HEALTH & DISABILITY COMMISSIONER
TE TOIHAU HAUORA, HAUĀTANGA

A Decision by the Deputy Health and Disability Commissioner

(Case 21HDC02222)

Introduction

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

2. The report discusses the care provided to Baby A by Health New Zealand|Te Whatu Ora (Health NZ).

3. Baby A was born at a public hospital via forceps delivery. As Baby A had a known risk of infection, he received clinical observation for 24 hours. Mr and Mrs A raised concern about Baby A's breathing and were advised that it was likely a build-up of mucous. He was administered saline through his nose. After a routine transfer to a community health service, Baby A experienced breathing difficulties. Sadly, he deteriorated rapidly and passed away.

4. Following a post-mortem examination, the pathologist concluded that the cause of Baby A's death was *Escherichia coli* sepsis.[1]

5. On 15 September 2021 this Office received a referral from the Coroner regarding Baby A's death. The referral included expert advice provided by neonatal paediatrician Dr G and paediatrician and Clinical Lead NICU[2] Dr F.

6. Through the assessment process, the following issue was identified for investigation:

Whether Health New Zealand|Te Whatu Ora (Health NZ) provided [Mrs A] and [Baby A] with an appropriate standard of care postnatally between [Day]2[3] 2018 and [Day 3] 2018 (inclusive).

7. The following parties are referred to in the report:

Master A	Consumer
Mrs A	Baby A's mother
Mr A	Baby A's father
Registered midwife (RM) B	Lead maternity carer
RM C	Hospital midwife
RM D	Hospital midwife
RM E	Hospital midwife
Health NZ	Group provider

[1] A life-threatening infection caused by the bacterium *Escherichia coli*.
[2] Neonatal Intensive Care Unit.
[3] The relevant days have been changed to Day 1 – Day 3 to protect privacy.

8. Further information was received from the Coroner, which included a report from Dr F, a paediatrician, and from neonatal paediatrician Dr G.

9. Independent advice was received from consultant pediatrician Dr Jeffrey Brown, and in-house midwifery advice was received from RM Nicholette Emerson.

Background

10. Mrs A had a normal pregnancy with Baby A. When she was at full term, she was visited at home by her Lead Maternity Carer (LMC), RM B. Mrs A was found to have slightly raised blood pressure (140/80mmHg), and RM B arranged for blood and urine samples to be tested. Group B Streptococcus[4] (GBS) grew on the urine sample.

11. On Day 1, at 41 weeks' gestation, Mrs A was reviewed at a public hospital as she was past her due date. It was thought that Mrs A's membranes had ruptured earlier that morning, and she was administered Cervidil[5] to induce labour.

12. During labour, Mrs A was administered three intravenous (IV) doses of the antibiotic penicillin between 6.15pm and 2.40am, due to the risk of infection from the GBS found in her urine sample.

13. RM B documented in Baby A's newborn record that thick meconium[6] had been present during labour and that fetal distress had been noted. A fetal scalp lactate[7] was 4.6mmol/L. The McRoberts manoeuvre[8] was utilised because of shoulder dystocia,[9] and Baby A was born via forceps delivery at 6.48am on Day 2. No subsequent injuries were noted.

14. Baby A's clinical records document that he was floppy on delivery. However, he cried after stimulation and did not require resuscitation. Baby A's Apgar scores[10] were recorded as 7, 9, and 10 at 1, 5, and 10 minutes respectively.

15. Mrs A's clinical records document that immediately following Baby A's birth she was taken to the Post-Anaesthesia Care Unit (PACU), where Baby A had skin-to-skin contact and latched to the breast for feeding.

16. Due to the risk of infection from Mrs A's positive GBS and the passing of meconium during labour, Baby A was placed under clinical assessment for 24 hours.

17. During the 24-hour assessment period, regular newborn early warning scores (NEWS) and observations were taken every four hours as per the newborn observation chart (NOC). The

[4] A bacterium that commonly causes severe infection in newborns.
[5] A medication used to help soften the cervix and induce labour.
[6] A newborn baby's first stool.
[7] A blood sample taken from the fetus's scalp. A normal lactate level is 4.1 mmol/L or below; 4.2 to 4.8 mmol/L is considered borderline; and 4.9mmol/L or above is abnormal.
[8] A technique used to help to rotate the pelvis and open the sacrum to release the baby's shoulder.
[9] One of the baby's shoulders becomes stuck behind the mother's pubic bone.
[10] A system used to assess newborns immediately following birth. A score of 7 to 10 is considered normal.

observations included heart rate, respiratory rate, work of breathing, colour, and oxygen saturation. No concerns were noted throughout this period.

18. Mrs A was assessed regularly during the 24-hour assessment period, and the observations were documented on the First 24 Hours Post-Partum form. No concerns were noted other than perineal bruising.

19. Mrs A was given regular assistance with latching and breastfeeding, and the clinical records note that Baby A was feeding well throughout the 24-hour assessment period.

20. At 9.45am on Day 2 Mrs A and Baby A were transferred from PACU to the Maternity Unit.

21. The clinical records note that at 11.30am Baby A was unsettled but fed well once latch support was given.

22. In his Police statement, Mr A advised that on the evening of Day 2 he raised concerns about Baby A's breathing with a midwife, who advised that it was possibly a mucous build-up, which is common in newborns. The interaction occurred with a hospital midwife, not RM B.

23. The 24-hour assessment period concluded on the morning of Day 3. However, regular observations and assessments of Baby A and Mrs A continued.

24. On Day 3 RM B recorded in the 24-hour post-partum clinical notes that at her visit at 8.30am breastfeeding had been established, and she discussed the importance of colostrum and a plan to transfer to a medical centre. However, the centre was at capacity, and a decision was made to transfer Mrs A and Baby A to a community health service.

25. At 10.00am RM C observed Baby A breastfeeding and documented 'great latch' and that he had passed urine overnight.

26. At 10.50am RM C documented that Baby A was 'snuffly' at the breast. She administered normal saline drops into each of his nostrils with very little result. Observations on the NOC were documented as normal, with a NEWS of zero, and RM C recorded that Mrs A and Baby A were ready for transfer.

27. At midday, RM C completed the Maternity Handover Tool in preparation for the transfer to the community health service. No concerns were noted.

28. An obstetric review at 1.45pm also noted no concerns.

29. At 2.10pm RM C documented that Mrs A and Baby A were ready for transfer.

30. At 2.15pm RM C documented that Baby A had been feeding on and off. In a later statement, she clarified that Mr A had advised her that Baby A had been feeding on and off since 10.50am, but she had received no request for assistance, and there had been no concerns about Baby A since 11.00am.

31. RM C stated that she did not undertake a set of observations immediately before transfer as Baby A was asleep, and she did not want to delay the transfer, and following the interactions throughout the day her impression was of a well-baby.

32. Throughout the period following the conclusion of the 24-hour assessment period and transfer to the community health service, Mrs A was also assessed, particularly for a bruised and painful perinium.

33. Mr and Mrs A and Baby A arrived at the community health service at 3.50pm.

34. The community health service midwife RM D documented that on arrival Baby A was pink and warm but uninterested in breastfeeding, with the last feed at 11.50am. His temperature was 37.2°C and he had passed urine and meconium.

35. RM D completed the Multidisciplinary Care Pathway and recorded on it a full set of observations, with no concerns noted. In a later statement, RM D confirmed that she had had no concerns about Baby A as he had presented as responsive and alert.

36. At 6.00pm RM E documented that Baby A was not interested in feeding and was 'mucousy', and he was given 3.5ml of expressed breast milk via a syringe.

37. RM E stated that she had attended Baby A at 6.00pm after his parents had called her using the call bell. She said that as she does with any interaction, she undertook a general assessment of Baby A, then supported Mrs A and Baby A to have skin-to-skin contact and to feed Baby A expressed breast milk via a syringe.

