Obstetric Registrar, Dr B

Canterbury District Health Board

A Report by the

Health and Disability Commissioner

(Case 12HDC00932)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

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Executive summary

1. In 2011, Ms A, aged 34 years at the time of these events, was pregnant with her first child. Ms A has a medical history of type 1 diabetes.

2. At approximately 9.30pm, when Ms A was 36 weeks plus 6 days' gestation, she went into labour. A few hours later, at approximately 3am, Ms A presented to the delivery suite at the public hospital, where she was noted to be in established labour.

3. Monitoring of Ms A and the fetal heart rate commenced and continued throughout the morning.

4. At 9.50am, three decelerations[1] on the CTG[2] were noted following the insertion of an epidural. The obstetrics registrar, Dr B, was asked to review Ms A. Following his review, Dr B requested that monitoring continue, with the plan to review the CTG again in 30 minutes' time.

5. Monitoring continued, and the CTG remained normal.

6. At 3pm, Syntocinon[3] was commenced and, at 3.35pm, the epidural was re-sited because of breakthrough pain.

7. At 5.10pm, Dr B reviewed Ms A. He noted that she had a mild temperature. Dr B also noted a change on the CTG, which he considered was indicative of fetal compromise. Dr B discussed the management options with Ms A and her partner, Mr A, and the decision was made to deliver the baby by instrumental delivery.

8. Dr B commenced the delivery using a Kiwi OmniCup (Kiwicup)[4] ventouse on the ward. After five traction attempts the head was noted to be crowning, and the Kiwicup detached. Dr B subsequently converted to a forceps delivery, and Baby A was delivered with one traction.

9. Initially Baby A required respiratory resuscitation, but she responded well and was handed to Ms A. Baby A was sent to the postnatal ward with Ms A but, approximately two hours later, Baby A was noted to be displaying unusual movements and was transferred to the Neonatal Intensive Care Unit (NICU).

10. Baby A continues to be followed up by the paediatric team at CDHB. She still has some weakness down her left side. It is too early to assess the extent of any developmental delay accurately.

Decision

11. Dr B failed to recognise the complexity of Ms A's presentation, and made a series of poor clinical decisions. He should have performed a fetal blood sample before making

[1] Slowing of the fetal heart rate.
[2] A cardiotocograph (CTG) measures the fetal heart rate.
[3] Syntocinon helps to promote labour.
[4] The Kiwi OmniCup (Kiwicup) is a type of cup used for vacuum assisted ventouse deliveries.

the decision to proceed with an instrumental delivery. As Ms A has type 1 diabetes and is small in stature, and her baby was large, with the head positioned in a high, transverse position, careful consideration should have been given to the appropriateness of performing an instrumental delivery. In addition, Dr B's decision to attempt such a delivery on the ward was not in accordance with clinical recommendations.

12. Dr B failed to provide services with reasonable care and skill when he continued with the instrumental delivery rather than converting to a Caesarean section when delivery was not imminent. This was a severe departure from accepted practice. Accordingly, Dr B breached Right 4(1) of the Code.[5]

13. For failing to contact the on-call consultant and making the decision to proceed with an instrumental delivery on the ward rather than in the operating theatre, Dr B breached Right 4(4) of the Code.[6]

14. At the time of these events, Canterbury District Health Board (CDHB) did not have any clear guidelines for consultant involvement, and had a culture that essentially placed the responsibility on more junior staff to recognise the extent of their own expertise. Accordingly, CDHB breached Right 4(1) for failing to provide services with reasonable care and skill.

Complaint and investigation

15. The Commissioner received a complaint from Mr A about the services provided to his partner, Ms A, during the birth of their baby, Baby A, in 2011. The following issues were identified for investigation:

- *The appropriateness of the care provided to Ms A by Dr B in 2011.*
- *The appropriateness of the care provided to Baby A by Dr B in 2011.*
- *The appropriateness of the care provided to Ms A by Canterbury District Health Board in 2011.*
- *The appropriateness of the care provided to Baby A by Canterbury District Health Board for the three weeks of her hospital stay.*

16. An investigation was commenced on 3 May 2013.

17. The parties involved in the investigation were:

Ms A	Consumer
Mr A	Complainant/consumer's partner

[5] Right 4(1) states: "Every consumer has the right to have services provided with reasonable care and skill."
[6] Right 4(4) states: "Every consumer has the right to have services provided in a manner that minimises the potential harm to, and optimises the quality of life of, that consumer."

Dr B	Provider/obstetric registrar
Canterbury District Health Board	Provider

Also mentioned in this report:

Ms C	Lead maternity carer
Dr D	On-call consultant
Ms E	Dr B's lawyer
Dr F	Consultant obstetrician
Dr G	Paediatric neurologist

18. Independent expert advice was obtained from a consultant obstetrician, Dr Jennifer Westgate (see Appendix A) and a consultant paediatrician, Dr Johan Morreau (see Appendix B).

Information gathered during investigation

Background

19. In 2011, Ms A, aged 34 years at the time of these events, was pregnant with her first child. Ms A engaged midwife Ms C as her Lead Maternity Carer (LMC).

Antenatal care

20. Ms A has a medical history of type 1 diabetes, and was thus referred to the Canterbury District Health Board (CDHB) antenatal team. She was seen by the team regularly throughout her pregnancy, and her diabetes was monitored closely.

21. When Ms A was 36 weeks' gestation, she was reviewed in the antenatal clinic. The Senior Medical Officer (SMO) for the antenatal clinic noted that a recent ultrasound scan indicated that the fetal weight was estimated to be in the 82nd percentile on a standardised growth chart.[7] Induction of labour was subsequently planned for 38 weeks' gestation. The SMO advised HDC that a customised growth chart would have been generated and reviewed when Ms A's management plan was being developed during this appointment. However, there is no evidence in Ms A's clinical records of a customised growth chart.

Onset of labour

22. At approximately 9.30pm, when Ms A was 36 weeks plus 6 days' gestation, she went into spontaneous labour.

Presentation to delivery suite

23. From approximately 1am, Ms A's contractions became more regular. At approximately 3am, she presented to the delivery suite, where she was met by her LMC, Ms C. Ms A was supported by her partner, Mr A.

[7] My expert advisor, Dr Westgate, advised that the estimated fetal weight would have been above the 95th percentile when charted on a customised growth chart.

24. At 3.45am a CTG was commenced. At 3.47am, Ms A was reviewed by the on-call obstetrics registrar and, following an assessment, was noted to be in established labour with a cephalic presentation,[8] and the cervix 5–6cm dilated and 1–2cm long.[9] Intravenous antibiotics were commenced at 4.45am, and the neonatologists were informed of Ms A's arrival and asked to be present for the birth.

25. At 5.49am, the obstetrics registrar reviewed Ms A again and found her cervix to be unchanged at 5–6cm dilated and 1cm long. She was experiencing four contractions every 10 minutes, and the plan was to reassess her in 3–4 hours' time.

Dr B

26. At the time of these events, Dr B was in his fourth year of training towards Fellowship of the Royal Australasian College of Obstetrics and Gynaecologists (RANZCOG). He had been working in the field of obstetrics and gynaecology for just over five years, over three of those at the level of registrar.

27. At the time of these events, Dr B had performed 66 rotational deliveries[10] using a ventouse, 61 of these using the Kiwicup.

28. The RANZCOG has a credentialling process intended to identify a trainee doctor's level of competence and confidence to perform various procedures, including rotational deliveries. It is a guide for the hospital to ensure that each doctor is provided with an adequate level of consultant support.

29. Dr B did not have RANZCOG accreditation for rotational deliveries.[11]

30. At 8am, Dr B commenced duty as the on-call senior obstetrics registrar. The on-call consultant was Dr D.

Obstetric ward round

31. Dr B advised HDC that, as is standard practice, he received a handover from the night shift registrars and the previous day's consultant when he commenced duty at 8am, and was briefed on all patients on the birthing suite at that time.

32. Dr B advised HDC that following handover he attended the routine morning ward round with Dr D. Ms A was reviewed during this ward round shortly after 8am. The clinical records from the ward round note that Ms A was experiencing four contractions every 10 minutes, which she was coping with, and that the CTG showed a reassuring trace. It is noted that Dr D's plan was to continue with labour and conduct a repeat vaginal examination at 10.30am, or sooner if indicated.

[8] The baby in a head down position.
[9] As the cervix prepares for delivery it dilates and shortens (effaces).
[10] This means that the baby's head is rotated during the delivery.
[11] In response to the provisional opinion, Dr B's lawyer, Ms E, submitted: "RANZCOG recommends a minimum of 100 instrumental deliveries, including both non-rotational and rotational, be performed in the first four years of training. With [Dr B] having performed 376 deliveries in 3.75 years of training including 92 rotational mid-cavity instrumental deliveries … he had far-exceeded the RANZCOG recommendations for sign-off."

Epidural/fetal heart rate deceleration

33. At 9am, Ms C carried out a further vaginal examination, which revealed the cervix to be "stretchy" and 6cm dilated. Ms C discussed with Ms A and Mr A the options available, including continuing as they were or having an epidural. Ms A requested an epidural. Because Ms C is not certified for epidurals, her care was handed over to the core (hospital) midwifery staff, and an anaesthetist was subsequently called. Ms A was informed of this and agreed.

