CORONER'S COURT OF THE AUSTRALIAN CAPITAL TERRITORY

Matter Title:	**Inquest into the death of Baby X (a pseudonym)**
Citation:	**[2024] ACTCD 4**
Decision Date:	11 September 2024
Before:	Coroner Archer
Findings:	See [51]–[52], [53]–[57]
Catchwords:	**CORONIAL LAW** – death of a baby aged two days – injuries sustained during a prolonged labour – disagreement regarding position of baby before birth – use of ultrasound to identify the position of the baby – delayed recognition of the subgaleal haemorrhage – public safety issues adequately addressed by changes to Canberra Health Service policies and procedures – decision not to conduct a hearing
Legislation Cited:	*Coroners Act 1997* (ACT) ss 3BA, 13, 34A, 52, 55, 64
Counsel Assisting:	X King
File Number:	CD 164 of 2019

CORONER ARCHER:

1. Baby X was born at the Canberra Hospital ("TCH") the morning of 12 October 2017. Baby X's birth mother was LX. It was her first pregnancy, and Baby X was conceived by in-vitro fertilisation. Baby X's non-birth mother was LI.

2. Baby X died in the Neonatal Intensive Care Unit at TCH ("NICU") on 14 October 2017, two days after he was born. As is developed further in these reasons, Baby X died from injuries sustained during his birth, which, I find, were inadequately treated in NICU. The inadequacy of his treatment contributed to the cause of his death.

PART 1 – BACKGROUND

Jurisdiction

3. Baby X's death was not immediately reported to the Coroner.

4. On 19 July 2019, a letter from Canberra Health Services ("CHS") was received by the Chief Coroner, notifying the Court of Baby X's death. An investigation was directed by the Chief Coroner, noting that aspects of Baby X's treatment in NICU involved him undergoing a "procedure". Those procedures included the resuscitation (involving ventilation and the administration of fluids and blood products) that occurred after his birth. The Chief Coroner formed the view that the circumstances in which Baby X underwent those procedures should be "better ascertained": see s 13(1)(d) of the *Coroners Act 1997* (ACT) ("the Act").

5. The jurisdiction of a Coroner is limited to the examination of a "death". For there to be a death, there must be a "life" in being. There is no doubt that Baby X was alive after his birth. I am satisfied that the jurisdiction of the Court extends to the consideration of events that occurred before his birth, being matters relevant to the circumstances in which the procedures described at [4] were carried out.

6. Having assumed jurisdiction in relation to Baby X's death, a Coroner was required to hold an inquest into the manner and cause of his death and make the findings required by s 52 of the Act. That section of the Act relevantly provides:

> **52 Coroner's findings**
>
> (1) A coroner holding an inquest must find, if possible—
> (a) the identity of the deceased; and
> (b) when and where the death happened; and
> (c) the manner and cause of death; and
> (d) in the case of the suspected death of a person—that the person has died.
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>
> (4) The coroner, in the coroner's findings—

(a) must—
(i) state whether a matter of public safety is found to arise in connection with the inquest or inquiry; and
(ii) if a matter of public safety is found to arise—comment on the matter.

Decision Not to Conduct a Hearing

7. In arriving at the findings a Coroner is required to make, I have a discretion as to whether to hold a hearing (s 34 of the Act). I can dispense with a hearing in the circumstances and according to the processes set out in s 34A of the Act:

> **34A Decision not to conduct hearing**
>
> (1) A coroner may decide not to conduct a hearing into a death if, after consideration of information given to a coroner relating to the death of a person, the coroner is satisfied that—
> (a) the manner and cause of death are sufficiently disclosed; and
> (b) a hearing is unnecessary.
>
> (2) A coroner must not dispense with a hearing into a death of a person, if the coroner has reasonable grounds for believing the death is a death in care or death in custody.
>
> (3) A coroner who decides not to conduct a hearing into a death must give the Chief Coroner and a member of the deceased's immediate family written notice of the decision, including the grounds for the decision.

8. If a decision not to conduct a hearing is made by a Coroner, an application can be made to the Chief Coroner for a review of that decision (s 64 of the Act).