38. Mr A advised that afterwards, Baby A began to vomit, with some blood coming from his nose and mouth. Mr A stated that when RM E returned, she said that this was common, and she was not concerned about it. Although not documented in the clinical records, RM E agrees that she examined a tissue with a small streak of blood but said she did not think it was something to worry about as she had seen similar spills with small streaks of blood, which usually is from nipple trauma.

39. At 8.00pm RM E documented in the clinical records that when she had checked on Baby A, he was notably grunting with nasal flaring and indrawing. His temperature was 37.7°C (raised), his heart rate was 150 beats per minute (normal), his respiratory rate was 60 breaths per minute (upper normal range), and his oxygen saturation (obtained on a second attempt) was 70–80%. Continuous positive airway pressure (CPAP)[11] was commenced, and RM E discussed Baby A's condition with the neonatal coordinator at a public hospital.

40. A team from the public hospital was sent to the community health service and arrived shortly before 10pm. The Transport and Admission form documents that on their arrival, Baby A's CPAP was at 60% with oxygen saturations at 90%. His heart rate was 179 beats per

[11] A means of providing respiratory support to neonates with upper airway obstruction or respiratory failure.

minute (tachycardic[12]) and his capillary refill time was 5 seconds. The form notes that Baby A was grunting and gasping and poorly perfused.

41. A decision was made to intubate Baby A to secure an airway. During the procedure, blood was suctioned from his mouth and lungs, indicative of a pulmonary haemorrhage.[13]

42. At 10.26pm IV access was obtained for bloods to be taken, and it was noted that Baby A had no reaction to painful stimuli. Baby A continued to deteriorate.

43. At 10.38pm Vitamin K was administered.

44. At 10.45pm it is documented that Baby A's heart rate was continuing to fall, and therefore cardiac compressions were commenced, and he was administered adrenaline, saline, sodium bicarbonate, and dextrose. Due to the prolonged resuscitation and inability to improve oxygenation, it was determined that transfer to a public hospital was not possible.

45. After 40 minutes, resuscitation efforts were ceased. Baby A passed away with his parents present.

46. After his passing, RM E documented that Baby A had passed away despite extensive efforts to resuscitate him. Arrangements were made for Baby A to be transferred to another public hospital.

Other information

47. The Coroner obtained a report from Dr F, a paediatrician. Dr F advised:

> 'Newborn sepsis commonly causes rapid deterioration and death if early antibiotic administration and intensive care treatment are not instituted. The most common presenting sign is "respiratory distress" which then rapidly worsens. When newborn infants are recognised to have "increased work of breathing" it is normal to admit them to a Neonatal Intensive Care Unit (NICU) and start intravenous antibiotics after checking a blood culture. This scenario (increased work of breathing) is common and although most infants with this problem settle down and do not have sepsis, one can see from this case how terrible the consequences of missing this now uncommon, but well recognised complication are.'

48. Dr G was the specialist neonatal paediatrician on call that day and was advised by the registrar about the impending retrieval of Baby A just before 9.20pm. Dr G provided two reports to the Coroner. In her first report, Dr G provided a description of the logistics of Baby A's retrieval and resuscitation attempts and noted:

> 'On arrival [at the community health service] just before 1600 his temperature was 37.2 (normal). He was not interested in feeding. At 1800 the parents reported a mucous

[12] An abnormally fast heart rate.
[13] Bleeding from the lung.

vomit with some blood streaks. In retrospect these appear to be the earliest signs of the developing infection and impending deterioration.'

49. Dr G provided a subsequent report at the request of the Coroner, in which she explained:

> 'In retrospect it appears the earliest signs of the developing infection and impending deterioration was at 1800. Bile vomit is the commonest reason for request for a Paediatric review. Blood in a vomit is concerning and a full set of observations at that time may have identified early signs of infection, such as a rise in temperature or heart rate above previous levels. Blood from cracked nipples is a potential more common source of blood in a vomit than infection. The baby was undressed and placed skin to skin which suggests he was observed, and that this handling did not trigger grunting at that time.'

50. Dr F concluded in his report to the Coroner:

> '[Baby A] died of overwhelming E coli septicaemia. While this is uncommon of itself, post-natal breathing problems are common, and usually lead to a neonatal examination and the commencement of antibiotics and observation because of this risk of infection and its untreated consequences. [Baby A's] father had voiced concerns — based on what he was observing. On the first night he was reassured over the phone but without a clear reason — other than "it was common for babies to be mucousy". No-one saw him that night that I have documentation about. The following day he was seen as normal (although ? saline was syringed in his nose). There is no clear evidence that anyone looked closely to assess [Baby A] for "increased work of breathing" prior to him being transferred in his parent's car to [the community health service]. I believe that in such a hospital setting where there are any concerns about a newborn baby's breathing, they should be assessed by the neonatal/paediatric staff.'

51. Before proceeding to the decision section of this report, it is important to note that the postnatal involvement LMC RM B had with Mr A's family is limited as Baby A required the 24-hour assessment period for known risk of infection and was transferred to the community health service, meaning that he remained under Health NZ as the primary carer for this period. Taking this into account and noting the post-natal interaction by RM B as per the clinical records, I hold no concerns about the care she provided.

Response to provisional opinion

52. Health NZ was provided with an opportunity to respond to the provisional opinion. Health NZ acknowledged the opinion and provided an update on the recommendations.

53. Health NZ clarified that RM E responded to the call bell at 6pm and assisted with Baby A until approximately 6.30pm, after which she left the room, and it was when she returned that she became aware of the blood-stained mucous. Therefore, she did not become aware of it until after 6.30pm.

54. Mr and Mrs A were given an opportunity to comment on the provisional decision. Their comments have been considered carefully and addressed in separate correspondence.

Opinion: Health NZ — adverse comment

Introduction

55. First, I acknowledge the patience of Mr and Mrs A while their complaint was assessed, and I offer my sincere condolences for the tragic passing of Baby A.

56. In forming my opinion, I have considered all the information received in relation to the complaint. In particular, I have noted the independent advice from consultant paediatrician Dr Jeffrey Brown, and the advice from my in-house midwifery advisor, RM Nicholette Emerson, who is a peer of the hospital midwives who provided the care at Health NZ.

57. As noted by Dr Brown, to avoid any hindsight bias, it is critically important that opinions are based on what individuals working with Mr and Mrs A and Baby A would have been reasonably expected to know at the time the care was provided. Dr Brown and RM Emerson provided their advice separately, without any interaction.

58. Following an induction of labour, Baby A was born via forceps delivery at 6.48am. Although initially Baby A appeared to need resuscitation, on being transferred for resuscitation he cried vigorously.

24-hour post-birth assessment period

59. Immediately post-birth, Baby A underwent a 24-hour assessment for the known risk of infection due to Mrs A's positive GBS urine test two days prior to labour and because meconium was present during labour.

60. RM Emerson noted in her report that as a result of the risk factors identified for Baby A, he was assigned to a pathway of 24 hours of clinical assessment following his birth.

61. During the assessment period, NEWS were recorded, and observations including respiratory rate, work of breathing, temperature, heart rate, colour, tone/behaviour, and blood glucose level were taken and regularly recorded on the NOC in adherence with the guidelines. During this period all NEWS were zero and no concerns were noted.

62. Neither RM Emerson nor Dr Brown considered there to have been a departure from the accepted standard of care in placing Baby A under 24-hour assessment, and/or in the documentation of the observations taken, which I accept.

Pre-transfer care

63. The last recording of Baby A's observations on the NOC was at 10.25am. Prior to his transfer to community health service, Baby A's NEWS had all been zero. He arrived at community health service at 3.50pm.

64. RM C advised that as Baby A was asleep, and her impression from his regular and normal observations since birth was that he was a well baby, she did not want to delay his transfer further by taking another set of observations.

65. RM Emerson advised that as per the '… District Health Board Transfer of Woman and her Baby to a Primary Unit (2017)' guidelines that were relevant at the time of this incident, it would have been standard practice for an additional set of observations to be completed within an hour prior to transfer.

66. However, RM Emerson considered that given the context and explanation of a well and settled baby at the time of transfer, and given that RM C had had at least four interactions with the family throughout the day, which included observations of breastfeeding and nappy changing, this would amount to only a mild departure from the accepted standard of care.