34. At 9.50am, the anaesthetist sited the epidural. Following its insertion, three fetal heart rate decelerations were noted, each lasting two minutes and returning to the baseline[12] of 140bpm (normal FHR is between 110–160bpm) with good variability.[13] Ms A was moved into a different position, and Dr B was asked to review the CTG.

10.03am review

35. At 10.03am, Dr B reviewed and initialled the CTG. Dr B advised HDC:

> "I was requested to review the CTG at this time and initialled the CTG printout. I noted [Ms A] had an epidural sited for pain relief approximately 20 minutes prior. There were minor variable decelerations present with normal baseline and variability which is not an uncommon pattern immediately following siting of an epidural; it is usually self-limiting. [Ms A's] blood pressure was normal and there was no Syntocinon infusion running for augmentation. She was lying in a lateral position to avoid aorto-caval compression.[14] As all appropriate conservative measures were being instituted, I made a plan to continue the labour and reassess the CTG in 30 minutes, which I did."

36. The hospital midwife then carried out a vaginal examination and attached a fetal scalp electrode to ascertain fetal well-being and ensure that the CTG changes were not associated with loss of contact of the CTG. The midwife noted that the cervix was 6cm dilated and 40% effaced, and that Ms A's forewaters had been ruptured during the attachment of the fetal scalp electrode. Dr B recalls that these findings were relayed to him.

37. At 10.32am, Dr B reviewed the CTG. The hospital midwife documented:

> "[Seen by] [Dr B], CTG reassuring, reassess 12.30hrs. discussed with [Ms A]."

38. Monitoring continued.

12.31pm review

39. At 12.31pm, Dr B attended to review Ms A, as planned. Dr B noted that Ms A was comfortable with three contractions every ten minutes, and that the CTG was reassuring. On examination, Dr B noted that the cervix was 8cm dilated and the fetal

[12] The mean FHR.
[13] Variability of the baseline FHR.
[14] Compression of the large blood vessel (inferior aorta) carrying oxygenated blood to the lower body and organs, and the large vein carrying deoxygenated blood to the heart.

head was at station 0,[15] with no change in the caput.[16] Dr B conducted an abdominal examination, which he stated demonstrated a baby of average estimated size in an occipito-posterior position,[17] with one-fifth of the baby's head palpable abdominally, and a full maternal bladder. Dr B inserted an indwelling urinary catheter and planned to review Ms A again in two hours' time, or sooner if there were any concerns.

40. Dr B advised HDC:

> "Based on my assessment, I judged progress to be adequate and there were no signs of maternal or fetal compromise. I also judged there to be no significant cephalopelvic disproportion evident at that stage.[18] I recommended labour continue and for another reassessment of progress in two hours, or sooner if there were any concerns. … I did not inform [Dr D] of my plan at this stage, nor did I consider it necessary to do so."

Ongoing care

41. At 1.10pm, Ms A started to experience breakthrough pain.

42. At 2.23pm, the anaesthetist reviewed Ms A and offered to re-site the epidural, which Ms A declined.

2.31pm review

43. At 2.31pm, Dr B reassessed Ms A's progress. He noted that she had been experiencing some breakthrough pain, contractions continued at a rate of three in ten minutes, and the CTG was reassuring. Following examination, Dr B noted no change in cervical dilation or position of the baby's head. Dr B subsequently requested Syntocinon infusion to be commenced, with the plan for review in 3–4 hours' time.

44. Dr B advised HDC:

> "These findings are consistent with secondary arrest[19] (not obstructed labour) and I judged this to be due to suboptimal uterine force of contractions and frequency, therefore augmentation of labour was now indicated. Again, in view of the gestation of 36+6 weeks, average fetal size, occipitoposterior/occipitotransverse position[20] and no clinical evidence of cephalopelvic disproportion at that stage, caesarean section was not indicated. … I did not inform [Dr D] of my plan at this stage; I did not consider it necessary to do so nor would it have been expected of me."

45. At 3pm, the Syntocinon infusion was commenced.

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[15] Fetal station describes the position of the baby's head in relation to the ischial spines of the pelvis. Station 0 means that the head is in line with the ischial spines.
[16] The caput refers to the baby's head seen at the cervix.
[17] Occipito-posterior position refers to the back of the baby's head being against the mother's spine.
[18] Cephalopelvic disproportion is when the fetal head or body is too large to fit through the maternal pelvis.
[19] The cessation of cervical dilation.
[20] Occipito-transverse position refers to the baby facing sideways.

46. At 3.35pm, Ms A agreed to the epidural being re-sited, which was subsequently done by the anaesthetist.

47. At 4.15pm, a deceleration was noted lasting two to three minutes, and then a further deceleration occurred lasting two minutes. Dr B was subsequently called to review Ms A.

5.10pm review

48. Dr B had to attend another urgent issue, and did not arrive to review Ms A until 5.10pm.

49. In his retrospective note, written at 6.40pm following his assessment, Dr B noted that at the 5.10pm review Ms A had been comfortable following the re-siting of the epidural, that she had a mild temperature of 37.3°C, and that the CTG showed a baseline fetal heart rate of 160–170bpm and a variability of 2–5bpm. Dr B advised HDC: "I considered this to be a significant deterioration in pattern such that it was no longer reassuring of fetal condition."

50. On examination, Dr B noted that a thin rim of cervix was present anteriorly, which was pushed away with a contraction. The fetal head was noted to be at the ischial spines in the right occipito-transverse position. This means that the fetal head had descended into the pelvis but the baby was rotated, facing the left.

51. Dr B advised HDC that based on his assessment he "judged the pelvic cavity to be adequate and there was no clinical suspicion of cephalopelvic disproportion".

52. Dr B discussed his findings with Ms A and Mr A and presented them with the options of: a fetal blood sample being performed to assess fetal condition and, depending on the result of this, proceeding with either delivery or continuation of labour; or proceeding with a ventouse or forceps delivery. Dr B documented "favours instrumental now as exhausted".

53. Dr B advised HDC that he considered that the criteria for an instrumental delivery had been fulfilled, and he judged that delivery would not be "unduly complicated" and was therefore suitable for carrying out on the ward rather than in theatre. He stated:

> "The decision for instrumental delivery I judged to be reasonable at that time given the preterm labour, suboptimal pain relief during the course of the day leading to maternal exhaustion, the developing CTG changes, epidural, minor maternal pyrexia and [Baby A's] head position (occipitoposterior earlier in labour and occipitotransverse at the time of full dilation) … [Baby A's] head was at the ischial spines at my assessment when [Ms A] was fully dilated and descended to below the spines with a trial push timed to a contraction. This is considered a reliable indicator that the fetal head has fully engaged, that the widest diameter of the fetal head has passed through the narrowest part of the woman's pelvis and that there was sufficient pelvic capacity for instrumental birth to safely occur. In a woman labouring prior to 37 weeks gestation (with a baby estimated to be less than 3200g a few days prior), it was my experience up until that point that these

babies had delivered instrumentally from the midcavity safely. This is why I offered [Ms A] the option of delivery at that stage."

54. Dr B stated that he made this decision "to the best of my knowledge, care and ability at that time for what I believed to be in the best interests of [Ms A] and [Baby A]".

55. Dr B advised that he did not consider contacting Dr D at that time as it was the expectation that he, as a senior registrar, would be able to make that decision himself. He advised that there was no guideline for mandatory consultation with the on-call consultant in such cases at the time.

Delivery

56. Following the decision to proceed with instrumental delivery, Ms A was placed in the lithotomy position[21] and the neonatal team called, as is usual practice for an instrumental delivery.

57. Dr B re-examined Ms A to confirm the position of the fetal head and that she was fully dilated. Dr B then applied the Kiwicup and ensured that it was correctly positioned with an adequate suction.

58. The first traction was applied at 5.28pm with a contraction. The hospital midwife noted in the clinical records, "Beautiful progression." Dr B advised HDC:

> "With the onset of the next contraction and in conjunction with [Ms A's] bearing-down efforts, steady moderate traction was directed in the direction of the birth canal, initially downwards and backwards to assist descent and rotation, then progressively more horizontally as the head descended."

59. At 5.30pm a further traction was applied. At 5.33pm, the midwife noted that Dr B performed an episiotomy[22] and a third traction. At that time, the cup had been applied for eight minutes, and there had been three tractions over five minutes. A "peep" of the baby's head was noted in the clinical records. Dr B advised HDC:

> "From starting the delivery attempt where the head was a station 0, I considered this to be adequate progress and that delivery would be completed with either the next one or two contractions. Therefore, I saw no need to abandon the delivery or call for help from [Dr D]. The fetal heart was recovering to around 160/min between contractions. There had been no cup 'pop-offs' up until this stage, indicating that traction was controlled and not excessive."

60. At 5.35pm, the fourth traction was made and a "further peep of head" noted in the clinical records.

61. At 5.37pm, the fifth traction was made and "further progress" was noted in the clinical records.

[21] The lithotomy position is when the woman is positioned on her back with her legs above the pelvis, generally in stirrups.
[22] A surgical incision in the perineum.

62. At 5.38pm, it is noted in the clinical records: "[B]aby's head crowning. Kiwicup released suction." Dr B advised HDC that this loss of traction was caused by impaction of the shoulders.