9. I received representations from LX and LI, Baby X's parents, that I should conduct a hearing.

10. I formed the view that the holding of a hearing was unnecessary. I provided Baby X's parents and the Chief Coroner with written notice of that decision and my reasons for it. In summary, it was my view that:
    (a) there is sufficient evidence available to me that allows me to make the findings that are required by s 52;
    (b) most of that evidence is not subject to contest;
    (c) the only real issue in contest is the positioning of Baby X's head before his birth (details of which are developed below). The resolution of that issue is not necessary to allow me to make findings as to the manner and cause of Baby X's death; and
    (d) so far as the circumstances of the injuries sustained by Baby X during the birthing process go beyond a possible error in clinical judgment and give rise to a matter of public safety, those concerns of public safety have been adequately

addressed by the changes made by CHS to relevant process and procedures: see [55]–[57].

11. On 4 April 2024, LI and LX made an application to the Chief Coroner to request a review of my decision not to conduct a hearing. Pursuant to s 64(2) of the Act, the Chief Coroner requested that I reconsider my decision. After reconsidering my decision, I notified the Chief Coroner that I remained of the view that a hearing was unnecessary in the circumstances. The Chief Coroner, having had regard to the material gathered in this inquest, was not satisfied that a hearing should be conducted. Written notice of the Chief Coroner's decision was provided to the applicants, LI and LX, on 12 April 2024.

Evidence

12. The findings that follow are made based on the following material received by me during the inquest:

    (a) Expert material

    - Report by Professor Andrew Korda, dated 25 August 2020;
    - Email from Professor Korda, dated 31 July 2022;
    - Report by Professor Mike O'Connor, dated 23 July 2020;
    - Report by Professor Simon Mitchell, dated 31 August 2020;
    - Statement by Associate Professor Boon Lim, dated 14 April 2023;
    - Statement by Dr ID, dated 14 April 2023; and
    - Final Post-Mortem report, Dr Renn Montgomery and Dr NG, dated 8 January 2018.[1]

    (b) Treating clinicians

    - Dr FL (Obstetrics and Gynaecology Registrar), unsigned but taken on 21 March 2021; and
    - Dr GC (on-call Consultant Obstetrician), dated 27 September 2023.

    (c) Reviews and procedures

    - Root Cause Analysis Investigation Report, dated 15 February 2018;
    - Challis & Goodfellow External Review, dated 2 February 2018;
    - Action Statement OG Department Meeting on 26 September 2017;
    - Table of recommendations actioned;
    - Canberra Health Service Procedure, *Labour and Birth: Care during First, Second, Third and Fourth Stage*, No CHS21/320, issued 25 May 2021;

[1] As Baby X's death was not initially referred to the Coroner, an autopsy was not ordered by the Coroner. An autopsy was performed on 18 October 2017 at TCH by Dr Renn Montgomery and Dr NG.

- Canberra Health Service Guidelines, *Assessment of the Newborn*, CHS22/368, issued 4 October 2022; and
- The CHS Clinical Procedure: *Neonatal Neurology* issued *25 October 2017 CHHS 17/244.*

(d) Medical records from TCH and CHS

Procedural History

13. Baby X's death was referred to the Chief Coroner on 19 July 2019. The conducting of the inquest was assigned to Coroner Peter Morrison. The case was amongst a significant collection of older inquests that were handed to me when I became the Territory's "dedicated coroner" in March of 2022.

14. The report of Professor Korda was requested by the Coroner on 13 July 2020. His report was received on 3 December 2020.

15. After Baby X's death, proceedings were brought in the ACT Supreme Court by Baby X's parents. I was advantaged in my investigation from having access to the reports of Professors Mitchell and O'Connor, which were prepared in the context of that litigation.

16. The inquest obviously touched upon the interests of several people and entities: Dr FL (an Obstetrics and Gynaecology Registrar, who attended upon Baby X's birth), Dr GC (the on-call Consultant Obstetrician, who was consulted during the birthing process and became actively involved in Baby X's delivery), and CHS, who had overall responsibility for the operation of TCH.

17. On 8 May 2023, Counsel Assisting the Coroner, Ms King, wrote to LX and LI's solicitor and the ACT Government Solicitor ("ACTGS"). A copy of that letter was subsequently sent to the solicitor for Dr GC on 6 September 2023. It was a shared understanding that ACTGS would represent the interests of Dr FL, who was, at the relevant time, an employee of the Territory. The letter of 8 May 2023 set out the submissions that Counsel Assisting was intending to make in respect of the facts relevant to the findings required by s 52 of the Act in some details. Parties were invited to indicate whether a hearing would be required in light of those submissions. At the time of that letter, a statement had not been obtained from Dr GC.

