a room for admission and to call for the clinical records in anticipation of arrival. It also enables staff to be welcoming to the woman and her support people as they arrive knowing

[5] NZCOM 2001 Consensus Statement — Roles and Responsibilities in a Hospital setting https://www,midwife.org.nequallty-practiceipractice-guidanceinzcom-consensus-statemeilts/

they are expected. As [RM B] knew that she would not be arriving directly she informed the staff of this so that they would provide care until her arrival.

It is usual in this exchange to handover any essential pieces of information that would be important for immediate care such as hypertension, or reduced fetal movements. It is not usual to give a full medical history or to expect the midwife taking the call to interrogate the clinical records for key clinical information. Therefore [RM H] would not be expected to identify GBS positive status.

Additionally: [RM B] requested assistance with cannulation at 17.00 from [RM H]. At this time she was referred to the RMO, who was known to be in theatre, it is not clear why [RM H] did not assist with the cannulation herself as this would have expedited the provision of antibiotics.

4. [RM C's] management

a) Whether it was reasonable that [RM C] did not identify [Mrs A's] GBS-positive status

The information was available to [RM C] in the electronic record, however at the time of admission staff would generally focus on immediate care such as orientation to the environment, assessing contractions and fetal heart response, and assessing vital signs. It is less critical at this time to review laboratory results until more urgent care has been attended to. In this respect [RM C's] practice was acceptable.

b) The adequacy of [RM C's] assessment on admission

Usual assessment on admission would include the following: Assessment of general wellbeing and response to contractions; abdominal palpation for lie, presentation, and engagement of the presenting part; auscultation of the fetal heart in response to contractions; assessment of strength, length and frequency of contractions; and assessment of vital signs to include, temperature, pulse, respirations and blood pressure. Vaginal examination is usually undertaken within 1–3 hours of admission depending on whether this had occurred pre-admission. From the 'Woman's Clinical Narrative' report it appears that [Mrs A] was in active labour and [RM C] assessed that she may be 'coming up fully' she therefore by-passed some of the routine assessment tasks and proceeded to vaginal examination to determine labour progress. It appears however that she did not return to the usual assessment examination and therefore her admission assessment omitted abdominal palpation, fetal heart auscultation and recording of vital signs. This was below the standard expected and would be viewed with mild disapproval.

c) The adequacy of the information shared with [Dr E] at around 9.20pm

According to the 'Woman's Clinical Narrative report' and her statement [RM C] called [Dr E] at around 9.20pm to request his assistance. She described the vaginal examination she had undertaken and the fact that fetal heart decelerations were noted. Decelerations of the fetal heart are not uncommon in second stage of labour but alongside slow progress would be viewed as abnormal. This would usually be

sufficient information to elicit attendance from the obstetric staff. [Dr E] in his retrospective note and in his statement claims that no mention was made of fetal heart decelerations, not mentioning fetal heart rate concerns would be inadequate information, and viewed with significant disapproval. However given that the contemporaneous record made by [RM C] makes reference to her reporting decelerations I am inclined to give her version more weight.

d) Standard of care in relation to the second stage of labour, in particular fetal monitoring and communication

There appears to be disagreement about who was responsible for care. It is my opinion that each midwife is accountable for the care that she provides and all the midwives present had a duty of care to [Mrs A] and her baby. I do not believe that a transfer of clinical responsibility had passed from the LMC to the secondary care team because this would require, as a minimum, a documented conversation. However an obstetric consultation had been requested, and declined.

It is usual practice in a maternity unit for LMC midwives to call on staff midwives to assist especially in the second stage of labour when the work becomes more intense. Staff midwives, who often are very experienced practitioners, provide advice and support to LMCs without assuming overall responsibility for care, however they are still responsible for the care they provide and in this situation should have been able to reassure themselves of fetal wellbeing as part of the assistance they were providing.

From 21.10 onwards there was sufficient indication to commence continuous fetal heart monitoring. Once a fetal scalp electrode was applied at 21.50 the CTG trace produced was uninterpretable and should have resulted in immediate obstetric referral. Not referring to an obstetrician with an abnormal CTG trace would be viewed with significant disapproval by peers.

e) Standard of care in relation to the resuscitation

The need for an assisted birth, for suspected fetal compromise, would usually result in a request for paediatric presence at birth. Not having a paediatrican present for birth resulted in a delay in intubation. Not calling a paediatrician in anticipation of a complex birth would be viewed with mild disapproval by peers. When [Baby A] was born needing resuscitation an emergency code call was made however the wrong code call further delayed the arrival of the paediatric team, this error was due to a recent change in emergency call numbers and therefore would be viewed with mild disapproval.

5. [RM D's] management

a) Insertion of IV cannula

The insertion of the IV cannula as described in [RM D's] statement appears to be standard proceedure.

b) Assisting [RM C] during the second stage of labour from around 9pm

My opinion is reflected in my comments above in the section related to the care provided by [RM C] *d) Standard of care in relation the second stage of labour, in particular fetal monitoring and communication.* And applies to all midwives present.

c) Calling [Dr E] for assistance after identifying significantly abnormal CTG

[RM D] reports that she alerted [Dr E] to the abnormal CTG as soon as she identified it; this would be usual practice.

d) Setting up the resucitation equipment and providing cardiac compressions.