63. Dr B advised HDC that he considered that the delivery to that point had progressed well and that there was no indication for abandoning the delivery attempt in favour of Caesarean section, and to do so "would involve certain increased morbidity for the mother with potentially more trauma to the baby and can be a formidable undertaking with the head so low in the pelvis".

64. Dr B then applied forceps. He advised HDC:

> "As I judged that I could deliver the baby with forceps within the next few minutes and that this was likely to be the least traumatic option for both baby and mother, I proceeded to do this. With the head at the perineum, completion of vaginal birth is indicated as extraction from the pelvis at caesarean section is both difficult and likely to be traumatic to mother and baby. Again, I did not inform [Dr D] of the situation as it would have taken longer for him to attend and assess than for me to proceed with the delivery, and I assumed that, faced with this situation, he would have proceeded with the above plan as well."

65. Furthermore, Dr B stated that "there was no undue concern with the delivery until the last two contractions; by which time shoulder impaction had likely occurred and it was too late to safely consider Caesarean section". Dr B advised that "shoulder dystocia[23] was promptly diagnosed and emergency manoeuvres instituted".

66. At 5.38pm, Dr B sited one blade of the forceps. He then sited the other blade at 5.39pm and applied traction. The FHR was noted to be 166bpm.

67. At 5.39pm, Ms A was noted to be "pushing with contraction". Then, at 5.40pm, the baby's head was noted to be at the perineum, and the forceps were removed and Baby A's head birthed.

68. At 5.41pm, Baby A's shoulders were birthed, followed by the rest of her body. Baby A was placed onto Ms A's abdomen and the umbilical cord clamped and cut.

69. Baby A was then immediately taken to the resuscitaire and the neonatal team commenced resuscitation, administering five inflation breaths and intermittent positive pressure ventilation for two minutes. Baby A responded well and began to cry and "pinked up well". The umbilical cord blood sample showed a pH of 7.147 with a base excess of 9.9mmol/L. Cord lactate samples were 5.9 and 6.4mmol/L.[24]

70. Dr B advised HDC that following the delivery:

[23] Shoulder dystocia happens when the baby's head has been born, but one of the baby's shoulders becomes stuck. The shoulder can become stuck if the woman's pelvis is small, the baby is big, and/or because of the baby's position.

[24] Dr Morreau advised that "[c]ord pH and base deficit of this level, with associated Apgars, would not ordinarily be indicative of Birth Asphyxia, associated with significant hypoxic damage …".

> "I recall the chignon [swelling] indicated that the Kiwicup had been sited in the correct place and thus the difficulty in delivery was not due to incorrect cup placement. This confirmed to me that the unexpected degree of difficulty was most likely due to the unexpected shoulder dystocia."

71. Furthermore, Dr B considered that if it had not been for the impaction of the shoulders, his belief that the delivery would not be "unduly complicated" would have been correct.

72. At 5.47pm, Ms A was given a bolus of Syntocinon to assist with delivery of the placenta. The placenta was subsequently delivered.

73. Baby A was then passed back to Ms A.

Postnatal care

74. Baby A was initially sent to the postnatal ward with Ms A. However, approximately two hours later, Baby A was noted to be displaying unusual movements and was transferred to the Neonatal Intensive Care Unit (NICU).

75. At 8pm a neonatal assessment was carried out, and it was noted that Baby A had a cone-shaped head, with some swelling in the posterior region and a laceration and mark where the Kiwicup had been applied. A red mark was also noted in the left eye region and bruising to her left forearm.

76. Baby A continued to be monitored in NICU. An MRI[25] scan confirmed subgaleal haemorrhage consistent with a severe hypoxic insult. An X-ray later revealed a fractured left clavicle.

77. Baby A was discharged three weeks following her birth with a plan for a follow-up MRI and Outreach Nurse and clinic follow-up. At the time of her discharge, Baby A was alert and feeding well, but was noted to have decreased tone in her left arm and, to a lesser degree, in her left leg.

Ongoing care

78. Baby A continues to be followed up by the paediatric team at CDHB. She still has left-sided hemiparesis affecting her left arm and leg, and a slight head tilt to the left. She has also demonstrated delays in motor development. However, it is still too early to assess the extent of any developmental delays accurately.

Canterbury District Health Board

Root Cause Analysis Report

79. Following these events, CDHB conducted an incident review. In summary, it concluded:

- The antenatal care was appropriate.

[25] Magnetic Resonance Imaging — a procedure used to scan patients to determine the severity of certain injuries.

- The initial decision to proceed with instrumental delivery, following Dr B's review at 5.20pm, was appropriate.
- While Dr B documented that there was a "moderate" shoulder dystocia, this would be more accurately described as "mild".
- The cord gas sample taken following birth was consistent with a "degree of intrapartum hypoxia" but was not extreme and unlikely to have contributed to Baby A's outcome.
- The fracture to the clavicle likely occurred at the time of delivery.
- The cause of Baby A's brain damage is unknown. It is probable that it occurred at the time of the instrumental delivery owing to a combination of the shoulder dystocia and traction during the ventouse delivery.
- This type of birth injury is rare, and there was no indication of this particular risk prior to the delivery.

Further comment from Dr B

80. In his statement to HDC, Dr B advised that he has reflected on this case and made a number of changes to his practice. Dr B stated:

> "I believe there has been considerable learning for the service as well as for me as an individual. To summarise what I have learned upon reflection; I have now adopted a somewhat more cautious approach to mid-cavity rotational instrumental birth. This includes reconsidering the indications for such deliveries and the alternatives to that decision. If I were to be (indeed, when I inevitably am in the future) in a similar situation, I would acknowledge the maternal exhaustion and the impact that can have on maternal pushing, but more strongly recommend that I firstly do a [fetal blood sample] and then depending upon the result try 30mins of maternal effort to see whether a further centimetre or so of descent, with or without spontaneous rotation of the fetal head, may occur: making the instrumental birth, if still necessary, possibly technically more straightforward and safer."

81. Dr B acknowledged that it is the general view of senior colleagues that given the full clinical situation, this case was "difficult and warranted discussion with the on-call consultant".

82. Dr B advised that he now performs any instrumental deliveries identified as needing rotation in the operating theatre, which affords immediate access to Caesarean section at an earlier stage should the delivery prove more difficult than anticipated.

83. In addition, Dr B advised that he now very rarely uses the Kiwicup for rotational deliveries, opting instead for manual rotation and forceps delivery.

84. Dr B is now accredited by RANZCOG to perform rotational deliveries as per their Advanced Surgical Procedures — Assessment of Trainee Competence form. He has completed an online training tool endorsed by the RANZCOG for CTG interpretation

and has attended a training workshop, the Fetal Surveillance Education Programme, conducted by RANZCOG.

85. Dr B stated:

> "I apologise again for the poor outcome suffered by [Baby A], as well as [Ms A] and [Mr A] in this case. The responsibility for the decisions made lies with me. I made the best decisions I could at the time with the best interests of [Baby A] and [Ms A] at heart. However, in retrospect I wish I had made different decisions or recommendations; I take responsibility for my part in this case and I apologise unreservedly."

Further comment from CDHB

86. In a statement to HDC, CDHB stated that it accepts that there were failings in this case, which "primarily relate to the absence at that time of a robust system whereby Senior Medical Officers were required to be informed of and attend instrumental deliveries where the presenting part was at a high station or required rotation". CDHB accepts full responsibility for the failings in this case, advising that "[o]ver a number of years a culture had developed where junior staff were encouraged to act independently if comfortable within their scope of practice". CDHB stated that it considers that "[Dr B] made a difficult judgement which was within the scope of practice of a competent obstetrician". Furthermore, it stated that "we do not believe that any individual component went beyond the limits of what is acceptable, and therefore the only route to mitigate the risk of recurrence is to alter the system by which our care is delivered".

87. Specifically, in relation to Dr B's decision to proceed with an instrumental delivery at 5.20pm, CDHB considered that the decision was reasonable and that the criteria for a safe attempt at vaginal delivery were met. It stated that while the CTG was not pathological, fetal condition can change rapidly where the woman is fully dilated and in the presence of maternal pyrexia.[26] It advised that a fetal blood sample or delivery were therefore the only options available.

88. CDHB considered that all the conditions required for vaginal delivery were met. In particular, full dilation of the cervix, fetus presenting "as a vertex or face with the chin anterior", presenting part at or below the spines and no fetal head palpable "per abdomen", ruptured membranes, maternal bladder empty, certainty as to fetal position, no suspected cephalopelvic disproportion, and adequate analgesia. However, CDHB agrees that it would have been appropriate to perform this procedure in theatre, rather than in a standard delivery room, so that the delivery could have been converted to a Caesarean section quickly if required.

89. CDHB agreed that the "circumstances were significantly challenging to warrant [senior medical] consultation from registrars of most levels of training". It considered that, taking all the factors of this case into account, "the biggest single factor therefore was lack of senior medical officer involvement". It reiterated, however, that it did not

[26] High temperature.

have a guideline in place at the time of these events that mandated consultation or involvement of a senior medical officer where a difficult instrumental delivery was planned or anticipated.