18. Submissions were received on behalf of LX and LI, dated 13 June 2023. They were signed by Ms Whalan SC and Mr Jullienne. The submissions expressed agreement with the matters put by Counsel Assisting, save for "factual deficiencies with respect of the instrument delivery." Those deficiencies were said to affect the proper determination of the manner of Baby X's death and "obscure the public health and safety features of what

occurred prior to and at the time of Baby X's delivery." It was submitted that a primary issue, in that context, was the decision-making surrounding the determination of whether Baby X's head was occipito anterior ("OA") or occipito posterior ("OP"). The misdiagnosis of the position of Baby X's head was, as it was submitted, an important factor in causing a failed vacuum delivery, which was the main cause of the subgaleal haemorrhage that contributed to the cause of Baby X's death. The submissions called for the Coroner to obtain a statement from Dr GC and to require Dr FL to answer more directly how she came to her diagnosis as to the orientation of Baby X's head, and what the precise details of her discussions with Dr GC were as to that issue.

19. Subsequently, a statement from Dr GC was obtained by the Court, through a solicitor engaged to act on her behalf. The statement indicated that, in Dr GC's view, a hearing was not required. The statement maintained the position already understood, that Dr GC was of the view that Baby X's head was in the OA position.

20. Dr GC's statement was provided to ACTGS and the solicitors for Baby X's parents on 11 November 2023. Further submissions from the parents, dated 14 November 2023, were received by the Court. Again, it was submitted that the "Primary Factual Issue" (that is, the orientation of Baby X's head) had to be resolved for the findings required by s 52 to be made. The resolution of that issue, as it was submitted, could only be made after a hearing had been conducted and relevant witnesses had been called.

PART 2 – THE CIRCUMSTANCES SURROUNDING BABY X'S BIRTH AND TREATMENT POST-BIRTH

21. I summarise the features of Baby X's birth that are significant to my findings.

22. Baby X was conceived by IVF. LX's due date was 10 October 2017. The pregnancy was unremarkable. On 30 September 2017 (38+4 weeks gestation), LX presented to TCH with early contractions. An examination of LX was conducted. No obvious abnormalities were observed. LX was sent home and an induction of labour was planned at 40 weeks gestation.

23. On 11 October 2017, LX was admitted to TCH for induction of labour. Cervidil was administered at 1210 hours. Cardiotocography ("CTG") was performed at 1500 hours, 1845 hours and 2020 hours, all of which showed normal results.[2] LX's membranes ruptured spontaneously at 2045 hours. A vaginal examination commenced at about

[2] Cardiotocography (CTG) is a non-invasive foetal monitoring technique used during pregnancy to monitor foetal heart rate and uterine contractions.

2245 hours. The examination was stopped at LX's request. The position of the baby was not able to be assessed.

24. Dr FL, an Obstetrics and Gynaecology Registrar, accompanied by Dr E, also an Obstetrics and Gynaecology Registrar, conducted an examination of LX, including a vaginal examination, at about 2350 hours. The medical records suggest that Dr FL may have been told that the baby was in the OP position. Dr FL, in her statement, said that she was unable to recall how the issue of the baby's position was raised.

25. At 0300 hours on 12 October 2017, a vaginal examination was conducted by a midwife. Her notes indicate that she found the cervix to be fully dilated and there was moderate caput.[3] She also found that the baby's head was in an OP position.

26. At 0620 hours, Dr FL and Dr E returned to examine LX. The vaginal examination showed the cervix to be fully dilated with the baby's head in a deflexed OP position. Syntocinin was administered at 0330 hours, and LX began pushing at 0410 hours.

27. Following that examination, Dr FL spoke with Dr GC, the Consultant Obstetrician. The doctors have different recollections of the conversations that then took place. Dr FL said that she told Dr GC that the baby was in the OP position, and that they then entered LX's room. Dr GC then conducted her own vaginal examination and spoke to Dr FL outside the room and said that the baby was in the OA position. Dr FL recalls challenging Dr GC, who, in Dr FL's words, "dismissed" her.

28. It is agreed that Dr GC recommended that Dr FL attempt a vacuum extraction in the labour ward under her supervision. Dr GC' recollection is that after her examination, she (Dr GC) drew a diagram illustrating how the suction cup should be placed on the baby's posterior fontanelle. Dr GC has no recollection of Dr FL stating her belief that the baby was in the OP position. Dr GC says she accepts that it may have been stated. If it had been stated:

> "it was not stated in a way that caused me to consider this was a strongly held belief and there was no indication that Dr FL was unhappy about applying the vacuum cup based on an OA presentation… there was no demurrer to my assessment... If Dr FL had questioned the lie firmly and asked if we should confirm this I would have been happy to do an ultrasound."