The resuscitation equipment is usually checked by the midwife providing labour care, in this case it would have been [RM B]. It would be usual in anticipation of needing the equipment, for example when an instrumental birth is being planned that the equipment be rechecked, if staff are available. It is not clear at what point the oxygen tubing became dislodged so it is not possible to say whether or not this could have been picked up during this check. There is no description of the cardiac compressions however cardiac compressions should be started when the heart rate is less than 60bpm and continued until the heart rate increases above this level. From the records it appears that this practice was being observed.

6. Care provided by [RM I], [RM K] and [RM G]

I have no comments to make about the care provided by the above midwives; the documentation of their involvement is scant and the care provided appears to be standard.

7. Whanganui DHB

a) Timeliness of arrival of the paediatric team

As per my earlier comments, there was potentially an opportunity for the paediatrician to be called at an earlier opportunity when the call was made for obstetric assistance when the fetal heart trace was noted to be abnormal. I requested a copy of any Whanganui DHB Guidelines on paediatric attendance at birth, the guideline I received was entitled 'Guideline for Referral to Paediatric services' this guideline states that a paediatrician should be called when there is 'significant fetal distress (with or without thick meconium)'. It would therefore be reasonable for the midwives to have called the paediatrician in advance of the birth rather than waiting until after the birth to make the call. It is likely that this would have reduced the delay in attendance of the paediatrician. In the absence of the paediatrician the midwives commenced neonatal resucitation with bag and mask and cardiac compressions as is usual practice.

b) Appropriateness of Whanganui DHB guidelines

I am uncertain if Whanganui DHB has a separate GBS guideline as the referrral document provided is related to pre-labour rupture of [membranes] which arguably does not apply in this situation as early labour appears to have started shortly after

rupture of membranes, and rupture of membranes was not prolonged, i.e. greater than 18 hours.

c) Adequacy of the changes made as a result of this incident

I concur with all the recommendations made by Whanganui DHB, and would like to suggest in addition introduction of an ISBAR[6] communication tool or similar to aid clinician to clinician communication.

d) Other matters

I have found the assessment of the care provided quite difficult from the MCIS record that is available for review. I wonder if this is particular to this case or an unintended consequence of the introduction of the electronic clinical record.

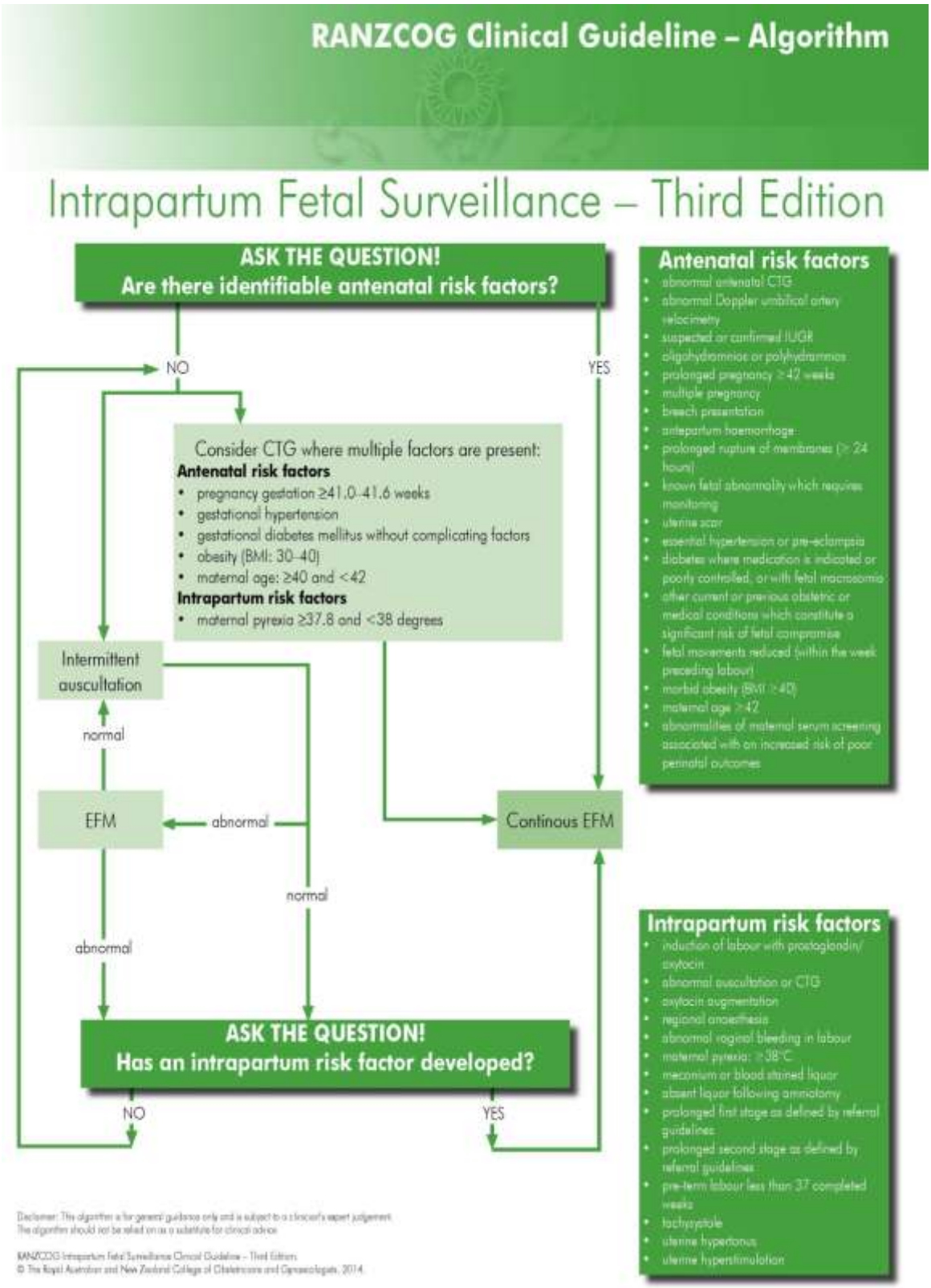
I trust that you find this advice helpful in your investigation, please contact me again if you would like further clarification.