Independent obstetrics advice — Dr F

90. Dr F, a consultant obstetrician, provided an independent report to CDHB on the care provided to Ms A. In relation to the antenatal care, Dr F considered that this was, overall, very good. However, he does comment on the apparent lack of a customised growth (GROW) chart antenatally, although he notes that this would have been unlikely to have altered the management plan.

91. In relation to the intrapartum care, Dr F stated that "it would have been advisable to have checked a fetal scalp blood lactate (or pH) and if that were normal to allow time for further descent of the head". Dr F considered that in all the circumstances of Ms A's presentation, the instrumental delivery "was very likely to be difficult". Dr F went on to advise that in the situation where delivery was considered appropriate, consideration as to whether an instrumental delivery was appropriate and whether this then should have been performed on the ward or in theatre, should have been discussed with the consultant. Dr F stated:

> "Both the RANZCOG Statement (C-Obs 16) on Instrumental Vaginal Delivery and RCOG Green Top Guideline on Operative Vaginal Delivery emphasise the need for a high level of clinical and technical skills for the decision to perform and the ability to carry out rotational mid-cavity instrumental deliveries."

92. Furthermore, Dr F considered that because delivery was not imminent after the third traction, converting to Caesarean section was "probably advisable". Again, Dr F considered that this decision should have been made in consultation with the consultant.

93. In relation to the postpartum care, Dr F considered that the obstetrics involvement appears to have been appropriate. However, he commented on the lack of ongoing involvement of the obstetrics team, and considered that given the difficulties with the birth and the fact that Baby A had been transferred to the neonatal unit, early involvement of a senior obstetrician would have been advisable.

Independent paediatric advice — Dr G

94. Dr G, a paediatric neurologist for CDHB, provided a report to the CDHB on the likely cause of Baby A's brain damage. In Dr G's opinion, having reviewed the initial MRI, he does not consider that it showed evidence of a severe hypoxic insult; rather, he advised that it showed appearances of "embolic infarction from the top of the basilar artery[27]". This view was shared by a paediatric neuro-radiologist.

95. Having considered all the information available on Baby A's clinical file, and having also been involved in Baby A's postnatal care, Dr G concluded that Baby A's brain

[27] A blood vessel supplying oxygenated blood to the brain.

damage was "most likely" caused by vertebral artery compression or vertebrobasilar artery dissection. This means that the blood flow was cut off to one of the major arteries in the brain, leading to permanent damage to the area of brain supplied by that artery. Having reviewed the literature on this type of injury, Dr G advised:

> "To me, it therefore seems reasonable to hypothesise that vertebral artery compression or vertebrobasilar dissection occurred in [Baby A] secondary to distortion of her neck during labour, either as a result of an abnormal neck position associated with shoulder dystocia or of the difficulties occurring during instrumental delivery."

Changes made by CDHB

96. Since this case, CDHB has made the following changes:

- Introduced a new guideline for the supervision of registrars, which requires the on-call consultant to be informed of all proposed mid-cavity or rotational instrumental deliveries except where the trainee has been credentialled to undertake such deliveries without supervision.
- Introduced a regular training programme for instrumental delivery, which targets safe practice, communication and awareness of complications, as well as technical skills.
- Changed the model of Kiwicup ventouse used to a model that has a traction force indicator.
- Introduced a new process for categorisation of Caesarean section, which encourages a multidisciplinary approach.
- Reviewed its guidelines setting out the requirements for requesting a neonatal specialist to attend a delivery.
- Introduced a weekly Caesarean Section Audit meeting to review emergency Caesarean sections, which all specialist and junior obstetrics staff are expected to attend.

Responses to provisional opinion

Canterbury District Health Board

97. In response to the provisional opinion CDHB advised that "Canterbury District Health Board (CDHB) accepts that it breached Right 4(1) of The Code of Rights, by failing to provide services with reasonable care and skill".

98. However, it reiterated its view that the failures in this case were primarily the result of organisational failings. On behalf of CDHB, the Chief Medical Officer (CMO) made the following statement:

> "Obstetrics is internationally an area of great difficulty regarding outcomes for babies and mothers post-delivery. Clearly this results in great distress where the outcome of a poor decision or mishap during labour or delivery results in a life-long disability or loss of a child. This is precisely the situation that all involved wish to avoid. As I have indicated it is the responsibility of the provider organisation to provide the safest possible environment that supports high quality care through clear evidence based guidelines, rapid access to appropriate skilled staff and necessary resources. It must also provide and foster a culture of supportive teamwork that compensates for the human factors in decision making and execution of clinical care. It is this latter element that I feel has not been sufficiently considered in the review of this tragic case.
>
> Labour is a high risk period where there is often a need for time pressured decisions with limited opportunity for reversal if the situation deteriorates. Instrumental deliveries are particularly challenging. There have been a number of landmark cases over the years where there have been poor outcomes associated with persistence in, what can be seen with hindsight, as a deteriorating situation."

99. The CMO goes on to discuss how mistakes and human error can occur, and the importance of team work and a supportive culture and environment in counteracting those mistakes. The CMO states:

> "Whilst I cannot disagree that there is a privilege in professional registration that requires great care and exercise of skill, it is also essential to acknowledge that we are all human.
>
> … The reports [the HDC provisional report and CDHB's RCA report] read as though [Dr B] were the sole person present throughout the delivery, whereas in fact he was working as part of a team of health professionals. It seems to me that the failure was that of the organisation, i.e. the CDHB having failed to create and foster a sufficiently supportive and empowered team culture to protect the mother, child and the doctor himself, from a deteriorating set of events."

Dr B

100. On behalf of Dr B, his lawyer, Ms E, stated that "no challenge is made to the fact of a breach finding against [Dr B]".

101. However, Ms E submitted that the focus of the failures of this case should be on the organisational responsibility. Ms E stated:

> "It was not a case involving a single major error or incompetent judgement, but resulted from a series of clinical decisions made with the available information at discrete points in time which at that juncture appeared to be reasonable and in the best interests of [Ms A] and her baby, and with the informed consent of the couple. The errors therefore occurred in circumstances where [Dr B] and his team were faced with rapidly changing circumstances in a complex and dynamic environment which included informational insufficiency, and did not arise from carelessness or recklessness."

102. Ms E submitted that while Dr B accepts in hindsight that it is the consensus between the experts who provided advice on this case that "instrumental delivery could and should have been avoided", there is a variance in opinion about what a peer would have done if faced with a similar situation. Ms E refers to CDHB's view that the criteria for safe vaginal delivery were met.

103. Furthermore, Ms E submitted that while in hindsight it is acknowledged that when the decision was made to proceed with vaginal delivery this should have been done in theatre, as stated in the CDHB RCA report, accepted practice allows for delivery in either the delivery room or theatre.

104. Ms E advised that Dr B accepts that in retrospect, because he had not been accredited for rotational deliveries, despite his extensive experience performing such deliveries, he should have contacted the on-call consultant. However, Ms E highlights the fact that, at the time of these events, there was no requirement that he do so. Ms E refers to the CDHB submission in which it viewed this case as very complex, "with the single biggest factor being the lack of senior medical officer involvement", and considers that the focus should therefore be on the organisational responsibility.

105. Ms E advised that Dr B "has learned valuable lessons and implemented changes to his practice which will eliminate likelihood of any recurrence".

Opinion: Dr B

Standard of care — breach

106. Dr B was the on-call senior obstetrics registrar. At the time of these events, Dr B was considered to be a middle grade registrar, in that he was in his fourth year of training towards Fellowship of the RANZCOG, and had been working in the field of obstetrics and gynaecology for just over five years, with over three of those at the level of registrar.

107. Dr B was first involved in Ms A's care when he reviewed her, with consultant Dr D, during the morning ward round, shortly after 8am. At that stage, Ms A's labour was progressing normally, and the decision was made to continue conservative management and to monitor her progress.

108. Dr B continued to monitor Ms A throughout the day, reviewing her at 10.32am, 12.31pm and 2.51pm. At each of these reviews, Dr B reviewed the CTG trace and recommended ongoing monitoring.

109. Dr B's actions up to this point were appropriate.

110. At 4.10pm, a deceleration lasting three minutes and then a further two decelerations lasting two minutes were noted on the CTG trace. Dr B was subsequently called to review Ms A. At 5.10pm Dr B arrived to reassess Ms A.

111. Following his assessment, Dr B noted that Ms A had a mild temperature of 37.3°C and that the CTG was showing a baseline fetal heart rate of 160–170bpm and a variability of 2–5bpm. Dr B advised HDC: "I considered this to be a significant deterioration in pattern such that it was no longer reassuring of fetal condition."

112. On examination, Dr B noted that a thin rim of cervix was present anteriorly, which was pushed away with a contraction, and the fetal head had fully descended into the pelvis. Dr B then presented Ms A and Mr A with the option of a fetal blood sample being performed and, depending on the result, proceeding with either delivery or continuation of labour, or proceeding with a ventouse or forceps delivery. Dr B documented, "[F]avours instrumental now as exhausted."

Decision to proceed with delivery

113. Dr B advised that the decision to proceed with an instrumental delivery was, in his view, reasonable given the preterm labour, earlier suboptimal pain relief which led maternal exhaustion, the developing CTG changes, epidural, minor maternal pyrexia, and Baby A's head position.