67. Dr Brown also reviewed the decision not to complete a set of observations within the hour prior to Baby A's transfer to community health service and noted that in hindsight there may have been an opportunity to repeat the observations, as some time had elapsed between the decision to transfer and the transfer taking place. However, more than 24 hours of clinical assessments had been noted on the newborn chart, with no concerns, based on the parameters of the observations. Therefore, Dr Brown found there to be no departure from the expected standard of care and accepted practice in relation to this point.

Post-transfer care

68. No concerns were noted on the transfer documents for Mrs A and Baby A, and the transfer documents did not mention the requirement and reasons for Baby A to undergo the 24-hour assessment period.

69. On arrival at community health service at 3.50pm, RM D documented her observations of Baby A, including that he was pink and warm with a temperature of 37.2°C. RM D further advised in her statement that she completed normal observations, which were written on the Multidisciplinary Care Pathway and in part in the written record, also noting that she had recorded him as pink and warm although uninterested in breastfeeding. The Multidisciplinary Care Pathway completed by RM D confirms that Baby A had 'respirations <60/minute with no grunting or rib recession'. It also confirms that he was responsive and alert, among other observations.

70. Dr Brown considered there to be a moderate departure from the accepted standard of care, as the policy at the time recommended that a full set of NOC/NEWS observations be done on arrival at community health service.

71. RM Emerson clarified in her advice that RM D had completed the Multidisciplinary Care Pathway, which included observations such as temperature and respirations being taken, and physical observations such as infant responsiveness. However, this information had not been transferred to a NOC/NEWS chart, as set out in the transfer policy.

72. In addition, in the 12–36-hour clinical records, RM D recorded Baby A's temperature as 37.2°C and noted that the last breastfeed had been at 11.50am, and that on offering the breast Baby A was not interested, but he had passed urine and meconium previously.

73. Given that the observations were in fact recorded, and there is a clinical summary of the observations and actions, RM Emerson considered there to be no departure in this regard. RM Emerson did, however, consider there to be a mild departure from accepted practice in not transferring the observations to a NOC/NEWS chart.

74. I have considered the different conclusions from my advisors on the degree of the departure from accepted care on this issue. Whilst Dr Brown considers there to be moderate departure that a full set of NOC/NEWS observations were not completed, I am satisfied that the observations were completed as indicated by the Multidisciplinary Care Pathway documents. Rather, it appears that the departure from accepted care was the failure to transfer these observations to a NOC/NEWS chart in accordance with policy.

75. A NOC/NEWS chart is an important tool to assist in detecting a newborn's deterioration, and how to respond to it. Whilst the documented observations did not raise any concerns about Baby A's health, I recognise the value of ensuring that these observations are transferred to a NOC/NEWS chart for ease of reference and to facilitate consistent care. As a result, I accept RM Emerson's advice that this was a mild departure from accepted standards, rather than a moderate departure as indicated by Dr Brown, as RM D had in fact taken the required observations but failed to record them on the NOC/NEWS chart.

Blood-stained mucous

76. I am concerned that after RM D's shift ended at 5.30pm, initially RM E was the sole midwife in charge, with the support of a healthcare assistant, for four women and their babies, with two postoperative patients. RM E stated that after Baby A began to show signs of acute unwellness, a further midwife was called in to assist. RM E described the evening in question as a busy night attending to general patients and other mothers and babies.

77. At 6.00pm RM E documented in the clinical records that Baby A was not interested in feeding and was mucousy. Approximately half an hour after this, RM E was made aware of blood-stained mucous on a tissue, as shown to her by Mr A, but this was not recorded in the clinical records. RM E stated that Mrs A advised her that Baby A had not fed since before the transfer. Therefore, RM E supported feeding and encouraged skin-to-skin contact, which involved stripping Baby A to a nappy, during which she undertook a visual assessment and noted nothing of concern.

78. RM Emerson considered that being in sole charge of the unit, with the knowledge that a labouring woman was underway, and RM E's recent interactions with Baby A, mitigated RM E's moderate departure from the accepted standard for failing to document or identify the source of the blood-stained mucous and undertake observations when the blood-stained mucous was noted. In addition, RM Emerson considered that it was appropriate for RM E to have encouraged Mr and Mrs A to use the call bell if they had any further concerns.

79. RM Emerson concluded that there may have been a missed opportunity to identify Baby A's unwellness if the blood-stained mucous source had been identified or observations taken. However, there is no evidence that this would have changed the tragic outcome for Baby A.

80. Dr Brown also noted that with the benefit of hindsight, the earliest sign of developing infection was when Mr and Mrs A advised RM E of the blood-stained mucous. However, Dr Brown considered that other factors were reassuring, such as the handling of Baby A whilst undressing him for skin-to-skin contact, which allowed RM E to observe him and did not trigger grunting. Therefore, Dr Brown considered that RM E's response was reasonable.

Care when patient deteriorated

81. Both Dr Brown and RM Emerson considered that once Baby A began to show signs of acute unwellness at 8pm, RM E provided the appropriate escalation of care. Dr Brown and RM Emerson noted no departure from the accepted standard of care and advised that the same can be said for Baby A's care once sepsis was identified and Baby A's health deteriorated rapidly.

Conclusion

82. In concluding my assessment, it is important to note the tragic circumstance in which Baby A passed away with an overwhelming infection, and the advice given that it is unlikely that the outcome would have changed if the signs of infection had been picked up earlier. Notwithstanding this, the purpose of my assessment is to determine whether an acceptable standard of care was provided.

83. Regarding Baby A's care prior to transfer to community health service, I acknowledge my advisors' comments that the appropriate standard of care would have been to complete a full set of NOC/NEWS observations, which for reasons previously explained did not happen. However, I accept the advice that the decision not to perform the NOC/NEWS observations prior to transfer was reasonable in the circumstances because Baby A had appeared to be well, his NEWS score was zero throughout the 24-hour assessment period, with no preceding concerns, and he was comfortably asleep before transfer.

84. I acknowledge Dr Brown's view that once Baby A arrived at the community health service, RM D's failure to complete observations was a moderate departure from the accepted standard of care. However, I am satisfied that observations were undertaken and documented in the Multidisciplinary Care Pathway, as noted by RM Emerson. Therefore, I accept her advice that there was no departure regarding the taking of observations, but a mild departure for failing to transfer the notes to the NOC/NEWS chart in accordance with accepted policy. There were two missed opportunities to take Baby A's observations between the time of his transfer to community health service at 11.00am and the discovery of his rapid deterioration at 8.00pm. The first was before his transfer to the community health service, but this omission was considered acceptable in the circumstances. The second was when RM E responded to the call bell at 6pm and assisted with Baby A until approximately 6.30pm, after which she left the room. She did not become aware of the blood-stained mucous until she returned after 6.30pm.

85. I accept RM Emerson's advice that there was a missed opportunity to take Baby A's observations and identify the blood-stained mucous at 6pm. However, given the factors identified by RM Emerson (outlined at paragraph 78), I accept that this mitigated the moderate departure.

86. In this instance my decision is finely balanced, as I acknowledge that my advisors are critical of aspects of Baby A's care, but I must also consider the mitigating factors, especially the regular observations taken and an overall appearance of a well baby up until Baby A began to show signs of acute unwellness. I am also conscious that the progression of paediatric sepsis can be rapid, and appropriate steps were taken to monitor Baby A, including an initial 24-hour assessment period, and support with latching and feeding. Overall, this leads me to determine that there has not been a breach of the Code of Health and Disability Services Consumers' Rights (the Code).

87. However, I would like to focus on the challenging situation RM E appears to have been placed in by Health NZ. RM Emerson has identified that there may well have been shortcomings in the operating environment, which contributed to the events and meant that RM E's workload could have compromised the individual attention she was able to give to her patients, including Baby A, and how she responded to the blood-stained mucous. I query whether additional support from a back-up midwife should have been provided earlier in the piece. I am critical of Health NZ for putting RM E in this position and hold it responsible for ensuring that staff working at community health service have manageable workloads, and the support they require to provide safe, quality care to their patients. It is a relatively remote primary birthing unit, and, as such, patients receiving care are reliant on there being adequate staffing on site and a robust system in place for matching the capacity of the unit to demand, with ready access to applied expertise when and if required.

