IN THE CORONERS COURT OF THE NORTHERN TERRITORY

Rel No: D0019/2024

Police No: 24 7154

CORONERS FINDINGS

*Section 34 of the **Coroners Act 1993***

I, Elisabeth Armitage, Coroner, having investigated the death of **a 33-day-old, female, Caucasian infant** and without holding an inquest, find that she was born on **17 December 2023** and that her **death occurred on 19 January 2024, at Darwin in the Northern Territory.**

Cause of death:

1(a)	Disease or condition leading directly to death:	**Sudden death of an infant (SUDI) in an unsafe sleeping environment**
1(b)		

Following an autopsy on 19 January 2024, Forensic Pathologist, Dr Marianne Tiemensma commented:

- The decedent was a 6-week-old female infant, who was reportedly found cold and unresponsive by her parents at 08:00 am on 19/01/2024 after she was last breastfed around 01:00 am on the same day. The infant was sharing a sleep surface with her parents at the time of death (soft double mattress with pillows and soft coverings).
- Examination of the infant at the death scene showed hypostasis (post-mortem distribution of intravascular blood under the effect of gravity) on the mid-anterior and right sides of the face, right side of the head, right arm and right side of the torso.
- Autopsy showed no signs of injury and no significant underlying natural pathology (such as congenital abnormalities or sepsis). Pleural and epicardial petechiae were present, the lungs were heavy and oedematous, and intra-alveolar haemorrhage was noted with microscopic examination.
- The differential diagnosis for a sudden and unexpected death of an apparently healthy infant (SUDI) include the following:
    - Natural causes (e.g. undiagnosed natural disease processes).
    - Unnatural (intentional or accidental causes).

    - Undetermined (including deaths ascribed to "Sudden Infant Death Syndrome (SIDS)").

- There is a known increased risk for sudden death in infants who share a sleeping surface with another.[1] A "triple risk" model was described by Professor Roger Byard and others,[2] to demonstrate the relationships of risk factors for infant death in a shared sleeping condition. These consist of:
    - Infant factors - premature; **young; small.**
    - Parental factors - sedated; intoxicated; **maternal smoking**; tired; obese.
    - Bed - **multiple co-sleepers;** sofa/single bed; **heavy covers; soft surface.**
- Many of the described risk factors were present in this case.
- The post-mortem diagnosis of an asphyxia death in infancy is extremely difficult, because of a paucity of features at the scene and the non-specificity of autopsy findings, and an integration of the history review, scene evaluation and autopsy examination is required.[3]
- Even though the cause of death cannot be determined by autopsy alone, taking into account the available history, scene description, and exclusion of other causes of death, I am of the opinion that the unsafe sleeping environment very likely contributed to the death of the infant, and accidental mechanical asphyxia/fatal sleep accident[4] as a likely cause of death should be considered.

References:

1. Weber MA, Risdon RA, Ashworth MT et al. Autopsy findings of co-sleeping - associate d sudden unexpected deaths in infancy: relationship between pathological features and asphyxia mode of death. Journal of Paediatrics and Child Health. 2012;48:335-41.
2. Byard RW. Journal of Paediatrics and Child Health 2012;48:947-950.
3. Byard RW, Jensen LL. Fatal asphyxia episodes in the very young: classification and diagnostic issues. Forensic Science Medicine and Pathology. 2007;3:177-181.
4. https:/ /raisingchildren.net.au/ guides/ a-z-health- reference/ sudi

Background:

Infant was loved and her parents devotedly cared for her. That she passed away is an immense and life altering tragedy for her family.

Antenatal care

Infant's mother received antenatal care including GP visits and ultrasounds.

The mother's NT Health pregnancy record commenced on 23 June 2023 with the Royal Darwin Hospital (RDH) Antenatal Care Service. The final due date was recorded as 20 December 2023. It is noted that the mother smoked (<10cigarettes daily). During her initial antenatal assessment several pro-forma documents were completed, including:

- 'Adult Pre-anaesthetic Screening Tool'
- 'Domestic /Family Violence Screen'
- 'Breast Feeding -Antenatal Checklist'

- ‘RDPH Breath co-monitoring Pathway’
- ‘Psychosocial Risk Assessment’
- ‘The Edinburgh Postnatal Depression Tool’
- ‘Midwifery Group Practice Expression of Interest’

Antenatal visit progress reports are documented on 8, 17 and 21 August; 5 September; 3 October; 3 November; and 13 December.