29. A Kiwi vacuum cup ("vacuum cup") was sourced, and Dr FL placed the cup on Baby X's head. Dr FL recalls Dr GC advised her in respect of the position for placement and told

[3] Swelling of the scalp in a newborn. It is most often brought on by pressure from the uterus or vaginal wall during a delivery. Swelling and bruising usually occur on the top of the scalp where the head first enters the cervix during birth.

her (Dr FL) to "just avoid the caput." Dr FL said the vacuum cup was placed by her "on the basis that the baby was in an OP Position." Dr FL recalls that she had one pull of the vacuum cup, without much descent being achieved. Dr GC then examined LX again and then they both attempted to deliver using the vacuum cup, again without success. Dr GC concedes her hands were involved in this second pulling attempt. Dr FL's recollection is that between the two attempts, "there was no pop off, though suction was lost."

30. Dr GC then advised that LX would need to be taken to the operating theatre to try forceps delivery and proceed to a caesarean section if required. In theatre, one attempt was made to deliver Baby X with forceps. Dr FL applied the forceps and both doctors pulled without achieving descent of the head. As it was clear that the head was severely impacted, Dr GC determined that a caesarean section was required. Dr FL created a standard incision and used her hands, without success, to disimpact the head. Dr GC then took over. She used her hands to disimpact the head, though again without success. A nurse inserted her hand vaginally, but the head could still not be disimpacted. Dr GC extended the incision. One of Baby X's arms was freed. Dr FL said that she took over "as the primary operator" and, with the assistance of a nurse, Baby X was born at 0738 hours on 12 October 2017. Professor Korda's opinion, on the basis of the medical records, was that it took about 18 minutes to deliver the baby's head. It is highly likely that Baby X was deprived of oxygen for a period during this process.

31. No notes were made by clinicians of Baby X's position during the caesarean section procedure.

Post-birth Treatment

32. Baby X was born moribund with Apgar scores of 0 at 1 minute, 2 at 5 minutes, 3 at 10 minutes, 3 at 15 minutes, and 4 at 25 minutes of life. He was taken to NICU for treatment. He was resuscitated (by way of mask ventilation and CPR) and then intubated. At 10 minutes, Baby X was noted to have fixed dilated pupils unresponsive to light. It took him 24 minutes to breathe spontaneously. The diagnosis soon after birth was of Hypoxic Ischaemic Encephalopathy ("HIE").[4]

33. Significantly, during the birthing process, Baby X suffered severe injury to his scalp, causing a large subgaleal haemorrhage.[5] The subgaleal haemorrhage was detected by

[4] Hypoxic Ischemic Encephalopathy (HIE) is a limitation of oxygen and blood flow around the time of birth. HIE causes brain injury. Other terms for HIE include birth asphyxia, perinatal asphyxia and neonatal encephalopathy.
[5] Subgaleal haemorrhage is an accumulation of blood in the subgaleal space.

Dr UD, the senior staff neonatal paediatrician, at 1515 hours, when Baby X went into cardiac arrest. It was only then (once the subgaleal haemorrhage had been detected) that Baby X had started to receive fluid transfusions, including blood products. The consequence of the delayed recognition of the subgaleal haemorrhage is addressed below.

34. A process of recording scalp examinations using a form called the 'neonatal scalp examination record' did not commence until 1700 hours on the 12 October 2017. Blood gases were performed an hour or so after birth, but they were not repeated. Cooling therapy (commonly employed after birth to achieve target temperatures) was used. Cooling therapy is contraindicated in the context of significant blood loss (by virtue of the subgaleal haemorrhage sustained by Baby X).

35. At 1445 hours on 13 October 2017, an MRI scan was done, which showed a 1.7cm subgaleal haematoma and multiple acute infarcts in both cerebral hemispheres and ischemia in the basal ganglia.

36. Baby X's poor prognosis was discussed with his parents. He was extubated and passed away at about 2127 hours on 14 October 2017, at age 2 days and 14 hours.

Autopsy Findings

37. The following significant features were observed at autopsy:

External Head

(a) Circular ecchymosis over the left frontal scalp, which appeared to be a mark created by ventouse[6] application.[7]

(b) Associated extension around the left orbit, left pre-auricular and post-auricular regions.