114. In my view, taking into account the full clinical picture, Dr B's decision to proceed with an instrumental delivery was inappropriate. According to my obstetrics advisor, Dr Jennifer Westgate, "the FHR pattern was non-reassuring but it was not abnormal and did not merit immediate delivery of the baby". Furthermore, Dr B failed to take into account other unfavourable factors for instrumental delivery, including that the baby's head was high and it was in a transverse position, Ms A's small stature, that Ms A was diabetic, that the baby was large (from the information available to Dr B at the time, the baby was estimated to be in the 82nd percentile on a standardised growth chart), that Ms A had already had a long labour, and that this was her first pregnancy.

115. Dr B disagrees with Dr Westgate's view, advising that Ms A's exhaustion, coupled with the abnormal CTG findings and her mild pyrexia, were indications for instrumental delivery. Furthermore, Dr B considers that even taking into account Ms A's diabetes and Baby A's estimated delivery size, the decision for instrumental delivery was appropriate.

116. However, in Dr Westgate's view, although Ms A was exhausted after her long labour, vaginal delivery was not imminent, and further assessment of the fetal condition by fetal scalp sampling was indicated. Dr Westgate noted that mild pyrexia of 37.3°C is not an indication for immediate delivery. She stated, "Women in long labours with epidural analgesia can develop mild pyrexia as a consequence of being unable to regulate their body temperature while being in a warm delivery room," and noted that this is usually managed by increasing intravenous fluids and continuing close observation.

117. I accept Dr Westgate's advice that, taking into account the full clinical picture, the decision to proceed directly to an instrumental delivery was "unwarranted and unwise".

Decision to perform delivery on ward

118. It was also inappropriate for Dr B to attempt the instrumental delivery on the ward. Dr B appears to have underestimated the complexity of such a delivery, advising HDC that he made the decision to proceed with the delivery on the ward based on his belief that it "would not be unduly complicated". Furthermore, Dr B stated that "if it were not for the impaction of the shoulders as the head descended with traction, I believe this was a correct assumption".

119. However, I note Dr Westgate's advice, with reference to Dr F's report, that the decision to perform an instrumental delivery where the position of the baby is in a rotated position and high in the pelvic cavity, requires "a high level of clinical and technical skills" and that Dr B's decision to attempt such a delivery on the ward "is clearly outside long established clinical recommendations that rotational operative deliveries from the midcavity should be performed in the operating theatre". Dr Westgate explained that the reason for conducting potentially difficult instrumental deliveries in the operating theatre is to allow the fetal position to be more fully assessed, as well as the ability to quickly convert to a Caesarean section if necessary.

120. Dr Westgate considered that "the decision to perform an instrumental delivery in the birthing room fell below an acceptable clinical standard of care and the departure is severe". I accept her advice.

Delivery

121. Following the decision to proceed with an instrumental delivery, Ms A was placed in the lithotomy position, Dr B reassessed Ms A to check that she was fully dilated, and he checked the position of the fetal head. Dr B then proceeded to attach the Kiwicup to the fetal head. Dr B made five traction attempts coordinated with Ms A's contractions. The head was noted to be beginning to "crown" during the fifth traction. The ventouse cup then detached and Dr B applied forceps. The head was delivered over the next contraction. According to the CDHB root cause analysis report, a "mild" degree of shoulder dystocia was experienced, but this was quickly resolved and the delivery was then completed within one minute.

122. I accept Dr Westgate's advice, with reference to Dr F's report, that converting to a Caesarean section was "probably advisable". Dr B advised HDC that he did not consider that converting to a Caesarean section was a reasonable option. Dr B considered that there had been "adequate progress" over the first three tractions. When the cup detached after the fifth traction, he considered that abandoning the delivery at this point and converting to a Caesarean delivery "would involve certain increased morbidity for the mother with potentially more trauma to the baby and can be a formidable undertaking with the head so low in the pelvis". Furthermore, Dr B advised that the difficulty of the delivery became apparent only after the third traction attempt. He believes that the shoulder dystocia delayed the delivery by a maximum of one minute.

123. Dr Westgate advised me that "more than three pulls at an attempted instrumental delivery was associated with a 4.2 times increased risk of neonatal trauma". Dr Westgate notes that Dr B did successfully deliver the baby and in a shorter time than

it would have taken to convert to a Caesarean section. However, in Dr Westgate's view, "Just because you can deliver a baby vaginally does not mean you should." I accept Dr Westgate's advice that Dr B's decision to proceed with the instrumental delivery rather than converting to a Caesarean section when delivery was not imminent was a severe departure from accepted practice.

Supervision

124. In my view, in light of the complexity of this delivery, Dr B should have consulted the on-call consultant, Dr D.

125. Dr B advised that he did not have any concerns during the initial stages of labour. Further, because he did not perceive this to be an unduly complicated delivery, he did not consider that consultation with the on-call consultant was necessary. Dr B advised that when the delivery did become complicated, had he consulted the on-call consultant he felt that "[the consultant] would have proceeded to apply the forceps and continue as the most appropriate and timely means of delivery of the baby, as I then did". Dr B considered that because the on-call consultant was at least 5–10 minutes away, had he stopped to consult him when the delivery did become complicated, Baby A would likely have suffered further hypoxia.

126. It is the consensus of all who have reviewed this case that this type of delivery was sufficiently complicated to have warranted consultation with the on-call consultant when the decision was made to perform an instrumental delivery. I note that Dr B has since acknowledged this.

127. While Dr Westgate considers that the failure of Dr B to contact the on-call consultant in this case fell below an accepted standard of practice, I note CDHB's advice that, at the time of these events, it would not be an expectation that an experienced registrar contact the on-call consultant to discuss an instrumental delivery undertaken on the ward.

Conclusion

128. Dr B made a series of poor clinical decisions. First, he should have performed a fetal blood sample before making the decision to proceed with an instrumental delivery. Next, given all the circumstances of Ms A's presentation, including her being small in stature, type 1 diabetic, and having a large baby with the head positioned in a high, transverse position, careful consideration should have been given to the appropriateness of performing an instrumental delivery. Then, had an instrumental delivery been considered appropriate, this should have been performed in the operating theatre. All of these decisions should have been made in consultation with the on-call consultant.

129. I acknowledge that it was the expectation at the time of these events for a registrar of Dr B's experience to "act independently if comfortable within their scope of practice". CDHB considers Dr B's failings in this case were the result of this culture and the resultant absence of senior oversight.

130. I commend CDHB for its willingness to accept responsibility for the failings in this case. I agree with the following statement provided by CDHB in response to my provisional opinion that it is the "responsibility of the provider organisation to provide the safest possible environment that supports high quality care through clear evidence based guidelines, rapid access to appropriate skilled staff and necessary resources. It must also provide and foster culture of supportive teamwork that compensates for the human factors in decision making and execution of clinical care."

131. I also acknowledge that Dr B was not working in isolation, but rather as part of a team. Accordingly, as I discuss in detail below, I am critical of the culture and systems in place at CDHB at the time of these events to ensure the provision of adequate supervision and support to its staff.

132. However, I remain of the view that Dr B failed to recognise the complexity of Ms A's presentation. In my view, he had an individual responsibility to recognise the limits of his knowledge and expertise. I endorse the comment of Dr Westgate:

> "Canterbury DHB have advised that they do not believe that there was a single causative error in this case but rather that 'each of the sequential decisions were marginal and the composite outcome was poor'. This is not an unreasonable way to summarise the events and is a common finding in cases of poor outcome. However, in my view the end result was that the decision to perform an instrumental delivery in the birthing room fell below an acceptable clinical standard of care and the departure is severe."

133. As noted in Opinion 08HDC04311:[28]

> "Being held accountable for one's actions is the flipside of the privilege of registration as a health professional and of accepting responsibility for the care of patients. Accountability goes with the territory. It must be applied fairly, taking into account the context in which the health professional is working (including any 'system factors')."

134. I conclude that Dr B failed to provide Ms A with services with reasonable care and skill and breached Right 4(1) of the Code by:

- failing to assess the situation adequately, including taking a fetal blood sample;
- proceeding with an instrumental delivery without recognising the complexity of Ms A's presentation; and
- continuing with the instrumental delivery when delivery was not imminent.

135. For failing to contact the on-call consultant and making the decision to proceed with an instrumental delivery on the ward, Dr B failed to provide Ms A with services in a manner that minimised potential harm and, as such, breached Right 4(4) of the Code.

[28] Available at www.hdc.org.nz.

Care provided to Baby A

136. Dr B's involvement in the care of Baby A finished at the point that her delivery was complete and she was handed to the neonatal team. Dr B was not involved in Baby A's care postnatally.

Opinion: Canterbury District Health Board

Supervision and support — breach

137. CDHB was responsible for providing adequate supervision and support to its staff. Consultant oversight and input provides an important safety net. The complexity of Ms A's presentation warranted consultant input and, by choosing not to contact the consultant in this case, Dr B bypassed this safety net.