Kind regards

Emma Farmer
RN RM DPSM MHSc Midwifery"

[6] HQSC 2016 Communication tools https://www.hqsc.govt.nz/our-programmes/safe-surgery-nz/projects/surgical-teamwork-and-communication/interventions/communication-tools/

APPENDIX 1: Intrapartum fetal surveillance algorithm



Names have been removed (except Whanganui DHB and the experts who advised on this case) to protect privacy. Identifying letters are assigned in alphabetical order and bear no relationship to the person's actual name.

Further advice was obtained from RM Farmer on 11 February 2018:

"I, Emma Farmer, have been asked to review my opinion provided to the commissioner on case number 16HDC00977; I have read and agree to follow the Commissioner's Guidelines for independent advisors. I am a registered midwife and hold a MHSc (Hons) Midwifery. I have worked in a variety of practice settings over a 25 year career and am currently employed as the Head of Division — Midwifery, at Waitematā District Health Board.

You have provided me with the following documents:

- [RM B's] response dated 19th August 2016 including clinical records and midwifery first year of practice booklet
- Whanganui DHB Critical System Analysis report dated 19th September 2016
- [Dr E's] response dated 22nd November 2016
- Whanganui DHB's response dated 8 December, 9 December and 13 December 2016 and enclosures Clinical records from Whanganui DHB covering the period [of pregnancy]
- Postmortem examination report of [Baby A]
- Statements to Coroner:
  - [Neonatal Intensive Care Specialist at Hospital 2]
  - [Dr F], Specialist Paediatrician at [Whanganui DHB]
- Guidelines 'Pre-labour rupture of membranes at term and prevention of early onset neonatal group B streptococcus infection — Management Guideline for women in labour'
- Whanganui DHB Fetal Surveillance Guideline
- Email to myself from [HDC] dated 24th January 2017
- Whanganui DHB Caesarean section Guideline Response from [RM D] 11th July 2017
- Response from [RM C] 25th July 2017
- Response from [RM B] 2nd August 2017
- Further response from Whanganui DHB 24th July 2017, incorporating enclosures

Having reviewed the above information and particularly the submissions by the midwives providing care for [Mrs A], I remain confident in my original advice, and do not wish to alter or amend any part of it. I trust that you find this advice helpful in your investigation, please contact me again if you would like further clarification.

Kind regards
Emma Farmer
RN RM DPSM MHSc Midwifery"

Appendix B: Independent advice to the Commissioner

The following expert advice was obtained from obstetrician and gynaecologist Dr Celia Devenish:

"I have been asked to provide an opinion to the Commissioner for the above. I have read the Commissioner's guidelines and I agree to follow these guidelines.

I am a Specialist Obstetrician and Gynaecologist, working within a generalist scope of practice, and have been accredited with Fellowship of both RANZCOG and RCOG.

I have practised as a Consultant in both Obstetrics & Gynaecology for 35 years in both tertiary and secondary provincial centres, in public, academic, rural and private practice sessions. I have worked in a joint clinical and academic position, as a Specialist at Dunedin Hospital for 17 years. I have also been Clinical Leader in Obstetrics. As an Otago University Lecturer, I am involved in research and teaching in the Dunedin School of Medicine at undergraduate and postgraduate levels. I am an elected RANZCOG Board and Council member where I chair and sit on various committees including the FRANZCOG and DRANZCOG Examination Committees. I also sit on the New Zealand Committee and SIMG interview panels for New Zealand and Australia. I am involved in specialist training and organise various workshops in NZ.

1. **[Dr E's] decision not to attend following the telephone conversation with [RM C] at around 09.20pm**.