(c) Mild extension to the right side of the scalp.

(d) Marked left peri-orbital oedema.

Scalp

(e) Extensive massive subgaleal haemorrhage (involving the entire skull).

Internal Organs

[6] Vacuum extractor.

[7] The autopsy report commented that "subgaleal haematoma occurs when scalp tissue detaches from the skull bone because of effects of applied suction or by the tangential shearing of the scalp from the skull…. Due to lack of containing membranes or boundaries, there is a large potential space for blood to accumulate. This level of blood loss may principate hypovolaemic shock, disseminated intravascular coagulation (DIC) metabolic acidosis and death. The accumulation tends to be gradual and may not become clinically apparent until hours to days post-delivery".

(f) Moderate to marked congestion of most organs.

Brain

(g) Area of extensive acute infarction within the left parieto-occiptal lobe.[8]

(h) Other areas showed signs of microscopic infarction.

38. The final post-mortem report concluded that:

> "There are two pathologies present in this case: Intrapartum asphyxia causing severe hypoxic encephalopathy and massive subgaleal haemorrhage with DIC.[9] Both occurred on background of prolonged/obstructed labour. Both are interlinked pathologies and the precise explanation of which pathology occurred first leading to subsequent events of multi organ failure is not possible. The sequence of events evolved acutely, and no chronic fetal or placental causes are identified."

Expert Evidence

39. Professor Andrew Korda, Professor of Obstetrics and Gynaecology, provided a report dated 25 August 2020, at the request of Coroner Morrison. He did not have available to him the other expert reports that are referred to below. Professor Korda reviewed the records of Baby X's birth. He relevantly concluded that:

(a) The attempted vacuum extraction and the attempted forceps delivery were performed appropriately and abandoned appropriately.

(b) The difficulty in disengaging the severely impacted head during the caesarean section led to a prolonged period of hypoxia, which led to the hypoxic ischaemic encephalopathy and the subgaleal haemorrhage.

(c) The extent of the injury observed at autopsy was consistent with the 18 minutes of hypoxia sustained during the difficult delivery.

(d) There was an unreasonable delay in performing the caesarean section.

(e) The incision used initially during the caesarean section was inadequate.

(f) There may have been possibilities surrounding moving to a general anaesthetic to encourage uterine relaxation that were not taken up.

40. Professor Korda did not analyse the impact of the injuries observed after birth, nor the treatment provided to Baby X in NICU. The report proceeded on the assumption that Dr GC had confirmed that Baby X was in the OP position, when in fact (she had not confirmed) that was not so. This was brought to his attention on 22 July 2022. He maintained his view that the baby was in the OP position.

[8] The report noted that "there [was] definitely evidence of underlying severe intrapartum asphyxia… Due to the prolonged obstructed labour, the duration and severity of organ hypoxia was prolonged and this was most evident on brain examination, which showed hypoxic encephalopathy".
[9] Disseminated intravascular coagulation.

41. Professor Mike O'Connor, Obstetrician and Gynaecologist, prepared a report for Baby X's parent's lawyers, dated 7 September 2020. He relevantly opined that:

(a) Baby X died from severe HIE, as well as the consequences of a severe subgaleal haemorrhage.

(b) The OA position is the normal position of a baby's head. The OP position is more frequently associated with prolonged labour, birth complications, and associated adverse neonatal outcomes.

(c) Baby X was "almost certainly" in the OP position, as found by Dr FL and the attending midwife.

(d) The autopsy showed an ecchymoses over the frontal region of Baby X's skull, showing where the vacuum cup was placed. The position of the ecchymoses confirms that the vacuum cup was not applied correctly (it should be over the occiput).

(e) The baby's head was deflexed, causing the presenting foetal skull diameter to be larger than normal.

(f) The effect of the misplacement of the cup was to draw the head further into deflexion, and thus increasing the foetal skull diameters presenting to the pelvis.

(g) Incorrect placement of suction cups has been associated with the production of a subgaleal haemorrhages, as it had in this case.

(h) Use of an ultrasound would have resolved any dispute about the baby's position.

(i) Use of a suction cup would have been indicated if the head was in the OP position, provided it was correctly placed.

(j) Dr FL applied the suction cup to the fontal region of the head instead of the occiput because her diagnosis of the baby's position "was overruled" by Dr GC.

(k) Baby X would have been delivered by vacuum if the baby's position had been correctly diagnosed.