Changes made since events

88. Health NZ advised that changes have been made to the Newborn Observation Chart to include a section for recording any concerns raised by parents when their newborn is being assessed.

Recommendations

89. In response to my recommendation in the provisional opinion, Health NZ provided HDC with evidence that a case study based on this opinion, focusing on the expectations around observations, particularly for the safe transfer of a mother and baby as per the transfer guidelines, had been presented to staff.

90. I also recommended that in the interest of education, Health NZ draft an educative piece on *Escherichia coli* sepsis in newborns, with a summary of the case for sharing with Health NZ as a whole. In response to the provisional opinion, Health NZ provided a copy of the educational summary and advised that it will update HDC when the summary is shared with staff.

91. I also recommended that Health NZ consider the adequacy of staffing levels at community health service and the protocols in place for responding to challenging and unmanageable workloads. In response to the provisional opinion, Health NZ advised that the staffing levels at community health service have increased, and it is now standard to have two midwifery staff rostered per shift.

92. I recommend that in addition to the above, Health NZ:

a) Provide Mr and Mrs A with a written apology that highlights the issues my advisors have identified, and the learnings taken from this case. The apology is to be provided to HDC within three weeks of the date of this report, for providing to Mr and Mrs A.

b) In line with my independent advisor's advice, consider the implementation of a protocol that requires a full NOC/NEWS score to be undertaken on a newborn infant prior to departure and on arrival for transfers between primary unit maternity services. Evidence confirming that this has been completed should be provided to HDC within six months of the date of this report.

Follow-up actions

93. Given the valuable learnings reflected in this case, including the importance of ensuring that primary birthing units are resourced appropriately, and the significance of staff following guidelines, particularly around regular observations of newborns, a copy of this report with details identifying the parties removed, except the advisor on this case, will be sent to Health NZ and the College of Midwives and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

94. A copy of this report will be sent to the Coroner.

Appendix A: In-house clinical advice to Commissioner

The following advice was obtained from HDC Midwifery Advisor Nicholette Emerson:

'**CLINICAL ADVICE — MIDWIFERY**

CONSUMER: **[Baby A]**

PROVIDER: **Te Whatu Ora …**

FILE NUMBER: **C21HDC02222**

DATE: **16 January 2024**

1. Thank you for the request that I provide clinical advice in relation to the complaint from the [Mr A] & [Mrs A] (via the Coroner's Office) about the care provided by Te Whatu Ora … midwives and the LMC midwife [RM B]. In preparing the advice on this case to the best of my knowledge I have no personal or professional conflict of interest. I agree to follow the Commissioner's Guidelines for Independent Advisors.

2. **I have reviewed the documentation on file: Documents provided.**

- Complaint 15 September 2021
- Clinical notes from Coroner 15 September 2021
- Letter from LMC midwife [RM B] 23 February 2023
- Clinical records for [Mrs A] and [Baby A] Te Whatu Ora
- Te Whatu Ora … response 1 September 2023

Background:
This was [Ms A's] first pregnancy. The pregnancy was normally progressing with 6-week gestation twins. By 9 weeks there was a singleton fetus (Vanishing twin syndrome). All routine assessments were undertaken during pregnancy. A 38-week scan for reduced fetal movements noted that [Baby A] was on the 97th percentile. An obstetric review on [Day 1], at 41 weeks gestation resulted in an induction of labour following confirmation of prelabour rupture of membranes that morning (waters had broken). As [Ms A] was known to have Group B positive Streptococcus (GBS) in her urine, IV antibiotics were commenced. As [Ms A's] labour established and progressed an epidural and oxytocin infusion were ordered at 10.30pm. Thick meconium (a baby bowel movement often indicative of distress) was noted at 5.02 am on [Day 2]. [Ms A] was transferred into theatre for a trial of forceps. At 6.48am via a forceps birth, [Baby A] was born following a shoulder dystocia requiring the McRoberts manoeuvre accompanied by suprapubic pressure. Apgars were 7,9,10 at 1,5 and 10 minutes respectively. [Baby A] weighed 4150gm. [Baby A] was closely monitored at Te Whatu Ora … for 24 hours and then transferred later in the day along with [Ms A] to [the community health service]. On arrival to [the community health service], clinical observations of [Baby A] were within the normal range. That evening, [Baby A] deteriorated rapidly, developing overwhelming E Coli sepsis. Despite comprehensive resuscitation attempts [Baby A] sadly died … .

3. Advice Request:

Expert advice requested:
Please review the bundle of documentation and advise whether you consider the care provided to [Baby A] by the LMC and hospital midwifery staff was reasonable in the circumstances, and why.

Please comment on:

1. The timeliness and adequacy of the postnatal assessments.
2. The adequacy of the documentation in particular of these assessments
3. Whether there was any undue delay in the escalation of care.
4. Any other matters in this case that you consider warrant comment.

At the commencement of this advice, I acknowledge the sudden and devastating loss of [Baby A] for [Mr and Mrs A] and their whānau. I offer my heartfelt sympathy for the loss of their precious baby boy.

1. The timeliness and adequacy of the postnatal assessments.
During her labour [Ms A] was administered IV penicillin as Group B Streptococcus (GBS) had been grown in a urine culture 2 days previously. The administration of IV antibiotics is in keeping with accepted practice. [Ms A] had an additional risk of confirmed pre labour ruptured membranes (broken waters) thereby an increased risk of ascending GBS via the vagina to the uterus and to [Baby A] in utero.

Known GBS risk factors.

- A previous baby affected by GBS infection.
- **GBS bacteriuria (of any count) this pregnancy**
- Intrapartum maternal temperature ≥ 38°C
- Pre-term labour (< 37 weeks) and imminent birth, with or without ruptured membranes
- **Prolonged rupture of membranes ≥ 24 hours** (unless negative "GBS swab", as described below)
- GBS colonisation diagnosed in this pregnancy (Unless a subsequent negative screening test result is available, called a GBS swab, it is taken ≥ 37 weeks, a combined vaginal-rectal swab and the laboratory requested to use "selective broth" process[2])

… District Health Board… Group B Streptococcus Management and Prophylactic Antibiotics in Labour. (May 2021)

Risk Factors for GBS

- Previous baby with GBS (including late onset)

- **GBS in the maternal urine in the current pregnancy**
- GBS colonisation on vaginal swabs in the current pregnancy (except for a negative swab at ≥37wk using the selective broth process)
- **Prolonged ROM ≥ 24 hrs (increasing risk after 18 hours) (ROM-Rupture of membranes)**
- Preterm labour

Maternity [a public hospital] created 2016, updated 16 August 2023
[Baby A] had also passed meconium during labour, and this increased his risk of infection following birth.

Risk factors for Early Onset Neonatal Sepsis

- **prolonged rupture of membranes ≥24hrs (increasing risk after 18 hours)**
- maternal illness, pyrexia >38.0°C (but any elevation >37.5°C increases risk), WBC > 15, raised CRP >10, suspected chorioamnionitis
- **pathogens (e.g. GBS,** E. coli**) present in maternal urine or high vaginal swab**
- preterm labour < 37 weeks
- fetal distress, tachycardia > 160 bpm or need for resuscitation
- twin gestation
- **meconium**

Maternity [a public hospital] created 2016, updated 16 August 2023
As a result of these risk factors [Baby A] was assigned to a pathway of 24 hours of clinical assessment following birth. It is noted that there was a potential risk of infection with prolonged rupture of membranes however [Baby A] was born before the membrane rupture was considered prolonged. The antibiotics for GBS would have covered the risk imposed by prolonged ruptured membranes. The clinical assessments were taken by the staff midwives and recorded in the Newborn observation chart — Newborn early warning score (NOCNEWS). The assessments included newborn heartrate, respiratory rate, colour, oxygen saturation and work of breathing. A cumulative score or a high score in one parameter would warrant referral and escalation of care.