138. CDHB advised HDC that, at the time of these events, while senior clinical staff were always available and approachable, there was a culture whereby registrars were given a degree of responsibility, and there was an expectation that they would "act independently if comfortable within their scope of practice". The culture in place at CDHB at the time of these events therefore placed the onus on the more junior staff members to identify the limits of their expertise and ensure that they were operating within safe and acceptable margins. Although Dr B was a relatively experienced registrar, Dr Westgate advised that, in accordance with RANZCOG guidelines, this type of delivery required a high level of clinical and technical skill. I note the view of both Dr Westgate and Dr F that this situation was beyond Dr B's expertise and warranted, as a minimum, a discussion with the consultant. I also note that Dr B did not have RANZCOG accreditation for rotational deliveries, which was an indicator to CDHB that Dr B should have been provided with adequate consultant support when performing such deliveries.

139. At the time of these events, CDHB did not have any clear guidelines for consultant involvement in complicated instrumental deliveries, and had a culture that essentially placed the responsibility on more junior staff to recognise the extent of their own expertise. As this Office has previously commented:[29]

> "[J]unior doctors will inevitably find themselves out of their depth at times.[30] District health boards have a responsibility to ensure that junior doctors are adequately and appropriately supported in the event that they face a situation in which they are out of their depth.[31] This includes a safety net of vigilant senior nurses and readily available consultants, and a culture where it is acceptable and

[29] See 10HDC00419, available at: www.hdc.org.nz.
[30] See, for example, opinions 08HDC04311and 10HDC00419, available at www.hdc.org.nz.
[31] See opinion 09HDC02089, available at www.hdc.org.nz.

> commonplace for questions to be asked, to and from any point in the hierarchy, at any time.[32]"

140. In my view, CDHB had a responsibility to ensure its staff were adequately supported and guided in their decision-making. In this case, it failed to discharge that responsibility. Accordingly, I find that CDHB breached Right 4(1) for failing to provide Ms A with services with reasonable care and skill.

141. I note that CDHB accepts these criticisms. As acknowledged above, in response to my provisional opinion CDHB stated that "it is the responsibility of the organisation to provide the safest possible environment that supports high quality care …". CDHB accepts that it "failed to create and foster a sufficiently supportive and empowered team culture to protect the mother, child and the doctor himself, from a deteriorating set of events".

142. I note that CDHB has since reviewed its system and introduced a new guideline for the supervision of registrars, which requires the attendance of the senior medical officer in all cases of instrumental mid-cavity or rotational deliveries except for registrars in their final year who have been credentialled to undertake such deliveries.

Postnatal care — no breach

143. Baby A was initially sent to the postnatal ward with Ms A; however, approximately two hours after her birth, Baby A started to show unusual movements and was transferred to NICU.

144. I note the advice of my paediatric advisor, Dr Johan Morreau, that Baby A's presentation at the time of birth was not indicative of severe hypoxia, and therefore not an indication for aggressive treatment. It was therefore appropriate for her to be handed back to Ms A and monitored.

145. Dr Morreau further advised:

> "Having been through the detail of [Baby A's] neonatal care, commencing at resuscitation which occurred successfully, through to blood glucose assessments and the care of neonatal convulsions, I'm very comfortable that she was from a neonatal perspective well cared for and that any residual neurodevelopmental issues are not a result of that care."

146. Overall, guided by Dr Morreau's advice, I am satisfied that the care provided to Baby A following her delivery was appropriate.

Customised GROW chart — other comment

147. CDHB advised that it is standard practice for a customised GROW chart to be generated for women with diabetes seen in the antenatal clinics. However, there is no chart available in Ms A's clinical records. I note the submission by the senior medical officer who reviewed Ms A during the last clinic appointment (when she was 36

[32] See opinion 09HDC01146, available at www.hdc.org.nz.

weeks' gestation) that it is their belief that a customised growth chart would have been generated at this time if one was not already available. However, in light of the fact that one is not available in the records, I find it more likely than not that one was not generated.

148. I note Dr Westgate's advice that the estimated fetal weight taken from the ultrasound at 36 weeks' gestation, if plotted on a customised growth chart, would have placed Baby A's estimated weight above the 95th percentile (compared to it being in the 82nd percentile when plotted on a standardised growth chart) and should have prompted the recognition that shoulder dystocia was a risk during any discussions about vaginal delivery.

149. However, I also note Dr Westgate's view that 36 weeks' gestation was still early to be commencing detailed discussions about labour and delivery options, and that the value of GROW charts where the estimated baby size is large has not been determined. I accept Dr Westgate's advice that the absence of a customised growth chart therefore would not be regarded as falling below an appropriate standard of care.

Recommendations

150. The following recommendation made in my provisional opinion has been complied with:

- Dr B has provided a written apology to Ms A and Mr A.

151. CDHB has agreed to comply with the following recommendations:

- Provide a written apology to Ms A for the shortcomings in her care. The apology should be sent to this Office by **10 March 2014**, and will be forwarded to the family.
- Carry out an audit of all mid-cavity and rotational instrumental deliveries, assessing compliance with the new policy for mandatory consultant involvement.
- Provide a report to HDC on any adverse outcomes following mid-cavity or rotational instrumental deliveries since this incident.
- Communicate with all other DHBs in New Zealand to ensure that their policies in relation to the supervision of obstetrics registrars are consistent.

This information should be sent to HDC within three months of the date of release of this report.

Follow-up actions

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

• A copy of this report with details identifying the parties removed, except the experts who advised on this case and CDHB, will be placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix A — Independent obstetric advice

The following expert advice was obtained from a consultant obstetrician, Dr Jennifer Westgate:

> "Thank you for asking for further expert advice on this case. I have read the notes sent to me and the additional email correspondence received since I last provided preliminary comments on this case in October 2012 and February 2013. Canterbury DHB have obtained their own independent report on this case from [Dr F], an obstetrician at [another] DHB and I have been provided with a copy of that report. I am aware that the ACC has also requested its own report from [an obstetrician] but I do not have a copy of his report. I will not summarise the clinical events as these are well described already. However, I will comment on the umbilical cord gas result briefly. You have asked me to comment specifically on eight issues and I will address each in turn.
>
> **Umbilical cord gas result**
>
> Blood could be sampled from only one vessel in the umbilical cord following delivery. In these circumstances it is invariable that the vessel sampled is the single, large cord vein. This means the result of pH 7.147 with a Base Excess (BE) of 9 mmol/L and a lactate of 6.4 is a venous sample and not an arterial sample as has been described repeatedly in the documents pertaining to this case. This is important to note as it means firstly, that the arterial pH, BE and lactate will be worse and quite possibly substantially so. Secondly, these results are very low for a venous sample and indicate that the placental vascular compartment is becoming swamped by metabolic and respiratory acids coming from the baby in the cord arteries. This means that the acidemia is not fleeting but has been sustained and or severe or indeed a mixture of the two (Westgate and Rosen, 1994).
>
> I mention this because [Dr F] has commented that the baby's Apgars of 6 at 1 minute and 9 at 5 minutes and a cord arterial pH of 7.147 are not consistent with the baby being severely hypoxic/acidotic. Once we realise the cord sample is venous in origin, then it becomes clear that significant acidemia is actually very likely. I agree that a 5 minute Apgar is not consistent with a baby whose responses are obtunded by asphyxia. But it might be that the combination of fetal hypoxia significant enough to produce this level of acidemia in the cord vein, possible fetal hypotension secondary to intracerebral bleeding and further hypotension secondary to hypoxia during apnoeic episodes which accompanied seizure activity all produced significant cerebral hypoxia. The RANZCOG Statement CObs-28 is on the topic of subgaleal haemorrhage in the newborn. It points out that subgaleal haemorrhage can be very large and babies can lose a large proportion of their blood volume with resulting hypovolaemic shock. This might explain the appearances seen on the MRI performed [after the birth] which were reported as being consistent with a severe hypoxic insult.

Response to specific questions

1. CDHB have advised that a customised GROW chart would have been developed despite one not being retained on file. Please comment on the adequacy of the antenatal plan to induce labour at 38 weeks.

I was the obstetrician responsible for the (then) South Auckland Health Diabetes in Pregnancy Clinic for a number of years in the late 1990s. My experience was that Type 1 diabetics frequently experienced difficulty in obtaining tight glucose control without sustaining hypoglycaemia. Despite everyone's best efforts fetal macrosomia was a frequent occurrence. A review of [Ms A's] pregnancy record shows close supervision of her diabetes but despite this around 50% or more of her daily blood sugars were noted to be high, especially in the mid trimester. I believe that this is consistent with a disease which is difficult to control in pregnancy and is not necessarily a reflection of poor care or poor compliance by [Ms A]. However, it does explain the fetal macrosomia evident on scan. [Ms A's] sugar control did improve in the third trimester. I consider that the delivery to induce at 38 weeks was appropriate in the light of fetal macrosomia.

CDHB have advised that GROW charts to track estimated fetal weight are routinely used for women attending the Diabetes in pregnancy clinics. However, it appears that for some unknown reason [Ms A's] GROW chart was either not printed out or was not filed in the notes. I have re-read the note made by the admitting registrar when [Ms A] came in labour. The comment made was 'EFW 82nd centile [at final appointment before birth]. This is taken from the ultrasound report and supports [Dr F's] view that a GROW chart was not available in the notes. The only reference I can find to a GROW chart was in the [SMO's] post natal letter.