(l) The attempted vacuum delivery came too late in the birthing process. It should have occurred in the theatre to facilitate a quick transition to caesarean section.

(m) Dr GC should have elected to perform an emergency caesarean after the vacuum had failed twice.

(n) The recognition of the subgaleal haemorrhage was delayed. If Dr UD (who eventually diagnosed the subgaleal haemorrhage) had been present at birth, it is more probable than not that the subgaleal haemorrhage would have been detected and appropriately treated (with blood products) then.

42. Professor Simon Mitchell, Consultant Neonatologist, examined the evidence around the subgaleal haemorrhage. He concluded that:

    (a) There was evidence that suggested Baby X sustained a severe subgaleal haemorrhage at the time of delivery.

    (b) Photographs of Baby X taken at 0805 hours on 12 October 2017 (27 minutes after birth) show extensive bruising and soft tissue swelling to the scalp. This appearance was a clear sign of a significant subgaleal haemorrhage.

    (c) Blood gases taken at one hour of age showed significant metabolic acidosis, which may have been partly due to the hypoxic-ischaemic insult around the time of delivery, but also contributed to by the extent of the blood loss from the subgaleal haemorrhage.

    (d) The failure to repeat blood gas until 5.5 hours later led to a failure to recognise the persistence of the severe metabolic acidosis and a failure to administer appropriate blood/blood product transfusions. It also led to incorrect treatment being administered, notably therapeutic cooling.

    (e) Baby X's ultimate collapse due to hypovolaemic shock should have been avoided.

    (f) The hypoxic injury suffered by Baby X was attributable to the prolonged hypoperfusion insult (cerebral blood flow being compromised by the large blood loss) suffered after birth, rather than any hypoxic-ischaemic insult prior to delivery.[10]

    (g) Baby X would likely have survived and avoided most of his neurological injury if the subgaleal haemorrhage had been identified and appropriately managed.

43. Reviews of the reports of Professors Mitchell and O'Connor were conducted on behalf of CHS by Dr ID, Paediatrician, and Professor Boon Lim, Senior Staff Specialist Obstetrician and Gynaecologist with CHS.

44. Relevantly, Professor Lim reviewed the aspect of Professor O'Connor's report that deals with the placing of the vacuum cups, and generally agreed with Professor O'Connor's conclusions. He accepted that the incorrect placement of the cup increased the foetal skull diameter, thus increasing the obstruction.

45. Dr ID reviewed Professor Mitchell's report. She expressed the following opinions:

[10] Professor Mitchell concedes that Baby X was showing clinical signs of encephalopathy from around 10 minutes after delivery, which "reflected an acute/profound hypoxic-ischaemic insult immediately prior to delivery" which may have given rise "to some neurological injury".

(a) That the pathology evidence (which was not referred to by Dr Mitchell) does not support the case for there being an identified need for a transfusion at the time of admission to NICU. Therefore, cooling and a fluid bolus were reasonable responses *at the time of admission*, but not thereafter.

(b) There was an unacceptable delay in diagnosing the existence of a subgaleal haemorrhage.

(c) No recorded scalp examination occurred before 1700 hours.

(d) There were signs of neurological injury early in the NICU admission. Dr ID notes that Professor Mitchell, in reaching his conclusions about the lack of evidence of hypoxic insult at the time of admission to NICU, may have relied on MRI findings that were provisional (not having been reviewed by senior staff). The relevant and final MRI report did point to ischemic damage (hypoxic ischaemic encephalopathy), suggesting that, in her view, Professor Mitchell's conclusion that hypoperfusion injury was the sole cause of the brain injury is not reasonable.

(e) The blood gas that *was* performed showed signs of HIE.

(f) Both pathologies (HIE and subgaleal haemorrhage) are likely to have contributed to the neurological injuries.

(g) Otherwise, Dr Mitchell's opinions are reasonable.

The Divergence between Dr GC and Dr FL

46. The accounts given by Dr FL and Dr GC reflect differing recollections as to the positioning of Baby X during birth and how that impacted the birthing process. As noted, Dr FL and a midwife formed the view that Baby X was in the OP position. Dr GC came to a contrary view. Dr FL is of the view that being overruled by Dr GC caused her to place the suction cup in the wrong position on Baby X's head.

47. Dr GC suggested a variety of reasons why it was more likely that the baby was in the OA position, including that:

(a) It is difficult for a cup to be placed over the orbital area if a child is in the OP position, because the "frontal part of the skull will be pressing against the public bone" making it virtually impossible "for the operator to pass their fingers and a vacuum past the pubic bone".