There is no documented evidence that safe sleeping/safer co-sleeping and/or SIDS was discussed with the mother during any of her antenatal visits with NT Health. The ‘RDPH Antenatal Care Pathway’ checklist was completed on the first visit but not thereafter. The check list contains ‘tick-a-boxes’ for educating mothers on breastfeeding but there are no ‘tick-a-boxes’ for safe sleeping/safer co-sleeping and/or SIDS education.

Birth

The mother entered hospital for an induced labour on 16 December 2023.

Infant was born at 39 weeks and 3 days on 17 December 2023. The delivery was an induced non-instrumental vaginal delivery. She weighed 3750ms, measuring 50cms in length, a head circumference of 34cm and an Apgar score of 9 at 1 minute and 9 at 5 minutes.

The discharge plan lists several education topics. The topic SIDS is initialed on the discharge plan indicating this topic was raised. There are several statements for the mother to sign; and the statement “My midwife has explained to me how my baby can sleep safely and provided me with the safe sleeping brochure” was signed by the mother.

Mother and infant remained at RDH until discharge later the same day at 17:50pm with a plan for domiciliary midwifery follow up and a routine GP check-up in 6 weeks.

Postnatal care

On discharge, infant resided with her family in Darwin.

Midwifery neonatal community follow up is documented on 18, 20, 21 and 23 December 2023. Infant checks are recorded. There is no documented evidence that safe sleeping/safer co-sleeping and/or SIDS education was provided at any of these follow-ups.

On 21 December 2023 infant was readmitted to RDH suffering from jaundice. She was discharged on 23 December 2023 and returned home with her mother who was advised to return to ED if she had any concerns.

On 28 December 2023 a Casuarina Community Care Child and Family Health Nurse conducted an initial visit at the family home from 11:30am-1:00pm. The nurse completed a ‘Healthy Under 5 Kids Partnering Families-HU5K PF Care Plan’. There were no concerns recorded about infant who was gaining weight. The nurse recorded that both parents smoke outside, and “Mo is aware of SIDS.” Her mother told the nurse that she was feeling a bit overwhelmed looking after two children, and that “baby struggles to sleep in cot, only sleeps in her arm.”

A second home visit was conducted on 2 January 2024 and infant had put on weight. It was recorded that infant slept overnight and her mother was encouraged to breastfeed at least once overnight. At a visit on 15 January 2024 infant was still putting on weight as expected. The records note that sleeping and settling were discussed and no concerns were noted, but no further detail about what was discussed is recorded.

Circumstances:

Infant's mother told attending police that for the past couple of days infant was experiencing diarrhoea and runny stools, and she was "fussy" and "unsettled."

Infant had a bassinet next to the mother's side of the bed in the main bedroom, but she also often slept in her parents' bed. Her mother said that infant generally came into the parents' bed "at some point because she gets quite fussy. But usually only for a short period towards morning. But last night (18-19 January 2024) she wouldn't stop fussing so we just put her in bed next to me." Infant's father slept on the left side of the bed, her mother slept on the right side of the bed, and infant further to the right again (next to the edge of the bed).

On 19 January 2024, there were two candles burning in the bedroom on the bedside table next to infant's father.

At around 1.00am mother changed infant's nappy, breastfed her and swaddled her in a muslin wrap. The muslin wrap was wrapped around her whole body, up to her neck, covering her shoulders. She was placed on her back to sleep cuddled up beside her mother. Her mother placed another blanket over them and her arm over infant and went to sleep.

At about 8.00am, mother woke up and discovered infant was cold to touch. Infant was more on her right side and her shoulders were peeking out of the swaddle. Mother then noticed that infant was unresponsive, not breathing, purple in colour, stiff, had a small amount of blood on her face and small amount of white foamy substance on her lips.