[Baby A] was born at 6.48am on [Day 2]. Birth was via Neville Barnes Forceps at 41 weeks +1-day gestation, a shoulder dystocia with no subsequent injuries had occurred. Apgar's were 7,9,10 at 1,5 and 10 minutes respectively. [Baby A] was floppy on delivery however cried vigorously following stimulation. No resuscitation was required. He had been exposed to meconium in labour and [Ms A] had 2x IV penicillin in labour for GBS cultured recently in her urine.

The management plan following birth as documented by [RM B] the LMC midwife, was:

1. Keep warm, feed early and regularly.
2. NEWS observations as per protocol for thick meconium/GBS positive

A full neonatal examination was completed and documented by [RM B] at 7am on [Day 2] and 8.30am on [Day 3]. All parameters are documented to be within the normal range. In [RM B's] response she states that the neonatal registrar was present at the birth. This is supported by Te Whatu Ora … .

The notes following are based on clinical notes and NEWS charts. The newborn feeding chart is not present in the documentation and is noted as absent and not locatable by Te Whatu Ora …

Clinical notes on [Day 2]

6.30am [Baby A] skin to skin

6.45am latched to the breast.

Note that the above 2 entries in documentation are likely to be an error in "time" as [Baby A] was born at 6.48am

The following entry would confirm my assumption as below.

6.50am Vit K administered IM

7.30am *[Ms A] in recovery after normal vaginal birth in operating theatre. Baby latched well and feeding vigorously.*

8.30am NEWS completed =0 (RM …)

10.10am NEWS completed =0 (RM …)

11.30am NEWS=0. Baby a little unsettled but latches and feeds well

2.30pm NEWS completed =0

4pm assisted to latch (left breast), breastfeed well. (RM …)

7pm NEWS completed =0. Asleep

8.10pm Latched (Right breast). NPU yet (not passed urine) (RM …)

11.15pm NEWS completed = 0 (RM …)

2.00am latched baby who is a vigorous feeder (RM …)

3.15am NEWS=0 Baby alert and feeding well (RM …)

4.40 am NEWS=0 Baby alert and suckling well? small swallows. Settled between regular feeds. Very warm — suggested to mother to use cotton sheets rather than polar fleece blanket, which they have. Baby HNPU (has not passed urine) or mec (meconium) this shift. (RM …)

There does not appear to be any departures from accepted midwifery practice in the care of [Baby A] on [Day 2] … and overnight on [Day 3] … .

Day 3
No time stamp documented in clinical notes however [RM B] has filled out the newborn examination chart at 8.30am: Breastfeeding establishing. Plan to T/F (transfer) to [the medical centre]. Breastfeeding discussed process and importance of colostrum (LMC RM B])

9.55am [Ms A] has had breastfeeding input this AM successful side lying latch, encouraged to seek input for next feeds. ([RM C])

10.00am [Baby A] observed at the breast. 3:1 suck swallow ratio. Great latch. Handles well. Pu'd (passed urine) overnight, seen by mum.

10.25am NEWS completed

10.50am Snuffly at breast, N. Saline (normal saline) drops to each nostril w (with) very little result. Did manage to latch + feed well. OBS NAD (observations — no abnormality detected). Ready to Tx (transfer). ([RM C])

11.00am Dad taught nappy cares ([RM C])

14.14pm Has been feeding on and off Dad managing same. ([RM C])

Note that although there is no documentation in [Baby A's] clinical notes [Ms A] was documented as seen regarding her perineal trauma prior to transfer at 1.30pm, 1.36pm and 2.10pm.

It is noted here that [RM C] states in her response that she did not undertake a set of observations for [Baby A] prior to transfer as required, if it had been over an hour since previous observations this is a requirement prior to transfer.

… District Health Board Transfer of Woman and her Baby to a Primary Unit (2017) Page

Safety of Woman and Baby

Step Action

1. Ensure baby is dressed warmly/appropriately prior to transfer.

2. **Ensure baby's temperature is stable above 36.5° Celsius immediately prior to departure.**
3. Ensure baby is travelling in a warmed, NZTA approved car seat and is safely secured.
4. Transfer directly to the primary maternity unit — not stopping elsewhere enroute.
5. **Vital signs for woman (MEOWS) and baby (NEWS) are within the normal range**.
6. Woman has one identity band on, and baby has 2 identification bands one with NHI

She states that baby [Baby A] was asleep, and she did not want to delay transfer and her impression was a well baby following the interactions throughout the day. She deeply regrets not having completed the observations prior to transfer however is assured by the normal observations on arrival to [the community health service]. The use of saline via nose earlier in the day in the context of a well baby did not require further investigation.

Typically, if I have had no concerns about a baby or a woman, I would not delay the transfer further to do another set of observations. I would definitely do another set of observations if the parents raised any concerns, if I had seen an abnormal NEWS score previously, or if I noticed anything concerning in a baby's behaviour.

Best practice would have included a full set of observations prior to transfer however given the context and explanation of a well and settled baby at the time of transfer and given that [RM C] had 4+ interactions with the family throughout the day which included observation of breastfeeding and nappy changing, in my opinion, my peers would consider that not completing a set of newborn observations prior to leaving as a minor departure from accepted practice in the context and in consideration of [RM C's] previous encounters and explanation.

At the time of transfer to [the community health service] [Baby A] was over 24 hours in age and the NEWS was completed (all scores 0). [Baby A] was latching and feeding vigorously.

Transfer to [the community health service]
3.50pm Arrival at [the community health service] [Baby A] noted to be pink and warm. Last feed at 11.50. Has passed urine and meconium. T 37.2 (normal) [RM D] confirms that she completed normal observations for [Baby A] and entered them into the "Multidisciplinary Care Pathway — Infant on Ward". She recalls in her statement that she did not have any concerns about [Baby A] and that he presented as responsive and alert. ([RM D])

Retrospective notes document

[RM E] had taken over care at 5pm.

6pm [Baby A] not interested in latching, stripped skin to skin but remained uninterested. He was then given 3.5mls of expressed breast milk. [Ms A] was assisted with hand expression of breastmilk.

The next entry is also retrospective. (RM E)

8.00pm Baby grunting and nasal flaring — resps 60 taken to resuscitaire. ([RM E])

8.00pm NEWS completed =10. A NEWS score of 10 warrants a medical emergency.

[RM E] had sole charge of the unit at the time of the event in 2018. Her shift had commenced at 2.45pm and she received a handover from RM Sidwell and [RM D]. [RM E] was to care for 4 postnatal women and babies plus two postoperative patients. General patients were taken by [the community health service] at that time, but this is no longer the case according to [RM E]. There was the support of a nurse aide available to [RM E]. [Ms A's] perineum was reviewed earlier by [RM E] at the request of [RM D] and a plan was formulated. At 5.30pm [RM E] became sole charge (this differs from [RM D's] statement which says 5pm).

In her statement [RM E] answered a bell at 6pm and was told by [Ms A] that [Baby A] had not fed since leaving [the public hospital]. [RM E] observed [Ms A] attempting to feed [Baby A]. He did not appear interested. [RM E] then assisted to encourage [Baby A] to latch but was unsuccessful. She stripped [Baby A] to a nappy and placed him skin to skin with [Mrs A]. [Baby A] did not feed when skin to skin, so [RM E] helped [Mrs A] to express some breast milk. 3.5ml of expressed breastmilk was obtained and [RM E] gave instructions to [Mr A] on how to give this milk to [Baby A]. These actions are in keeping with accepted midwifery practice.

[RM E] says in her statement that when [Baby A] was stripped to his nappy for skin to skin with [Mrs A], she did not notice that [Baby A] demonstrated any "work of breathing" or increased respirations. [RM E] notes that not long after she left the room, she answered a bell to [Mr A]. He showed her a tissue that she describes as a clear mucous spill with a small streak of blood. Following examination, [RM E] reassured [Mr A] that she was not concerned as she had seen similar spills previously as a result of nipple trauma. This episode has not been documented however there is agreement that [RM E] reviewed a tissue with blood-stained mucous.