(b) She (Dr GC) made no note of the position of Baby X during the caesarean section procedure, which would be expected if the baby was in the OP position.

48. Dr GC concluded that Dr FL placed the cup incorrectly "regardless of what the position was, and that that was more likely to be the case if the baby was OA rather than OP." Dr GC conceded she may be wrong about her conclusions.

49. Professor O'Connor was of the view that Baby X was in the OP position. Professor Korda seems to be of the same view.[11]

50. The placing of the vacuum cup is an antecedent event that forms part of the background circumstances of the birthing process. The balance of evidence suggests that Baby X was in the OP position. It is my view that I do not need to finally resolve the issue as to what position Baby X was in to make findings as to the manner and cause of Baby X's death. Whilst determination of that issue may be necessary in proceedings where findings of negligence are required, or blame is to be apportioned, that is not the case in coronial proceedings. The vacuum cup was placed on Baby X's head by Dr FL under direction by Dr GC. The incorrect positioning of the cup may have been a cause of the subgaleal haemorrhage observed after birth. The attempt at vacuum delivery was a major cause of the subgaleal haemorrhage.

PART 3 – FACTUAL FINDINGS

Cause and Manner of Death

51. I make the following factual findings as to cause of Baby X's death:

    (a) Baby X suffered injuries during a prolonged labour at TCH, in which birth was delayed by difficulties associated with his head being impacted.

    (b) Consistent with the autopsy findings, two pathologies played a role in Baby X's death, namely:

        (i) hypoxic-ischemic encephalopathy (HIE); and

        (ii) massive subgaleal haemorrhage.

    (c) Consistent with the post-mortem report, both of those pathologies were interlinked and contributed to the cause of Baby X's death. It is difficult to say with certainty:

        (i) which preceded the other; and

        (ii) what caused each pathology to develop.

[11] Dr Korda's opinion as to the position of Baby X's head seems to have been based on an incorrect assumption about what Dr GC had concluded as to that issue. However, he maintained that point of view having considered the reports of Professors Mitchell and O'Connor. Dr Korda didn't give weight to the failed vacuum delivery as a matter that was significant to the adverse outcome that ultimately resulted.

(d) Contrary to Professor Mitchell's opinion, I am not satisfied that the subgaleal haemorrhage, in and of itself, caused Baby X's death. In that regard, I accept the findings made by Dr Montgomery and Dr NG, who conducted the autopsy, and the opinions of Professor Korda and Professor O'Connor.

52. And I make the following findings as to the manner of Baby X's death:

(a) Both pathologies were associated with asphyxia and other mechanical factors, including the failed vacuum delivery, that occurred during a prolonged and obstructed labour and failures in Baby X's care after birth:

(i) the HIE was most likely caused by asphyxia during the prolonged labour; and

(ii) the main identifiable cause of the subgaleal haemorrhage was the unsuccessful attempt at vacuum extraction.

(b) Whilst the hypoperfusion caused by the subgaleal haemorrhage may have added to the extent of neurological injury, HIE was occasioned during the birthing process, and it was life-threatening at the time of birth. In that regard, I prefer the opinions of Professors Korda and O'Connor rather than that of Professor Mitchell.

(c) I generally accept Professor Mitchell's opinions as to the inadequacy of Baby X's treatment in NICU, notably, that:

(i) recorded scalp examinations were delayed;

(ii) cooling was contraindicated in the case of significant blood loss; and

(iii) inadequate steps were taken to assess whether scalp injury could have caused blood loss, including the failure to undertake scalp examination and repeat blood gases.

(d) The delayed recognition of the subgaleal haemorrhage caused hypovolaemic shock and probably added to the extent of Baby X's neurological injury.

(e) I am unable to say whether the failure to identify the subgaleal haemorrhage was the difference between Baby X dying or surviving (with a level of neurological damage).

(f) The vacuum delivery was appropriately attempted.

(g) There is a difference of opinion (between clinicians) as to whether Baby X's head was, before the caesarean section procedure, in a deflexed occipito-posterior position or in an occipito-anterior position. The balance of the expert evidence supports Baby X being in an occipito-posterior position.

(h) Inadequate steps were taken to determine the foetal position.

(i) The vacuum cup was positioned incorrectly, causing Baby X's head to be further deflected, possibly adding to the degree of impaction of Baby X's head.