I believe this decision met the standards of good practice. I believe this because the notes describe, as does [Dr E] that he considered the information given to him at the time, and excluded fetal and maternal distress, before giving his opinion. His opinion was to allow further time for progress in labour to occur. He stated that he would be in the hospital, as he was attending an intra-operative consultation. He also asked to be informed if there were any change in the acuity of the situation. Since [Dr E] was already committed to a consultation in operating theatre, he had to prioritise the request for an opinion in light of the information he was given at the time.

The hospital notes record that whilst full dilation was noted after getting out of the bath at 08.15pm, no effective maternal pushing occurred until an hour later around 09.18 when the core midwife noted fetal descent with effective maternal pushing. Prior to this time, maternal efforts were described as 'not into her bottom' and ineffective. It is common that women require practice and coaching before effective pushing can be achieved. Delivery assistance was requested after minimal effective efforts and after only an hour of full dilation. I do not believe adequate time had elapsed to indicate medical intervention in the absence of any maternal or fetal concerns. However, had there been fetal concerns or an inability to adequately monitor the fetus, or any other complication, then attendance and assessment would have been indicated. Similarly, had there been any concern for lack of progress after a further period of time and effective maternal pushing, then specialist assessment would have been indicated. I believe my peers would agree with this opinion.

It is difficult to diagnose lack of progress in less than 60 minutes of effective pushing, particularly in a primiparous woman, who has not delivered vaginally before. At 08.45pm, it is documented that the pushing was not effective. The reason for the call by [RM C] was that, 'the cervix was fully dilated, and that the fetal head was at the spines'. In such circumstances I believe the expected standard of care is a plan to wait and monitor as long as there were no additional concerns. This is, in fact, what [Dr E] recommended. The presence of caput is not unusual. Electronic fetal monitoring is indicated when risk factors are also present. Overall progress seems to have been excellent for a first labour. After establishing regular contractions around 02.30pm it was 6 hours to full dilation on getting out of the bath at 8.18 pm. Assessment of the condition of the fetus was reliant on auscultation by the LMC using Doppler. It became apparent the fetal heart was difficult to hear, so a fetal scalp electrode was subsequently applied at 9.50pm by the core midwife.

The abnormal trace evident from this time was then acted upon. The CTG shows 20 minutes of fetal heart trace abnormality prior to delivery, and it is likely these abnormalities had been present previously. I believe this because the changes, as shown on this CTG, do not suddenly occur in the absence of an additional acute event (e.g. such as a placental bleed). There was no evidence for such an event. Or other acute event causing hypoxia. Listening to the fetal heart intermittently does not provide adequate information.

2. The appropriateness of the advice [Dr E] gave [RM C] (as described by [Dr E]). Should [Dr E] have provided any additional advice or asked additional questions?

I believe the advice was appropriate for the situation described to him, which included no identified risk factors to the pregnancy or the labour. He confirmed that there was no maternal or fetal distress. The only possible further assessment tool was for electric monitoring, i.e. and to ask for a CTG. Since he had not been advised of any risk factors, such as GBS status or any concerns regarding the fetal heart monitoring by auscultation, then electronic monitoring is not considered essential. I believe the response from RM that 'she would be happier if he came to assess or equally happy to carry on' was confusing terminology in itself, but overall, meant that as an experienced core midwife, she did not feel there was any urgency or significant concerns, rather that she was keeping him aware of the situation.

3. The reasonableness of the alleged statement by [Dr E] that if he came, 'he would probably take the woman to theatre for a caesarean section as he was reluctant to do a ventouse on an untried pelvis.'

I believe this statement indicates that [Dr E] felt that if, indeed, there had been any disproportion causing a delay at the level of the spines, then this would require delivery by caesarean section. By allowing further time in the second stage, [Dr E] allowed sufficient time for any cephalopelvic disproportion to declare itself. In the event, descent occurred to +3 cm below the spines in less than an hour. [RM C] states she described the head at the spines, which is initially normal, early in the second

stage when the cervix has recently become fully dilated. It may be that rotation was occurring at this point, so descent is not instantaneous. Subsequently there was natural descent of the head to well below the spines. In the absence of any fetal compromise, such management is considered good practice. Had there been no descent, then delivery by Caesarean Section would then be indicated for failure to progress. A reluctance to do a ventouse at zero station, i.e. mid-cavity, in a primiparous woman after inadequate time for descent, is good practice and is understandable in an untried pelvis. I believe my peers would agree with this opinion.

4. The standard of care provided in the instrumental delivery

There seems to have been no deviation in the expected standard of care regarding the kiwi cup (ventouse) low outlet delivery. I believe this because the notes describe the fetal station as +3cm and the head visibly crowning, such that the core midwife had gone to fetch episiotomy scissors. Whilst a minor degree of shoulder dystocia was described, prompt manoeuvres of McRobert's leg positioning and suprapubic pressure allowed delivery of the fetus within 30 seconds. At birth, the fetus was pale and lacked tone, and was transferred to the recussitaire without delay. The midwives commenced resuscitation. The cord was around the neck, but this is a common finding at deliveries and in itself is unlikely to have impact on the fetal status. It seems that cord gases and vitamin K injection were overlooked in the urgency of the situation. A routine oxytocin bolus was given to assist delivery of the placenta. [Dr E] had thought ahead to the possible need for operating theatre and advised them of this. The presence of a fetal subgaleal bleed is a recognised complication of ventouse deliveries, and does not indicate poor technique. I believe the standard of care provided by [Dr E] was appropriate. I believe my peers would agree with this.