On forming an opinion on whether there was a missed opportunity for earlier referral for [Baby As] the following has been considered

- The content of the interaction following the blood-streaked mucous (excluding outcome), has been anonymously discussed with several midwifery colleagues.
- Whilst it is not uncommon for blood to be ingested and expectorated by a baby in the context of nipple trauma there is no documentation pointing to nipple trauma being present or that it was checked for following the blood-streaked spill.
- Review of the history would have been prudent in the context, given the known GBS and meconium exposure and forceps birth. It is noted however that the period of protocol

observation had ended, and [RM E] had recently been in the room with [Mrs A] and [Baby A].

- A change in behaviour from a vigorous baby to a sleepy baby uninterested in feeding had occurred and whilst this is also not uncommon, a set of observations and discussion with either a colleague or paediatrician may have been prudent.

Mitigating factors include the sole charge of the unit and the expectation that a labouring woman was on her way and that [RM E] had recently interacted with [Baby A]. It is also noted that in the context of sole charge the availability of a colleague for discussion is not as simple as it might be in a secondary or tertiary unit. Departure from accepted practice is discussed at end of question.

[RM E] states that she left instructions to call her if there were further concerns. At 8pm she returned to assess [Baby A]. [Ms A] was sitting in a chair holding [Baby A] and [RM E] immediately noticed [Baby A] had grunting respirations and nasal flaring (signs of increased work of breathing/respiratory distress) in addition, on inspection [Baby A] was indrawing (further sign of increased work of breathing/respiratory distress). Following a full set of observations [Baby A's] temperature was 37.7 (raised) heart rate 150 (normal range), respiratory rate 60 (upper normal range). Oxygen monitor readings were difficult to obtain. [Baby A] was alert and looking around according to [RM E].

[RM E] removed [Baby A] to a resuscitaire. The [public hospital] neonatal coordinator was phoned. Oxygen saturation was 78–80 percent (abnormal), so CPAP was commenced, and another phone call was placed to the coordinator for guidance. A retrieval team was dispatched, and an additional midwife was called in from home to monitor the mothers and babies in the unit whilst the current resources were directed to [Baby A]. Resuscitative measures were maintained under the guidance of … (retrieval team) until the arrival of the retrieval team who then took over the resuscitation. These actions are in keeping with accepted midwifery practice.

On consideration of the blood streaked mucous and knowing the outcome there would appear to have been a missed opportunity. On consideration of the interaction without outcome, determination of the blood source by confirming nipple trauma, a full set of observations and review of the history may have resulted in an earlier identification of an unwell baby. This cannot be determined retrospectively however accepted midwifery practice would include these actions. A moderate departure from accepted midwifery practice is identified in not investigating the source of blood and not completing a set of observations in the context of the history.

That said, there is no evidence that the outcome would have been different.

2. The adequacy of the documentation particular of these assessments

On the whole, the documentation meets accepted midwifery standards and includes both clinical notes and NEWS and MEWS charts. [Baby A's] feeding record is not available.

Following the deterioration of [Baby A] [RM E] has written retrospectively and annotated it as such.

A departure from accepted practice is the lack of reference to the blood streaked mucousy spill. Given the mitigating factors of the gravity of the situation, the caseload at the time and that all notes from [RM E] are retrospective and given the spill has been acknowledged and addressed by [RM E] the departure appears minor.

According to Midwifery Council (2018) Documentation and record keeping.

Professional documentation includes.

- Detailed assessments and clinical findings.
- Discussions of care and information provided with the woman.
- Discussions and consultations with health professionals, including care plans.
- Evidence of informed choice and consent.
- Care decisions with rationale.
- Any medication or treatment prescribed.
- All administrative requirements eg dates, time, identifying information.
- Name and designation of health professionals consulted and/or referred to.
- Any referrals.

Documentation should occur at the time that care is provided. Notes written in retrospect should be identified as such.

3. Whether there was any undue delay in the escalation of care.
Answered in question 2.

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

LMC RM B
It is noted that LMC midwife [RM B] has fulfilled her responsibilities as a LMC midwife. She appropriately referred [Mrs A] for scans, arranged a post-dates obstetric consultation for [Mrs A] and [RM B] and attended [Baby A's] birth. Following the birth, a full baby check was undertaken and then a care plan was documented for the core staff. This is in keeping with accepted midwifery practice and does not depart.

The following day, [RM B] attended in the morning and has documented her visit and assessment of [Baby A]. This was the last time she saw [Mrs A] and [Baby A] prior to transfer to [the community health service]. When she was notified of [Baby A's] death she attended immediately and has provided on-going support according to her complaint response.

[Baby A's] father had voiced concerns based on what he was observing. On the first night he was reassured over the phone but without a clear reason — other than "it was common for babies to be mucousy". No-one saw him that night and the following day he was seen as normal. There is no clear evidence that anyone looked closely to assess [Baby A] for "increased work of breathing" prior to him being transferred in his parent's car to [the community health service].

[RM B] is adamant in her complaint response.

I did not receive any contact from either of the parents of [Baby A], nor the hospital staff at [the community health service].

I was not informed of any issues with the babies breastfeeding or of it being distressed. Either by [Baby A's] family or hospital staff.

*The **only** call that I received after the transfer from care was from [the community health service] at around midnight on [Day 3] … to say that [Baby A] had passed away.*

It should be noted that this is a transfer of care from one hospital to another — he was not discharged from hospital into my care. The mother and baby were still under hospital care.

If this is accepted, then this is in keeping with accepted midwifery practice with no departures identified.

Disposal of the placenta.
It is unfortunate that the placenta was disposed of particularly in the context of [Baby A's] death. … (The pathologist) notes [a few days later]

It is possible for significant inflammation to be present in the placenta without the mother or infant showing overt signs of infection at the time of delivery.

The reason the placenta was disposed of and by whom cannot be determined retrospectively.

Summary
This is a very sad case of overwhelming E Coli sepsis. Whether deterioration could have been identified earlier is impossible to know. In not undertaking a set of observations and identification of possible sources of blood following the blood streaked mucous is a moderate departure from accepted midwifery practice. This is in the context of no documented nipple trauma, a previously vigorous baby and on the background of GBS, meconium exposure and forceps birth.

Nicholette Emerson, BHSc, PG Dip-Midwifery
Midwifery Advisor
Health and Disability Commissioner'

RM Emerson provided the following further advice in relation to the observations of [Baby A] taken at 3.50pm on arrival at [the community health service]:

> 'It does appear that [RM D] has filled in the Multidisciplinary documentation for [Baby A].
>
> Page 6 of 20 in the … clinical notes for [Baby A] records this. It does not appear to have been transferred to a NEWS chart, but it is completed. Temperature, Respirations, and physical observations.
>
> In addition, page 8 of 20 in the … Clinical notes records temperature, last breastfeed, offering breast and that baby [Baby A] has passed urine and meconium previously.
>
> The Multidisciplinary notes document the observations from [RM D] as "am" but from memory [RM D] points out this error in her statement. They could only have been "pm" as transfer to [the community health service] occurred in the afternoon.
>
> Given the observations are recorded and there is a clinical summary of observations and actions I think it would be considered a no/mild departure from accepted practice not to have transferred them to a NEWS chart.'

Appendix B: Independent clinical advice to Commissioner

The following advice was obtained from consultant paediatrician Dr Phillip Jeffrey Brown:

'**Independent clinical advice to Health and Disability Commissioner**

Complaint:	**[Baby A] / Te Whatu Ora …**
Our ref:	**C21HDC02222**
Independent advisor:	Dr Philip Jeffrey Brown

I have been asked to provide clinical advice to HDC on case number C21HDC02222.

I have read and agree to follow HDC's Guidelines for Independent Advisors.

I am not aware of any personal or professional conflicts of interest with any of the parties involved in this complaint.

I am aware that my report should use simple and clear language and explain complex or technical medical terms.