Customised GROW charts were introduced to help identify small babies. There is a wealth of literature about their value in these circumstances. There is some evidence that babies identified as having a birthweight of >90th centile on a GROW chart were more likely to experience adverse birth outcomes than those identified as large on the basis of absolute birthweight (Pasupathy et al, 2012). In this study the adverse outcomes were caesarean section (CS), postpartum haemorrhage, severe neonatal morbidity/mortality and admission to the neonatal unit. They did not address the specific issue of instrumental deliveries or shoulder dystocia. However, I agree with [Dr F] that identification of the EFW on the 36 weeks scan as being well above the 95th centile on a customised GROW chart should have prompted recognition that shoulder dystocia was a possibility during any discussions about vaginal delivery. This is particularly relevant for women with diabetes in pregnancy as it is well recognised that their babies have an increased risk of birth trauma due to macrosomia.

In fairness to the clinicians involved in [Ms A's] antenatal care, [Ms A] had not yet had her final few visits to the clinic prior to a planned induction at 38 weeks of gestation. My experience is that more detailed discussions about induction of labour, management of labour and delivery risks would have been covered at these visits rather than at 36 weeks of gestation. Another visit closer to 38 weeks would also have given clinicians the opportunity to clinically assess size of the baby and

whether the head was engaged or not. This information too would have informed the final decision as to mode of delivery. The fact that [Ms A] arrived in spontaneous labour at 36 and ½ weeks rather precluded these considerations.

Given that the clinical value of GROW charts in cases of macrosomia has not been determined and there are no expert recommendations on management of pregnancies with GROW chart identified macrosomia, I do not believe that the absence of a GROW chart can be regarded as falling below an appropriate standard of care.

2. The appropriateness of [Dr B's] decision to perform an instrumental delivery in the circumstances

When [Dr B] reviewed [Ms A] at 1700, the fetal heart rate pattern (FHR) was nonreassuring and she was some way from a spontaneous vaginal delivery. He himself had just pushed a lip of cervix away thus making her fully dilated at his examination. 'The baby's head was high, at the level of the spines, and was also in a transverse position. [Ms A] was of small stature and had taken over 14 hours to reach full dilation.'

[Dr B] advises that his decision to perform an instrumental delivery was due to the following observations:

a. the fetal heart rate (FHR) pattern was non reassuring

b. maternal exhaustion and [Ms A] preference for immediate delivery when she was offered the choice

c. a mild pyrexia

d. his vaginal examination findings and the fact there was some descent of the baby's head with one trial push

I will deal with each in turn.

a. I agree that the FHR pattern was non-reassuring but it was not abnormal and did not merit immediate delivery of the baby. [Ms A] was not close to vaginal delivery and therefore further assessment of the fetal condition by fetal scalp sampling was indicated.

b. It is understandable that [Ms A] would have been exhausted given her long labour and the inadequate analgesia from her first epidural. As obstetricians we frequently care for women in similar situations and usually find that when the urge to push arrives most women get a new burst of energy with the anticipation that the delivery of their baby is near. In [Ms A's] case, given her new and now effective epidural, it was quite possible that she could have slept for one or even two hours while allowing time for the baby's head to descend if the scalp sampling had shown normal lactate levels. We also need to realise that exhaustion, lack of sleep and stress impair decision making ability. There are frequently times in labours where we must coax a woman through a difficult period, even when she tells us she can't do it, she's too tired or she just wants us to 'get it out'. That is part of the art of obstetrics.

c. A mild pyrexia of 37.3 degrees Celsius was not an indication for an immediate delivery. Women in long labours with epidural analgesia can develop mild pyrexia as a consequence of being unable to regulate their body temperature while being in a warm delivery room. Mild pyrexia of this nature is usually managed by increasing intravenous fluids and continuing close observation.

d. [Dr B] reported that the baby's head was at the maternal spines, in a transverse position and that all of the baby's head was in the pelvis and none was still in the abdomen. Firstly, it is unlikely that this assessment is incorrect (sic). At station 0 to the spines there is invariably part of the fetal head still present in the abdomen. Failure to detect this may be due to a full maternal bladder, inadequate maternal pain relief to palpate adequately, maternal body habitus, occipito posterior position of the head or failure of the obstetrician to palpate for the head bimanually when performing a vaginal examination.

[Dr B] advised proceeding with a mid cavity rotational vaginal operative delivery at the very extreme of what is regarded as a mid cavity delivery. Deliveries with such a high station of the fetal head are well recognised as being both more difficult to achieve and carrying more risk of fetal trauma.

In addition to the vaginal examination findings, there were a number of other suboptimal features of [Ms A's] labour which should have been taken into consideration when determining a management plan at that point; small maternal stature (5ft 1 inch), a diabetic mother with a large baby, a long labour, in a first pregnancy which make the likelihood of a successful and safe vaginal instrumental delivery low and the likelihood of a difficult procedure high. Given these circumstances and the clinical examination findings the decision to proceed directly to an instrumental delivery was unwarranted and unwise.

Canterbury DHB have advised that they do not believe that there was a single causative error in this case but rather that '*each of the sequential decisions were marginal and the composite outcome was poor'*. This is not an unreasonable way to summarise the events and is a common finding in cases of poor outcome. However, in my view the end result was that the decision to perform an instrumental delivery in the birthing room fell below an acceptable clinical standard of care and the departure is severe.

3. The failure of [Dr B] to consult with his supervising obstetric specialist, [Dr D]

[Dr F] has succinctly addressed this point in his report and I quote: 'Both the RCOG Greentop Guidelines and the RANZCOG Statement (C-Obs 16) emphasise the need for a high level of clinical and technical skills for the decision to perform and the ability to carry out rotational mid-cavity instrumental deliveries ... As a minimum I would expect such an instrumental delivery to be discussed with the consultant and for a patient with this level of risk I think it is advisable for the procedure to be supervised by the on call consultant even if the registrar is experienced.'

Canterbury DHB have advised that under their previous guidelines they would not insist that an experienced registrar call the on call specialist to discuss an

instrumental delivery undertaken in the delivery room. This places the entire responsibility on the registrar themself to ensure that they are operating within safe and acceptable margins. In this case the literature, the guidelines and the opinions of at least two independent reviewers are that the decision to proceed with an operative delivery in the room was beyond those margins. There are many situations in obstetrics where it is difficult to know exactly the best course of action. Discussion of such cases with a suitably experienced colleague is to be encouraged and is often very helpful. It is not clear to me whether [Dr B] felt an unspoken pressure not to bother the specialist on call or whether he felt that asking for advice might be seen as a lack of confidence or ability in his case or whether he simply missed some of the complexities of the case which should have indicated more caution was required.

The failure of [Dr B] to consult with his supervising obstetric specialist, [Dr D] fell below an acceptable level of clinical practice. In view of the DHB comments, failure to consult may have been influenced by the culture in the unit at the time and was clearly not a deliberate attempt to exclude the consultant so he could carry out his own management plan. [Dr B] genuinely believed that he had the OK to do what he thought best and in view of that his departure is at the mild end of the scale.

4. The adequacy of oversight and supervision provided by [Dr D]

[Dr D] performed a ward round [in the morning]. He reviewed [Ms A] and wrote in her notes. [Dr B] was a middle grade registrar with a fair level of experience and it was appropriate for [Dr D] to expect that he would be able to manage [Ms A's] labour without close oversight. In my view, [Dr D] was entitled to expect [Dr B] to consult him regarding his plan for operative delivery at 1700 hours. [Dr D's] supervision of [Dr B] was appropriate given that [Dr B] was a middle grade registrar.

5. [Dr B's] decision not to perform a fetal blood sample prior to proceeding with an instrumental delivery

[Dr F] and I are both in agreement in our assessment of the CTG. The FHR pattern overall was reassuring. There were two broad decelerations lasting two minutes following the second epidural insertion which is not an uncommon occurrence. Over the next 30 minutes the FHR pattern improved and by 1700 there was a baseline of between 160 to 170bpm, with some undulation of the baseline and occasional mild variable decelerations. [Ms A] had a slightly elevated temperature which could have in part explained the mild tachycardia. The FHR pattern was not reassuring but did not merit an immediate operative delivery. Given the high station and position of the fetal head the appropriate management would have been to perform a fetal blood sample and if it was normal wait to allow descent of the fetal head further into the pelvis. The concept of waiting for descent of the fetal head in the second stage when an epidural is used is now common place in obstetrics.

The key factor here seems to me to be that [Dr B] did not appreciate the possible risks of embarking on this operative vaginal delivery. Risk not just of being

unable to deliver the baby but more importantly, risks of damage to the baby either during the delivery process or due to shoulder dystocia. The correct management was fetal scalp sample and wait if normal, not fetal scalp sample and then deliver instrumentally if normal.

6. [Dr B's] decision to perform the instrumental delivery on the ward.

This decision is clearly outside long established clinical recommendations that rotational operative deliveries from the midcavity should be performed in the operating theatre.

There are two reasons for conducting a potentially difficult instrumental delivery in the operating theatre with the patient ready for an immediate caesarean section. The first is the dense spinal or epidural block allows thorough assessment of the position of the fetal head and assessment of how much head remains in the abdomen. The extra information obtained by this examination is an important part of the decision making process. It is not uncommon to discover that there is far more of the head still in the abdomen than initially realised and it becomes clear that an attempt at vaginal delivery is inappropriate.