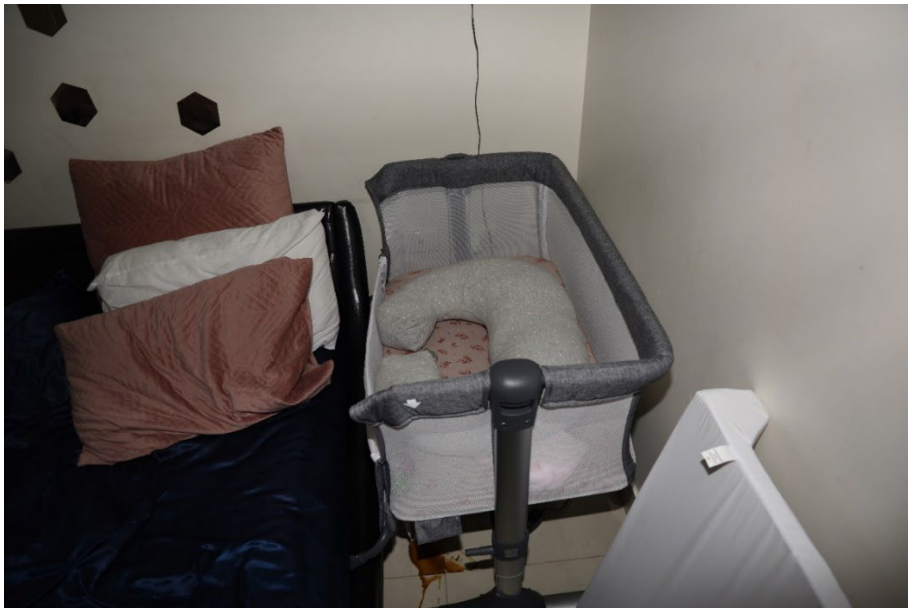
Mother screamed the "baby was dead" and father immediately contacted 000. Mother was instructed to commence CPR, which she did until St John Ambulance officers promptly attended the scene and took over.

Forensic Pathologist Dr Marianne Tiemensma also attended the scene. Her initial opinion was that the presence of hypostasis (blood pooling) around the mouth and front of the infant suggested that she died while facing down (i.e. likely died as a result of positional asphyxia / SUDI). Dr Tiemensma noted that the mattress was soft and that it is likely infant rolled onto her front and was unable to self-correct.

An autopsy examination was undertaken. The Forensic Pathologist was of the opinion that, excluding other causes, and considering the sleep environment, accidental mechanical asphyxia/ fatal sleep accident could be considered as a cause of death.

The available evidence supports that the death was a SUDI (Sudden Unexpected Death in Infancy), as the death was unexpected in an apparently healthy female infant, with no reported prodromal symptoms.

SUDI is not a diagnosis or disease, but describes the sudden death of an infant, for which the cause may not be immediately obvious. However, a cause may be discovered by a thorough death investigation. In this case there was evidence of an unsafe co-sleeping environment and an accidental/unintended unsafe sleeping position towards the right side and front of infant.



NT Police SUDI checklist:

The attending Coroner's Constable completed the NT Police 'Investigative Checklist/Interview Tool for the Sudden Unexpected Death of an Infant' (the NT Police SUDI checklist).

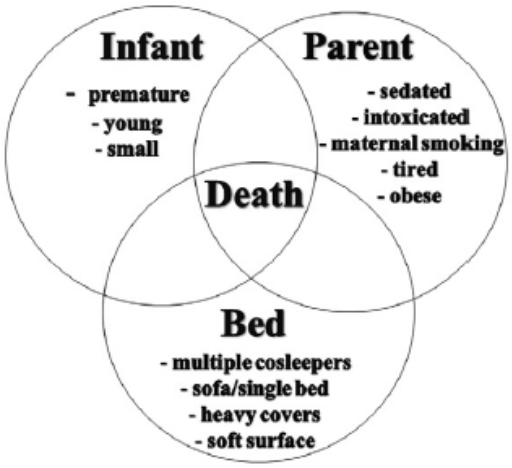
There were some minor inaccuracies in the checklist of no significance. However, on page 6 of the SUDI checklist the risks that could be observed in the sleep location were not specified. In particular, the soft mattress, the number of pillows and the number and weight of the blankets was not documented. Candles are also a known risk and there was no reference to these in the checklist.