5. The standard of care [Dr E] provided after the birth

I believe that [Dr E's] care was of a good standard after the birth which did not deviate from the expected standard of care … I believe this because he cared for [Mrs A] appropriately after the birth during the third stage and placental delivery and completed the perineal suturing. Documentation of the delivery, assistance with shoulder dystocia and perineal repair, as well as debriefing the parents, deviates minimally from the expected standard of care in that there is limited detail in the notes. Given the acuity of the situation at the time this is understandable. Also the MCIS notes may not contain the means to complete templates for such events. Suitable proformas are available in many hospital paper based notes. In some centres, dictation is used to complete necessary documentation. I believe my peers would agree with this opinion. It is not clear whether [Dr E] was able to visit the couple postpartum, prior to their transfer to [Hospital 2] the next day. It would have been ideal to have met with the parents afterwards to offer information and debrief. This may have occurred, though not documented. Overall I believe the standard of care was acceptable at the time following birth and that my peers would agree with this.

6. The timeliness of paediatric involvement in this case and what, if any, responsibility [Dr E] had in arranging this.

The paediatric involvement was initially delayed due to errors in making the 777 emergency call. [Dr E] was already focussed on the care of [Mrs A] and urgently caring for a woman he had not previously met, and may not have noted whether the paediatricians had arrived or not.

In most hospitals, it would normally be the role of the core midwifery team, LMC or junior resident involved in the case to ensure that the paediatrician was called at the same time as the Obstetrician was called to attend.

It is good practice that the specialist SMO on arrival confirms that the paediatric team are on their way, or at least called, especially when the CTG was recognised as abnormal. It is not possible to know if this occurred. I believe the recent systems change regarding emergency maternity calls, initially delayed the request for the paediatrician. Staff education around this change may not have been complete. I believe regular education for all staff members, including drills and local PROMPT courses, which are multidisciplinary, would help avoid such confusion when emergencies occur.

It is a good practice standard that DHBs facilitate all junior medical staff's attendance at basic neonatal resuscitation training. Such courses would enable familiarity with any neonatal equipment and procedures. I believe my peers would agree with this opinion. I cannot comment on why the paediatric call was not promptly received. On occasions this can be because the incorrect number was dialled in the emergency or because the cell coverage was compromised in some way. Having a back up pager or home number would obviate this risk.

Also provide comment on:

1. The adequacy of changes made at Whanganui DHB since this incident.

I believe the changes made are adequate. However I recommend an additional requirement that all those involved in the Delivery Suite area attend a local PROMPT day course. This should be established for all staff across the disciplines. Compulsory PROMPT course attendance would be an effective means of promoting multidisciplinary teamwork. Such a course is tailored to the specific needs of each individual unit. The recommended changes described by Critical Systems Analysis include overhaul of the communication systems for maternity emergencies, fetal monitoring education for all DHB staff and guidelines for the appropriate monitoring of women with identified antenatal risk factors and audit of the same using RANZCOG audit tool. Compulsory Audit of all neonatal resuscitation events with findings circulated to all teams is also recommended. It is noted that the Paediatricians from both [Hospital 2] and Whanganui have also met to discuss lessons learnt from these events. I believe these changes will improve the staff response to any maternity emergencies. I believe my peers would agree with this opinion.

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

I do not agree with [the pathologist's] comments regarding the shoulder dystocia, which is in the last sentence on Page 3 of [the pathologist's] comments 'and that (shoulder dystocia) was the likely cause of the failure to progress'. There was, in fact, no failure to progress documented. The labour progressed well and in the second stage, the fetal head descended from zero station at 09.10pm.to + 3 cm in less than an hour once effective pushing was established. Technically speaking, a shoulder dystocia cannot occur until such time as the head is delivered when, for the first time, the anterior fetal shoulder may fail to fit under the pelvic brim anteriorly at the symphysis. Shoulder dystocia is not a cause of 'failure to progress'. A shoulder dystocia is not predictable and 50% of all shoulder dystocias occur in the absence of any associated risk factors, such as macrosomia. The need for low pelvic outlet assistance by vacuum, especially with a crowning head, does not predict shoulder dystocia. [Baby A] was a normally grown term infant, who underwent spontaneous labour at 39 weeks +2 days. There was no antenatal record of fundal height measurement in the woman held notes nor a GROW chart, nor ultrasound estimated fetal weight, so it was not possible to assess the fetal size as a risk factor. After birth, the baby weighed 3.95kg, which represents a normally grown fetus and a birth weight at the 80th centile. [Mrs A's] height at 162 cm and weight of 60kg gave a BMI within the normal range.