(j) I am satisfied that a subgaleal haemorrhage was caused by the vacuum cup process.

(k) I do not accept that had the vacuum cup been correctly placed, inevitably the extraction would have been successful. In my view, such a finding would be purely speculative. HIE might still have resulted from what was clearly a difficult and prolonged birth. Consistent with the findings at autopsy and Professor O'Connor's opinion, there were signs that the impacting of the head was an issue before the vacuum delivery was attempted.

(l) Consistent with Professor Korda's and Professor O'Connor's opinions, I find that the move to deliver Baby X by caesarean section was unreasonably delayed.

(m) I am unable to say whether the earlier identification and treatment of the subgaleal haemorrhage would have saved Baby X's life. The failure to provide him with adequate care after his birth deprived him of a chance of survival.

PART 4 – MATTERS OF PUBLIC SAFETY

53. The birthing process was attended by a number of clinical decisions, actions, and judgements that were wrong or in error. Those failings are reflected in the factual findings above.

54. For the purposes of s 52(4) of the Act, those failings do not give rise to matters of public safety unless they point to:
    (a) conduct that suggests an ongoing failure to practice medicine satisfactorily; or
    (b) underlying systemic failings.

55. On this occasion, there are two issues that, in my view, give rise to matters of public safety.

Issue 1 – The Delayed Recognition of the Subgaleal Haemorrhage

56. Whilst the failure to make adequate scalp observations in NICU resulted from a failure of clinical care, the policy and procedure guidelines within NICU at the time did not mention the requirement to perform scalp observations on babies who had experienced an instrument-based delivery. Before Baby X's death, a scalp observation matrix had been developed by CHS, but it was not implemented. It is now in force and provided for in the policy document "*Assessment of the Newborn*". The guideline is comprehensive

and applies to all newborns. It directs attention to the examination of the head and lists abnormalities that should be positively excluded. Relevantly, they include subgaleal haemorrhage/haematoma. Once that assessment has taken place and a bleed is suspected, a further assessment is to be performed by the medical neonatal team. The CHS Clinical Procedure document "*Neonatal Neurology"* now makes specific provision for head examination in the context of instrument delivery, including vacuum delivery. The general head injury risks associated with instrumental birth are identified. Signs of hypovolaemia are detailed. Significantly, the procedure document mandates head observations hourly for four hours after birth.

Issue 2 – Use of Ultrasound to Identify the Position of the Baby

57. Ultrasound equipment was available at the time of Baby X's delivery. It could and should have been employed if there was an acknowledged difference of opinion amongst relevant clinicians as to the baby's position. Relevant CHS governance – "*Labour and Birth: care during First, Second, Third and Fourth Stage*" – now mandates consideration of the use of ultrasound where there "is a discrepancy or uncertainty regarding the position of a foetus."

58. In my view, these changes to relevant procedure represent a reasonable response to the public safety issues arising from my consideration of the manner and cause of death questions. I make no comment as to their effectiveness in addressing the clinical shortcomings that were apparent in this case.

SECTION 55 OF THE ACT

59. The clinical management of Baby X's birth was attended by a series of clinical shortcomings and failures. My findings in that respect contain comments adverse to CHS, Dr FL and Dr GC. Consistent with my obligations under s 55 of the Act, I provided CHS, Dr FL and Dr GC with a copy of the proposed comment and written notice as to how they may respond.

60. CHS on behalf of the Territory responded to the notice and acknowledged that aspects of the treatment and care received by Baby X were inadequate. Dr FL indicated that she shared CHS's sentiments but did not wish to formally respond to the s 55 notice in respect of her. Dr GC made additional submissions which invited consideration of whether the attempted vacuum delivery should be found to be the only cause of the subgaleal haemorrhage. Consistent with Professor Mitchell's report, I find that the main identifiable factor in the cause of the subgaleal haemorrhage was the unsuccessful attempt at kiwi vacuum extraction. Dr GC also suggested that the findings should reflect

the degree of impaction of Baby X's head was a substantial cause for the delayed delivery. That issue is sufficiently addressed in my findings.

POSTSCRIPT

61. Baby X's death was a tragedy, and I acknowledge the ongoing impact his death has had on his family, particularly his parents, LX and LI. I extend my sincere condolences to Baby X's family for their loss.

I certify that the preceding sixty-one [61] numbered paragraphs are a true copy of the reasons for findings of his Honour Coroner Archer.

Associate: Markus Ching

Date: 11 September 2024