Issues:

According to the Australian Breastfeeding Association, 75% of all babies spend at least some time sharing the parent's bed in the first three months of life, including unplanned sharing

(for example, when the carer unintentionally falls asleep with baby).[1] Similarly, to most families, infant slept in her parents' bed sometimes. The Australian Breastfeeding Association makes it clear in its advice that shared sleep environments "increase the risk of SUDI for a baby" and that "adult beds were not designed with infant sleep safety in mind and may contain hazards for babies." [2] Tragically, infant passed away likely from asphyxia in the unsafe sleeping environment of the parental bed.

In the *Inquests into the Deaths of Baby K, Baby B, and Baby S* [2026] NTCC 06 the risks of unsafe and co-sleeping were considered in detail. I heard evidence from Professor Roger Byard who has been researching and publishing on the risks of co-sleeping since 1994.[3] To assist in identifying SUDI in an unsafe sleeping environment, Professor Byard developed the "triple risk" model; the greater the number of risk factors in a sleeping situation, the greater the risk of an infant death.[4] The model demonstrates the interrelationship of risk factors and provides a conceptual framework for understanding accidental suffocation/smothering and unexpected infant death in a shared sleeping situation:[5]



Professor Byard said that the model demonstrates the potential interaction between three components in a shared sleeping situation: the infant, the bed, and the parents (or other co-sleepers). Infants who are most at risk are young, small for gestational age and premature. Bed/sleep environments that increase the risk of suffocation/smothering include beds with soft surfaces such as compressible mattresses, bean bags, waterbeds, sofas, and pillows. Heavy covers also increase the risk. Features of parents which increase the risk include obesity, sedation, fatigue, intoxication, maternal smoking, and multiple co-sharers. He said

[1] Australian Breastfeeding Association, Bed-sharing and your baby: the facts; see also Common Brief 1.5 SUDI and the practice of co-sleeping/bed sharing in the NT
[2] Australian Breast Feeding Association – Bed-sharing your baby: the facts, June 2021, aba.asn.au/bed-sharing
[3] Byard RW ,Is co-sleeping in infancy a desirable or dangerous practice?, J. Paediatr. Child Health 1994; 30
[4] Inquest into the deaths of Baby k, Baby B and Baby S [2026] NTCC 06 - evidence of Professor Byard on 17 July 2025 at 278
[5] Byard RW, The Triple Risk Model for Shared Sleeping, J. Paediatr. Child Health 48 [2012] p947-948; although not considered in these inquests it is also known that bottle fed babies are at greater risk when co-sleeping because mothers who bottle feed do not demonstrate the same responsiveness at night as breastfeeding mothers - see *Inquest into the deaths of Baby K, Baby B and Baby S* [2026] NTCC 06 Common brief 1.5 SAF,T, SUDI and the practice of Co-Sleeping/Bed Sharing in the NT which references the research of Professor James J. McKenna

that, while it must be recognized that many situations do not result in a lethal outcome, in certain infants the compounding effect of these risk factors may result in death.[6]

In this case the following risks can be identified in infant's sleeping environment:

- Infant – small and young
- Parental – maternal smoking
- Bed – multiple co-sleepers, soft mattress, multiple pillows and covers

Infant's mother had diligently attended antenatal care, however, there is no documented evidence that she received education on safe sleeping/safer co-sleeping and/or SUDI during her pregnancy.

On the day of infant's birth, her mother signed the statement "My midwife has explained to me how my baby can sleep safely and provided me with the safe sleeping brochure." There are no details as to what education was provided but I expect it can only have been reasonably cursory given the events of the day and her imminent discharge.