I do not agree with the comments in the same report on page 4 paragraph 4 in the report that 'there was no indication that the fetus was compromised prior to the recognised abnormal CTG trace'. I do not agree because the notes indicate that there was prior documentation that the fetal heart had been decelerating, both before and during contractions and that the fetal heart was also 'hard to hear' during the second stage of labour. Despite these changes in an at risk pregnancy, no CTG was immediately applied. Intermittent auscultation does not permit assessment of fetal heart rate variability and it is not continuous, so it is impossible to state that there was 'no fetal concerns prior to delivery'.

The described fetal CTG changes heard by auscultation are an indication for continuous electronic fetal monitoring, preferably by scalp electrode. This is certainly indicated when there are risk factors such as known positive GBS positive status. As [Dr E] was not advised of any of these factors, he could not make the appropriate recommendations or prioritisation decisions so he did not have the opportunity to act on any concerns that may have shown on monitoring, and diagnose fetal distress earlier. I believe my peers would agree with this.

In reference to page 8 of the report 'Histological Examination of the placenta' Chorioangiosis of the placenta has associations with adverse fetal outcomes. See reference 2016 Archives of Pathology. Ongoing research in this area suggests the pathological finding is an adaptive response of the placental organ to a range of intra-uterine situations, including chronic hypoxia. Acute intrapartum hypoxia on top of chronic hypoxia may result in such sad intrapartum stillbirth events, as experienced by [the family]. Whilst the cause of such chronic hypoxia, which is thought to be

associated with chorioangiosis, is unknown, the recent research suggests that adverse outcomes, including unexplained stillbirth, can be better understood in this context.

All DHB staff and Access holders may not be fully conversant with the MCIS electronic recording system developments, which are being piloted by the central DHBs. Whanganui DHB may wish to ensure that LMCs and occasional users are fully up-skilled, especially since the WHO standard recommends all woman have a partogram and details of labour documented in such a format.

Regular PROMPT courses, involving each discipline involved in maternity care, has been shown to improve outcomes for women and babies, improve staff confidence in dealing with emergency situations and increases working relationships and work satisfaction. The scenarios and communication practice in such courses allow systems to be explored in a safe environment through scenario based learning. This allows improvements to be suggested by the staff and incorporated into local guidelines for the unit.

Thank you for the opportunity to consider this case. I would like to extend my sincere condolences to the family for their sad loss.

References:

RANZCOG Guidelines and Statements 'Care of uncomplicated pregnancy' RCOG and NICE guidelines re Fetal Electronic Monitoring

Consensus Statement RANZCOG RCM and Paediatric Society2014

NZ MOH website guidelines re screening GBS in pregnancy

NICE guidelines and RCOG guidelines re Group B streptococcus

Chorioangiosis of Chorionic Villi. What does it really mean? Vol 140 Archives of Lab Med Pathology J. Staneck June 2016

Placental Chorioangiosis associated with fetal death. Sheenhan MM et al Ir Med Sci 1990

Yours sincerely

Celia Devenish
Consultant Obstetrician & Gynaecologist
MBBS FRCOG FRANZCOG

Electronically reviewed & signed"

Appendix C: Independent advice to the Commissioner

The following expert advice was obtained from neonatal paediatrician Dr Simon Rowley:

"My name is Robert Simon Hearn Rowley. I am a Registered medical practitioner and specialist Neonatal Paediatrician. My qualifications are MB ChB. FRACP. I am a Neonatal Paediatrician working at National Women's Health, Auckland City Hospital which includes clinical management of level 3 and level 2 infants in NICU. I am also the Chair of the Northern Region Paediatric Vocational Training Committee.

I have been asked to provide expert advice to the Health and Disability Commissioner on the care provided to [Baby A].

I have been provided with a number of documents relating to the case as outlined in your request. These include detailed reports by [the Coroner], [Dr J] and [Dr F] as well as several midwife reports.

I will not reiterate the history in full as it has been well covered in several of the reports and my brief is to examine the paediatric practice after the delivery of [Baby A]. I will offer an opinion at each step of the way as I relate the events.

1. Resuscitation in delivery suite

[Baby A] was born at [Hospital 1] a level 2 unit (SCBU) [at] 10:12 pm by ventouse delivery. His birthweight was approximately 3.7kg at 39.1 weeks gestation — an acceptable weight for gestation.

There was shoulder dystocia and he was born in poor condition. His Apgar scores — an index of the need for resuscitation are given as 0 at 1 minute, 2 at 5 minutes and 4 at 10 minutes, indicate that he was significantly compromised and he is described as being 'flat', white, no respiratory effort with no pulses and requiring immediate resuscitation. The severity of the acidosis on the cord blood gases confirm this and indicate likelihood of him having been in trouble for some time before delivery. The Paediatric House Officer was not called until 4 minutes of age although he should have been called for the delivery.

However [Baby A] appears to have had initiation of resuscitation appropriately by the midwives in attendance until the House Officer arrived.

Opinion:

An instrumental delivery for fetal distress and then with shoulder dystocia would normally mean a paediatric person (usually a House Officer) should have been in attendance but this did not happen. The House Officer was not called until 4 minutes — an early call for help is emphasized in resuscitation and this should have been immediate when it was recognized that the baby was pale and not breathing.