Qualifications, training and experience relevant to the area of expertise involved:
I qualified MBChB from University of Auckland in 1982, Diploma in Obstetrics in 1983 and FRACP (Paediatrics) in 1992. I have worked as Consultant Paediatrician at Palmerston North Hospital for 32 years since 1992 including neonatal care in a Level 2A Neonatal Unit. I have looked after many infants with infections and other neonatal conditions that present with slow or rapid clinical deterioration. I have managed cases of severe neonatal sepsis, some with poor outcomes. The Neonatal Unit I work in has implemented Newborn Observation Chart/Newborn Early Warning Score (NOC/NEWS) observation charts and processes. I have also been involved in the development and implementation of local and national Paediatric Early Warning Score (PEWS) charts and processes.

Documents provided by HDC:

1. Referral from the Coroner dated 15 September 2021
2. Te Whatu Ora's … response dated 1 September 2023
3. Clinical records for [Mrs A] and [Baby A] from Te Whatu Ora … covering the period [Day 1]–[Day 3] (inclusive)
4. Medical notes as provided by the Coroner
5. Coronial autopsy report
6. Coronial report — LMC
7. Police statement — father
8. Complaint response — LMC
9. Te Whatu Ora response appendices

Referral instructions from HDC:

Prior to transfer

1. The adequacy of the 24-hour observation period of [Baby A] post-birth.
2. The adequacy of observations prior to [Baby A] being transferred to [the community health service] maternity unit.
3. The adequacy of the assessment of [Baby A] in relation to his mucous/"increased work of breathing" prior to transfer particularly when being assessed after [Baby A's] father raised concerns?
4. Would you consider [Baby A's] "work of breathing" normal based on the documentation of assessments taken prior to transfer?
5. Can you identify areas that may have been overlooked as an opportunity to identify [Baby A's] unwellness prior to his transfer to [the community health service].
6. The adequacy of documentation by those assessing [Baby A] prior to transfer in relation to his breathing.
7. If those assessing [Baby A] prior to transfer were of acceptable experience level given the concern raised about mucous/work of breathing.

Post-transfer

1. The adequacy of observations after [Baby A's] transfer to [the community health service] maternity unit.
2. The adequacy of documentation by those assessing [Baby A] after transfer in relation to his breathing.
3. The adequacy of assessment by the maternity unit midwife when [Mr A] raised concern about [Baby A's] breathing/dis-interest in food and subsequently when being made aware of blood stained mucous.
4. The adequacy of the management of [Baby A] at 8pm, when it was noted, he had grunting respirations, nasal flaring and indrawing?
5. The adequacy of the management of [Baby A] once sepsis was identified.
6. Any other areas you consider relevant to comment on when assessing the care provided to [Baby A]?

Factual summary of clinical care provided complaint:

Brief summary of clinical events:

[Baby A] was born [in a public hospital]. His delivery went smoothly, but after his discharge from hospital, his condition deteriorated and he died on … The post-mortem examination determined that [Baby A] died of Escherichia coli (E coli) sepsis.

[The Coroner], inquiring into the death of [Baby A], and following a review of the evidence gathered so far, considered the death should be referred to the HDC.

The Coroner received a report from a Paediatrician, [Dr F], which raised some potential issues with the medical care received by [Baby A].

This Paediatrician report was responded to by [Health NZ], with further information to that initially provided to the Coroner, and in particular [Dr G's] responses to issues and statements by [Dr F].

I know both [Dr F] and [Dr G] and respect their expertise as Neonatal Paediatricians.

It is critically important that in answering the questions and giving my advice, I avoid any bias from knowing the tragic outcome, and give opinion based on what would be reasonably expected from only knowing the facts up to the point in time when decisions were made and actions taken, or not taken.

Clinical History

[Baby A] was born by vaginal forceps delivery to a primigravid mother at 06:48 on … at 41 weeks gestation following induction of labour for postdates at [a public hospital]. The mother was thought to have had ruptured membranes since the previous day. The mother had a urine sample that tested positive for Group B streptococcus [a couple of days earlier] so was given three doses of IV penicillin between 18:15 on … and 02:40 on [the following day].

Thick meconium was noted during labour when cervix fully dilated. The fetal scalp lactate was raised at 4.6. There was shoulder dystocia, requiring two forceps pulls and McRoberts manoeuver. His birth weight was 4.15 kg.

At delivery [Baby A] was noted to be floppy but cried on transfer to resuscitaire, responded well to stimulation and required no resuscitation. Apgar scores were 7 at 1 minute, 9 at 5 minutes, and 10 at 10 minutes.

[Baby A] and his mother were transferred to the Maternity Ward. He had NOC/NEWS observations and recordings at 08:30, 10:10, 19:00 and 21:15 which were all normal. At 11:30 on Day 2 it was documented that [Baby A] was a little unsettled, but latched and fed well.

On the evening of Day 2 the father was concerned about [Baby A's] breathing. He was told that it was possible mucus build up, and was common in newborn infants. On the morning of Day 3 the father was concerned about his breathing and loud noises from his nose. [Baby A] was given saline into his nose.

On Day 3 NOC/NEWS observations were recorded at 03:15 and 10:25, all normal. Decision made to transfer to [the community health service's] maternity unit at 14:10. Parents had wished to go home but further time for establishment of breastfeeding was recommended. No capacity at … The parents drove [Baby A] from [a public hospital] to [the community health service's] maternity unit, arriving at 15:50. During the car journey [Baby A] was sleeping.

On arrival at [the community health service] [Baby A] was reportedly pink and warm with a temperature of 37.2 degrees. He had last fed at 11:50, and had passed meconium and urine overnight. The mother attempted to breastfeed but [Baby A] was not interested. At 18:00 [Baby A] remained uninterested in breastfeeding and was given 3.5 ml of expressed breast milk via a syringe. He was noted to be "mucousy".

About 10 minutes after the midwife left the room [Baby A] vomited blood from his nose and mouth. The midwife was called back but stated she was not concerned.

At 20:00 the midwife checked [Baby A] who was being cuddled by mum and found that he was grunting with nasal flaring and indrawing. His heart rate was 155 bpm with respirations of 60 per minute and a temperature of 37.7 degrees. The neonatal coordinator was informed, and Neonatal team contacted to make their way to [the community health service].

[Baby A] was taken to a resuscitaire and his oxygen saturations were noted to be 78–80%. Oxygen was commenced at 50% via CPAP mask. His oxygen saturations improved to 96% and the oxygen was reduced to 40%.

At 21:00 his oxygen saturations were 94% with a heart rate of 162 bpm, respirations of 60/minute, and ongoing grunting.

At 21:30 his oxygen saturations had dropped to 90% and his heart rate was 180 bpm. He was switched to IPPV (positive pressure ventilation) on the advice of the neonatal retrieval team.

At 21:45 his oxygen saturations decreased to 91% and oxygen was increased to 60%. His heart rate was 176 bpm and respiratory rate was 60/minute with indrawing.

At approximately 21:55 the retrieval team arrived [at the community health service]. On their arrival [Baby A] appeared poorly perfused. He was breathing but otherwise unreactive. Dried blood was noted around his mouth. Intravenous access was attempted and was successful on the second attempt. A nasogastric tube was placed. Oral suction showed copious frank blood. A blood gas showed acidosis with pH 6.9, lactate 5.4, and base excess –16. He was intubated with a 3.5 ET tube.

At 22:38 an additional dose of Vitamin K was given. At 22:45 adrenaline was administered via ET tube. Despite treatment, [Baby A] was bradycardic with no audible heart sounds. At 22:49 he was reintubated with a 4.0 ET tube.

Full resuscitative measures continued with ventilatory assistance, intermittent chest compressions during periods of bradycardia, adrenaline infusion, intravenous bicarbonate, and dextrose. His white blood cell count was 2.3 and he had a CRP of 61.

Despite full resuscitative measures [Baby A] remained unresponsive with no ongoing cardiac output, and he died at 23:45.

A blood culture taken during resuscitative efforts was positive for gram negative bacilli at less than 24 hours and subsequently grew E Coli.