In her postnatal care there is one note that "Mo is aware of SIDS," one note that sleeping and settling were discussed, and one note of infant's mother reporting that infant did not settle in the cot and only slept in her arms. There is no detail recorded as to the nature of any safe sleeping education provided or of the sleep environment being inspected.

Although infant's parents likely believed they understood SIDS and sleep risks, the photos of the sleep environment make it clear that there were risks that had not been identified or mitigated. The bassinet contained a curved pillow, likely designed and sold as a sleep aid, but when placed in a bassinet it is against Red Nose advice and posed a risk. The co-sleeping surface (double mattress) was soft, whereas Red Nose recommends a firm surface. There were pillows and blankets on the sleep surface which posed a suffocation risk. Infant's mother shared a blanket with infant and Red Nose advise that this should not be done.

Comment:

I consider that the pregnancy and postnatal services infant's mother engaged with did not do enough to ensure the risks of an unsafe sleep environment, including co-sleeping, were fully understood by infant's parents. There was no detailed documentation on any education provided on safe sleeping and the risks of co-sleeping. Postnatally, even though there were home visits, there is no evidence that the sleep environment was assessed, and no improvements to the bassinet and co-sleeping spaces were suggested.

NT Health was provided with a copy of these findings for its consideration and comment, and it agrees in principle with the proposed recommendations. NT Health notes that after birth parents can choose how they engage in post birth care and there will not always be an opportunity for a baby's sleeping arrangements to be assessed by a health practitioner. I note also the limitations of such an assessment in that sleep arrangements can change over time. However, when it is done an assessment does provide an opportunity for safe sleeping education to be provided and, if they exist, for risks to be identified and mitigated.

Given the complex and sensitive nature of these findings, the Coroner's Grief Counsellor will take steps to ensure that they are explained sensitively to infant's parents and that support is offered.

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[6] Byard RW, The Triple Risk Model for Shared Sleeping, J. Paediatr. Child Health 48 [2012] p947-948

Recommendations:

1. I recommend to **NT Health** that it take all necessary steps, including by amending its RDPH Antenatal Care Pathway (and any similar pathways) and any other policy, practice, procedure, guidelines and training, to ensure that baby safe sleep education is provided to pregnant and new mothers at regular intervals during pregnancy and after the birth. The mother's /baby's medical records should document when the education is given and include some detail as to the content and nature of the education. A single 'tick-a-box' next to SIDS is insufficient to capture what must be recorded.
2. I recommend to **NT Health** that it develop a 'Safe Sleeping /Safer Co-sleeping/ SUDI Screen', to be completed with all mothers attending its antenatal services which clearly communicates that there is a risk of death from unsafe and/or co-sleeping, the risk factors, and the necessary actions to minimise risk.
3. I recommend to **NT Health** that Midwifery and Casuarina Community Care (and all other NT Health postnatal care providers) are to review their policy and practice to ensure that staff:
    a) provide culturally sensitive and appropriate ongoing education on safe/safer infant sleeping to parents, extended family or care givers, including clear statements about the risk of death;
    b) take reasonable steps to identify whether an infant is exposed to an unsafe sleeping environment, including procedures for requesting to see the sleep environment; and
    c) have guidance as to the proactive actions to be taken by them to mitigate an unsafe sleep environment. By way of example only, by ensuring staff:
        (i) provide education on safer sleeping;
        (ii) make appropriate referrals (such as for priority housing or alcohol/drug/smoking education or rehabilitation) and ensure the referrals are actioned as expected; and
        (iii) provide practical assistance (for items such as a firm mattress, light weight baby blanket, Pēpi-Pod® or Coolamon etc).

Decision not to hold an inquest:

Under section 16(1) of the *Coroners Act 1993* I decided not to hold an inquest because the investigations into the death disclosed the time, place and cause of death and the relevant circumstances concerning the death. I do not consider that the holding of an inquest would elicit any information additional to that disclosed in the investigation to date and the circumstances do not require a mandatory inquest because:

- The deceased was not, immediately before death, a person held in care or custody; and
- The death was not caused or contributed to by injuries sustained while the deceased was held in custody; and
- The identity of the deceased is known.