Regarding the resuscitation on delivery suite — standard care was provided with good midwifery support for the initial resuscitation of [Baby A].

There was a problem with the Neopuff resuscitation equipment not being connected which was resolved quickly by using a Laerdal bag for ventilating the baby. Resuscitation continued for 11 minutes before the baby had a good cardiac output.

Opinion:

The Neopuff disconnection from gas flow was not picked up although we are assured that the equipment had been checked. It is possible that in shifting equipment for resuscitation this connection could have been dislodged. This would have taken a few seconds to correct or find alternative bag and mask and there would have been only a short period of time that the baby was ventilated without oxygen — not enough to make a difference to his overall state.

With the arrival of the senior Paediatrician from home at 26 minutes of age [Baby A] was immediately intubated and ventilated manually with subsequent transfer to SCBU at 45–50 minutes of age.

It appears that the telephone call to the senior Paediatrician was not received immediately thus causing an approximate 20 minute delay in his arrival to assist with and take over resuscitation.

Opinion:

The Paediatrician was called and was present within 8 minutes of receiving his call but this was at 30 minutes of age and approximately 25 minutes after the initial call to the House Officer. It is not clear why he did not receive his initial calls. The standard recommendation for attendance for off-site Paediatricians to attend in emergencies is 20 minutes drive from the hospital which usually means attendance at the bedside within 20–30 minutes. Therefore this timing is just but barely acceptable.

2. Care Provided to [Baby A] in SCBU

Intubation occurred immediately the Paediatrician arrived and then after a period of stabilization baby transferred to NICU at 45–50 minutes age. Fifteen minutes later [Baby A] was connected to the ventilator which had not been re-set since being used for a very small baby a few hours earlier. A Volume Guarantee (VG) mode was set which normally would NOT have been the default setting as it is a more sophisticated mode of ventilation and was not recognized as being on. As a result the settings were inappropriate for [Baby A] who was much larger and term and needed greater volumes than the previous baby had received. He was not adequately ventilated as a result.

Adjustments were made to respiratory rate and ETT position and clinically baby improved but it was not noticed that the ventilator settings were inappropriate.

Opinion:

A VG (Volume Guarantee) mode had been set up with tidal volume of approximately lml/kg being set when 3–5ml/kg would have been a starting volume for this baby's weight. The default settings on these ventilators would normally be with VG off and this is an error. The setting up of a ventilator is usually done by the Nursing staff and a protocol for this should have been followed. The administering Doctor should then check these and adjust for the baby's condition before placing the baby on the ventilator.

Although the Paediatrician did not recognize that the ventilator was on a VG mode he instinctively made a change which in part addressed this issue i.e. he increased the respiratory rate — and that and withdrawal of the ETT meant that the blood gases improved. Once the [Hospital 2] team arrived the VG was appropriately adjusted and there was a period of over-correction before ideal gas status had been achieved.

It is my opinion that VG is a relatively recent and more complicated mode of ventilation that should not be used in non-level 3 settings and it would be unreasonable to expect a general Paediatrician and the level 2 Nursing staff to manage this type of ventilation without specialist input and training. Had the [Hospital 2] team advising asked about the mode of ventilation they might have realized that the volume settings were inadequate i.e. a more experienced Consultant Neonatal Paediatrician might have asked more probing questions about the ventilator settings and picked up that the VG was on. This would have then resulted in turning off the VG.

Fifteen minutes after arrival [Baby A] had a chest radiograph which showed that the endotracheal tube (ETT) used for connecting his airway to the ventilation system needed to be withdrawn. Blood gases also indicated a severe respiratory acidosis supporting this intervention to enable better oxygenation and ventilation.

Following this adjustments were also made to the respiratory rate of the ventilator which partially ameliorated the incorrect ventilator settings. An intravenous line was inserted and vitamin K was given.

At 2 hours of age the [Hospital 2] (the level 3 Referral Centre) team was called and a discussion occurred in which the [Hospital 2] Fellow/Acting Consultant made some recommendations. These included withdrawing the ETT (which had already been done) and administering sodium bicarbonate to help correct the acidosis. There appears to have been no discussion of the ventilator settings unfortunately.

Opinion:

Although the [Hospital 2] team were not consulted until the baby had been in NICU for an hour and did not arrive until he was 4 hours of age, that time lapse is within an expected time frame. Level 2 Neonatal units are expected to be able to stabilise and manage sick infants for short periods of up to a few hours. In addition as [Dr J] pointed out it is not easy to remove oneself from directing a resuscitation to make phone calls.

Using a nurse or more junior RMO has been suggested as an alternative to talking directly, and is now in practice.

An hour later after a repeat blood gas measurement the [Hospital 2] Consultant was phoned again and at this point there was a discussion about passive cooling on the basis of the likely diagnosis being hypoxic ischaemic encephalopathy (HIE) which was initiated — at this stage the infant [Baby A] was just under 3 hours of age. Other management suggestions were made and carried out appropriately.