The second is that if the baby's head does not come down as expected during the attempt at delivery the vaginal delivery can be abandoned and a CS performed immediately without undue delay for the mother and baby or embarrassment for the obstetrician.

The departure from acceptable practice is severe.

7. [Dr B's] decision to proceed with the instrumental delivery rather than converting to a Caesarean section

[Dr B] decided to continue with the ventouse delivery even when it was clear that delivery was not imminent after three contractions. [Dr F] believes that given the circumstances 'changing to delivery by caesarean section was probably advisable.' More than three pulls at an attempted instrumental delivery was associated with a 4.2 times increased risk of neonatal trauma even when the delivery was successful (Murphy et al, 2003).

[Dr B] stated that he continued with the delivery because he believed that he would still be able to get the baby out in a shorter time than it would take to perform a caesarean section. [Dr B] was very confident in his ability to deliver the baby and actually, he was correct, he did get the baby out vaginally. If the only measure of a successful instrumental delivery was that the baby comes out of the vagina then his delivery was a success.

In his response to the Commissioner, [Dr B] stated that he judged that this delivery would not be '*unduly complicated*' and '*if it were not for the impaction of the shoulders as the head descended with traction, I believe that this was a correct assumption*'. This comment suggests to me that [Dr B] is attributing [Baby A's] subgaleal and intracerebral haemorrhages and her subsequent neurological morbidity to the occurrence of shoulder dystocia. This is both incorrect and quite frankly disturbing. The degree of shoulder dystocia encountered was described as 'mild' by the CDHB RCA Report and I quote '*Registrar B's recollection confirms*

that any difficulty with the anterior shoulder was resolved quickly and with the sole use of McRobert's manoeuvre, therefore the shoulder dystocia would be more accurately described as "mild".' Mild cases of shoulder dystocia are not associated with intracranial haemorrhage.

[Dr B's] skill with the mechanics of a ventouse delivery was such that he did manage to successfully extract this baby from the pelvis. However, it seems that he did not consider the effect on the cranial blood vessels of a 36 and 1/2 week baby of being pulled through the entire length of the vaginal cavity and the previously unstretched paravaginal tissues of a primigravida solely with traction on its scalp for 15 minutes.

The reasons that instrumental delivery guidelines have been developed is to prevent or minimise fetal and maternal morbidity and mortality associated with instrumental deliveries. The introduction of the ventouse was anticipated to be safer for both mother and baby but with more widespread use adverse events came to light. In 1998 the FDA issued an advisory regarding the possibility of two major life-threatening neonatal complications following ventouse deliveries: subgaleal haematoma and intracranial haemorrhage (Wegner and Bernstein, 2013). As mentioned already, RANZCOG has a statement specifically about subgaleal haemorrhages (CObs 28). [Baby A] suffered from both of these complications and they were directly attributable to her ventouse delivery. Just because you can deliver a baby vaginally does not mean you should.

The departure from accepted practice is severe.

8. The adequacy of the changes implemented at CDHB following this incident

CDHB have advised the Health and Disability Commissioner that they have introduced a new Guideline for the Supervision of Registrars which mandates the presence of the Senior Medical Officer (SMO) on call at all mid or rotational deliveries except for trainees in their final year who have been credentialed to undertake such deliveries without supervision.

All Kiwi Cup ventouse devices used at CDHB now have the Traction Force Indicator. The choice of Delivery Suite or Theatre for instrumental deliveries has been debated and is at the discretion of the attending SMO. This is acceptable.

Appropriate recommendations and guidelines have been established. The next objective will be to ascertain the level of compliance over time.

J Westgate FRANZCOG, DM
Obstetrician and Gynaecologist

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Appendix B — Independent paediatric advice

The following expert advice was obtained from a consultant paediatrician, Dr Johan Morreau:

"RE: Advice for the Commissioner Johan Morreau

[Baby A] — Canterbury District Health Board

Thank you for your letter dated the 4th October, and subsequent letter dated 5th November 2012 regarding the above complaint.

I have had opportunity to read in sequence:

1. Summary Letter dated 4th October 2012
2. Summary letter dated 5th November 2012
3. The family complaint dated […]
4. Relevant HDC follow up conversations
5. ACC Treatment Injury Claim
6. [Ms A] Obstetric notes — with focus on (a) antenatal issues, (b) labour and delivery
7. [Baby A's] neonatal notes
8. The Canterbury District Health Board Root Cause Analysis Report

I understand that this is preliminary advice regarding whether there is indication to progress the complaint to more detailed assessment, and note that further preliminary reports have been requested from maternity colleagues also.

From the above my observation is that [Ms A] was well cared for through her pregnancy, that her Type I Insulin dependent diabetes was well controlled, and that appropriate plans were put in place for her delivery. [12 days prior] to delivery her HbA1C was 45mmol/l (6.3%). Following this [Ms A] went in to spontaneous labour [at 36 weeks and 6 days]. [Baby A] had been documented as on the 82nd centile for weight [at her final clinic appointment]. The management of her labour and delivery I anticipate will be assessed by the Obstetrician reviewing this case.

Of significance from a neonatal perspective is that preventative (prophylactic) antibiotic — Benzyl Penicillin was commenced at [0455 hours]. At a time when labour was not progressing an epidural was inserted. Because of concerns regarding foetal distress, an instrumental delivery was carried out, culminating in delivery at [1741 hours]. At this time a 3.7kg [Baby A] was delivered following significant shoulder dystocia and instrumental (Ventouse and Wrigley's forceps lift out) delivery. I understand that she was handed to the neonatal registrar at delivery [and] required initial respiratory resuscitation (5 rescue breaths and 2 minutes of positive pressure ventilation) before then being well enough to be placed 'skin to skin'.

Apgars were 6 at 1 minute, 9 at 5 minutes, 10 at 10 minutes, and a cord pH was 7.14, base deficit -9.9 and cord lactate 6.4.

Comment: These are consistent with the resuscitation and recovery described. Cord pH and base deficit of this level, with associated Apgars, would not ordinarily be indicative of Birth Asphyxia, associated with significant hypoxic damage and would not be an indication for immediate aggressive neonatal care, e.g. head cooling approaches as it would be anticipated that a baby would function normally neurologically following these recordings.

The birth time was 1741 hrs. [Baby A's] first feed was at 1900 hours. There is no baby blood sugar documented at that time though pre feed blood sugars had been requested.

A neonatal examination was carried out at 2000 hours and it was documented that [Baby A] had a cone shaped head, swelling in the posterior region of the head (consistent with ventouse delivery), a red forceps mark to the L eye region and bruising to the left forearm. Mother and baby were transferred to the Maternity ward at 2100 hours (3 hours 20 minutes of age) at which time a blood sugar level was normal at 3.0.

Further neonatal review by the on duty Nurse Practitioner occurred at 2315hrs, ie, at around 5½ hours of age. At this time [Baby A] had a temperature of 37.9, had had further blood sugars that were satisfactory, ie, glucose of 3.8, which would tend to go along with the very satisfactory management of diabetes in pregnancy and which almost certainly means that [Baby A's] neurological issues are not glucose or maternal diabetes related. At this time of assessment there were obvious generalized abnormal jerky movements which were considered to be convulsion at a time when baby also had a high pitched cry and was peripherally cool, but with oxygen saturations of 100%, breathing spontaneously in air. [Baby A] was immediately transferred to the Neonatal Intensive Care Unit for management of convulsions.

Following on from this [Baby A] was treated appropriately with (a) intravenous fluids, (b) intravenous Phenobarbitone, in appropriate dosage. Relevant antibiotics, i.e. Amoxil and Gentamicin, were commenced in anticipation of infection being a possible basis for this.

She was carefully managed for an inappropriate ADH secretion issue (an almost inevitable consequence of the cerebral issues being dealt with) the situation was controlled and slowly stabilised.

An MRI performed on day 5 showed 'extensive subgaleal haemorrhage, subarachnoid haemorrhage, mild dependent R ventricular intraventricular haemorrhage, multifocal posterior circulation acute infarcts, ? embolic'.

On day 5 [Baby A] was also assessed by [Dr G], Paediatric Neurologist, who recommended discontinuation of Phenobarbitone — he assessed that convulsions would no longer be an immediate issue for her, though was concerned at the significance of the MRI findings and the potential for significant neurological disability being an outcome from this of significance and potential optimism to family was the fact that once [Baby A] came off the Phenobarbitone, her

behaviour, feeding etc improved significantly. This has important implications for cognition (understanding).

Comments

I would have anticipated early blood sugars being performed in order to be confident that hypoglycaemia was not an issue. The subsequent (later) blood sugars were however very satisfactory, suggesting that hypoglycaemia was unlikely to have been an issue for [Baby A], i.e. not material re the outcomes, but where I would have preferred to have seen more easily the relevant documentation of testing. Similarly, while family describe her as having been jerky in those 5 hours prior to transfer to NICU, I did not see any midwifery or other comment regarding this time period. There had however been relevant neonatal service engagement (including effective resuscitation) from the time of delivery.

Having been through the detail of [Baby A's] neonatal care, commencing at resuscitation which occurred successfully, through to blood glucose assessments and the care of neonatal convulsions, I'm very comfortable that she was from a neonatal perspective well cared for and that any residual neurodevelopmental issues are not a result of that care.

Dr Johan Morreau

Consultant Paediatrician"