The death was reported to the Coroner and an autopsy was directed.

Before answering the following questions I extend my condolences to [Baby A's] family for the tragic outcome. The overwhelming neonatal sepsis in his second day of life led to rapid deterioration and was not forewarned by the clinical observations undertaken at [the public hospital] prior to transfer to [the community health service] Maternity Unit. There may have been subtle signs of him becoming unwell with poor feeding but this is very common in babies, very few of whom will have serious illness. By the time he had signs of difficulty breathing at [the community health service] the sepsis was extensive and almost certainly not survivable, even if he had received treatment an hour or two earlier.

Question 1: The adequacy of the 24-hour observation period of [Baby A] post-birth.

No departure from expected standard of care and accepted practice.

Question 2: The adequacy of observations prior to [Baby A] being transferred to [the community health service] maternity unit.

No departure from expected standard of care and accepted practice.

NOC/NEWS observations of heart rate, respiratory rate, work of breathing, colour, oxygen saturation all performed and recorded. There were more than 24 hours of clinical assessments noted on the newborn observation chart NOC/NEWS with no concerns based on the parameters of the observations and consistent NOC/NEWS scores of zero.

Question 3: The adequacy of the assessment of [Baby A] in relation to his mucous/ "increased work of breathing" prior to transfer particularly when being assessed after [Mr A] raised concerns

No departure from expected standard of care and accepted practice.

A NOC/NEWS assessment had occurred at 10:25 prior to transfer to [the community health service] on Day 3 which recorded: Respiration rate of 42/min, normal breathing in air, oxygen saturation 99%; temperature 37, heart rate 110, colour: pink and well perfused and normal feeding/alert periods were scored with 0.

Shortly after this at 10:50 [Baby A] was documented to be snuffly while at the breast by Core Midwife. He was given normal saline (sodium chloride) drops to each nostril, with very little result noted. Following this, he was observed to latch to the breast and fed well which was reassuring. Saline dropped into the nasal passage is a standard tool midwives and neonatal nurses use to moisten the nasal lining. Core Midwife recalls via her statement that she noted the drops gave very little effect but a good latch was achieved anyway.

Question 4: Would you consider [Baby A's] "work of breathing" normal based on the documentation of assessments taken prior to transfer?

Yes.

No departure from expected standard of care and accepted practice.

The respiratory assessment in the NOC/NEWS scores includes counting the respiratory rate and assessing the work of breathing at each check. This includes assessing for a noisy breathing or grunting or chest recession. Recording these as a score of zero indicates, and documents, the absence of any increased work of breathing. The NOC/NEWS charting is sufficient documentation, and replaces any need to write "normal" or "no increased work of breathing", "no grunting", "no recessions" or other such documentation. This standard documentation in NOC/NEWS, and indeed in PEWS and other early warning systems, was not appreciated by [Dr F] when giving his opinion to the Coroner. It was satisfactorily addressed by the Quality Manager and by [Dr G] in their response to the Coroner.

Question 5: Can you identify areas that may have been overlooked as an opportunity to identify [Baby A's] unwellness prior to his transfer to [the community health service].

In hindsight, there may have been an opportunity to repeat the observations as some time had elapsed between decision to transfer and the transfer taking place.

However the midwife decided not to disturb [Baby A] as he was asleep and she did not want to delay the transfer any further. Note that when he arrived at [the community health service] he was assessed as pink and warm.

Question 6: The adequacy of documentation by those assessing [Baby A] prior to transfer in relation to his breathing.

No departure from expected standard of care and accepted practice.

Question 7: If those assessing [Baby A] prior to transfer were of acceptable experience level given the concern raised about mucous/work of breathing?

No departure from expected standard of care and accepted practice.

The staff were all sufficiently experienced in newborn care and in the use of NOC/NEWS. Five assessments of [Baby A] occurred from 921:00 [Day 2] until [Baby A] left for [the community health service]. These assessments were carried out by three midwives and the LMC. None of these assessments or observations raised any concern about [Baby A's] wellbeing.

Question 8: The adequacy of observations after [Baby A] transfer to [the community health service] maternity unit.

Moderate departure from expected standard of care and accepted practice.

The policy at the time recommended full set of NOC/NEWS observations and score to be done on arrival at primary birthing unit. This was not fully done, his temperature was recorded. In hindsight, if there had been abnormal breathing, noting that there is no

evidence of, this may have been picked up if full NOC/NEWS had been done. We cannot determine presence or absence of any breathing abnormality. I note the event review by the then DHB identified the failure to do a full NOC/NEWS score.

Reinforcing the recommendation for full NOC/NEWS score on arrival at any primary birthing unit following any transfer could be made by the HDC to all maternity services as a learning from this case.

Question 9: The adequacy of documentation by those assessing [Baby A] after transfer in relation to his breathing.

No departure from expected standard of care and accepted practice.

See Question 8. There was no policy requiring documentation of breathing other than an initial NOC/NEWS score.

Question 10: The adequacy of assessment by the maternity unit midwife when [Mr A] raised concern about [Baby A's] breathing/dis-interest in food and subsequently when being made aware of blood stained mucous.

No departure from expected standard of care and accepted practice.

At 18:00 when [Baby A] did not feed, the core midwife helped [Mrs A] try skin to skin to see if this would help him show interest and encourage him to feed. While helping [Mrs A] initiate skin to skin, the midwife will have looked closely at [Baby A]. She also gave him 3.5 ml of expressed breast milk (EBM) which she assisted [Mrs A] to hand express. The midwife recalls in her statement that she showed [Baby A's] father how to give EBM via a syringe which he was happy to do. Shortly afterwards, she answered a call bell in [Baby A's] room, his father showed her a tissue with a clear mucous spill with a thin streak of blood. In her statement, "I examined the tissue and reassured them that a small streak of blood was not something to worry about and that this can happen occasionally. I have seen similar spills from babies with small streaks of blood which is usually from nipple trauma. I again reiterated that they should call me and let me or let the nurse aid know if they had any concerns."

In retrospect and with the benefit of hindsight, the earliest sign of developing infection and impending deterioration was at 18:00 when [Baby A] was not interested in feeding and the parents reported a mucous vomit with some blood streaks. However, other factors were reassuring and led to a midwifery response which was reasonable based on the information available to them at the time. [Baby A] "was undressed and placed skin to skin which suggests he was observed, and that this handling did not trigger grunting at that time."

Question 11: The adequacy of the management of [Baby A] at 8pm, when it was noted he had grunting respirations, nasal flaring and indrawing?

No departure from expected standard of care and accepted practice.

The documented actions are all appropriate for the skill level and experience of staff. Note that a midwife living close by was also called to assist.

Question 12: The adequacy of the management of [Baby A] once sepsis was identified.

No departure from expected standard of care and accepted practice.

The documented actions are all appropriate for the skill level and experience of staff.

Question 13: Any other areas you consider relevant to comment on when assessing the care provided to [Baby A]?

It could be speculated that if a call to the neonatal team had been made two hours earlier at 18:00 when he was not interested in feeding and had the mucous vomit with blood streaks, there may have been earlier intervention with antibiotics. However the post-mortem found numerous aggregates of bacterial organisms seen throughout the lungs and within small vessels in multiple organs — scattered small epicardial vessels (in the heart) contained numerous bacterial organisms, occasional collections of bacterial organisms were identified in glomeruli and tubules (of the kidneys), numerous bacterial organisms were seen in many of the intracerebral vessels (of the brain) — which were gram negative on staining. Microbiological investigations showed growth of Escherichia coli on blood culture, meningeal swab culture, and bilateral lung swab cultures. This indicates widespread and overwhelming E coli sepsis, which would most probably have been fatal even if treatment had been commenced one or two hours earlier.

I also note that after the release of the Sapere audit of NOC/NEWS, and with the input from the consumer on the NOC/NEWS working group, a section noting **parent express change/ concern** is now included for each assessment. This is now standard throughout the motu, rolled out from 2020.

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Signature:

Dr Phillip Jeffrey Brown

Date of advice: 20 August 2024’