Opinion:

Therapeutic hypothermia via passive cooling was instituted at the suggestion of the [Hospital 2] team by under 3 hours of age. This is within the acceptable time frame of 6 hours of age for initiation of therapeutic hypothermia for HIE. There has been implied criticism in another report of the delay in initiating passive cooling due to misunderstandings about the baby's neurological status. Neurological status changes significantly over the first few hours of life following a hypoxic ischaemic injury making ongoing assessments important. Babies may appear relatively normal initially and then deteriorate neurologically.

Whether or not HIE and the need for therapeutic cooling of [Baby A] was discussed in the first conversations with the [Hospital 2] team it is clear that the Whanganui Paediatrician recognized that the baby was suffering from HIE and he did communicate lack of spontaneous movement and lack of respiratory effort. It is more important to resuscitate the baby (including obtaining good venous access) before then deciding to initiate cooling if indicated. It is essential to ensure that the essential vital signs (blood pressure heart rate and including blood gas status) are stable before making a decision about cooling. This takes time, and therefore my opinion is that this time frame was appropriate.

Care Provided to [Baby A] in NICU

On arrival at 4 hours of age the [Hospital 2] team arrived, took over [Baby A's] care and re-adjusted the ventilator settings correctly. As a result the subsequent blood gases indicated over correction of the ventilation which was appropriately adjusted again. They then transferred [Baby A] to [Hospital 2] shortly after that. At this stage he was nearly 7 hours of age.

Once there, it was established that [Baby A] had suffered a lethal global hypoxic ischaemic insult with brain death and multi organ failure, and redirection of care was undertaken after discussion with the family. A palliative approach was taken and [Baby A] died in the care of his parents later that day. The case was referred to the Coroner.

Opinion:

The decision to redirect care was made on the basis of [Baby A's] history, clinical condition at birth and subsequently on arrival in [Hospital 2], where there were signs

of brain death, the EEG findings of burst suppression, and signs and evidence of multi-organ failure. Two other NICU Consultants were involved in detailed discussions about the recommendations to redirect care for [Baby A]. In some units it would be possible to arrange an MRI brain to further help with this assessment, but I believe there was enough information available on which to base the decision to redirect care. The parents were also appropriately consulted in this decision. I have nothing further to say about the management of [Baby A] whilst in [Hospital 2] NICU which appears to have been appropriate.

Other Matters

I believe that the 4 blood gas measurements taken in the less than 2 hours that the baby was in SCBU before the team arrived were appropriately done. Communication of the results to the [Hospital 2] team advising was frustrating for that team but understandable when there was so much happening to the critically ill baby. It is not an easy task to chase up the laboratory results and then communicate them back to the level 3 [Hospital 2] team when at the same time struggling to adequately ventilate an extremely sick baby.

Other issues raised by the report by [the Neonatal Intensive Care Specialist] to the Coroner such as delay in administration of vitamin K, and whether [Baby A] had been placed in an enclosed incubator as opposed to a heat table have been adequately addressed by [Dr J] in his report and do not have any bearing on the outcome of this case, therefore warrant no further discussion.

Some of the issues of communication with the [Hospital 2] team could have been resolved had the [Hospital 1] Consultant attending called in another Consultant for assistance. This was not usual practice at that time. However this has also been addressed in [Dr J's] report and will be a part of future management.

Finally I think that it is easy to be critical in retrospect but the local Consultant Paediatrician managed the very difficult resuscitation of [Baby A] relatively well given the number of systems issues that he had to deal with.

Summary:

[Baby A] had suffered a severe in-utero hypoxic ischaemic insult to his brain and other organs. This meant that he was unlikely to survive despite all interventions. Resuscitation in such a situation will always seem to be inadequate and while it is important to review in detail the things that might have been done better, nothing was likely to change the outcome.

Overall I think that the management of [Baby A] while on SCBU was mostly appropriate but there were a number of systems errors.

These relate to not having a Paediatric RMO at a high risk delivery, delay in midwives calling for help, detachment of the neopuff tubing requiring a Laerdal mask as alternative, late arrival of the Consultant who had not received a call as assumed, a

more complicated ventilator than is necessary without specific training for its use, and the incorrect ventilator setup — being on VG mode. I think that the advice given by the [Hospital 2] team was appropriate although they also did not pick up on questioning that the ventilator settings were incorrect. Communication between the teams was as expected intermittent and difficult, but did not contribute to any significant delays in management. I have no issues with the timing of the assessment of the baby as having HIE needing therapeutic cooling, or the delay in instituting this while resuscitating [Baby A].

I would therefore not regard this very sad clinical case as being a significant departure from accepted practice on behalf of any individual, but the cumulative systems errors meant that management was not within accepted practice.

The response of the [Hospital 1] Leadership team, as per [Dr J's] detailed response, to put in place safeguards to avoid this scenario including training sessions, recurring indicates that they have taken it seriously and do regard the episode and [Baby A's] death as a tragedy — not necessarily avoidable but certainly as an opportunity to improve training and systems in relation to infant resuscitation and Newborn Care generally.

Yours sincerely,

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