IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: 2009/ 169

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 60(2)
Section 67 of the ***Coroners Act 2008***

I, JACINTA HEFFEY, Coroner having investigated the death of Noah Sheekey

without holding an inquest:
find that the identity of the deceased was Noah Philip James Sheekey
born on 7 January 2009
and the death occurred on 10 January 2009
at the Latrobe Regional Hospital, Traralgon
from:

1 (a) Escherichia Coli Sepsis in a low birth weight infant

Pursuant to section 67(2) of the **Coroners Act 2008**, I make findings with respect to **the following circumstances:**

1. Noah was born at 11.18am on 7 January 2009 by normal vaginal delivery, following a labour of almost two and a half hours. The labour was induced at just short of 39 weeks gestation because of concerns regarding intra-uterine growth retardation. Noah's mother, Amy Walsh, had reported difficulties with swallowing and weight loss in the weeks preceding Noah's birth. On 2 January 2009, she had also been commenced on the anti-biotic Cephalexin because of a suspected urinary tract infection.
2. Noah weighed 2358grams at birth, which meant that he was small for his gestational age. However, he needed no resuscitation and his Apgar scores were nine (with the full score being ten) at one minute, and ten at five minutes. He was assessed following his birth by the Paediatric Hospital Medical Officer Dr Sangalang. Noah's hospital progress notes record that Dr Sangalang took a full history, examined Noah and found that, apart from being small, he was normal on examination and that vital signs were all within normal range (that is, his respiratory rate was 55, temperature was 37.2, heart rate was 145, and blood sugar level was 3.4). Dr Sangalang discussed Noah's case by phone with the Consultant Paediatrician, Dr Joseph Tam. It was agreed that given his good condition at birth, it was

not necessary, despite his low birth weight, to admit Noah to the special care nursery, and that he would be observed instead on the post-natal ward with his mother.

3. Noah was reviewed by the Paediatric Registrar Dr Bernal at 8.30am on 8 January and by Dr Tam, during his rounds, at 10am. Noah was assessed as making acceptable progress, including with feeding, as recorded on the newborn feeding chart. Some episodes of vomiting were noted to have occurred during the night of 7-8 January, described as mucus vomits with a yellow-green tinge. No vomiting had occurred since the morning. No concerns were expressed about Noah's presentation or progress at that point. Both doctors made a note that Noah should be "observed for further vomiting".

4. Noah was reviewed again by the Paediatric Registrar Dr Bernal at 9am on 9 January. Noah had been a little slow with feeds and the Newborn Feeding Chart records that he was not completing feeds well on the afternoon of 8 January. Nonetheless, Noah's progress appeared good. Dr Bernal noted that there had been no vomiting since the night of 7 January and that Noah had had a number of wet and dirty nappies. He directed that Noah's feeding be increased.

5. On the morning of 9 January, according to the midwife assigned to her, Noah's mother, Amy Walsh, said that she wanted to go home because of her other children. The Social Worker who reviewed her later in the morning also recorded in Ms Walsh's progress notes that the she was "keen +++ to go home today." Likewise the dietician who reviewed her noted in her progress notes that Ms Walsh was "looking forward to going home today." Despite this evidence in the medical records, Noah's father, Evan Sheekey, claimed that his wife was, in fact, reluctant to go home.

6. At any rate, steps were commenced to prepare Ms Walsh and Noah for discharge. On the morning of 9 January, Noah was weighed, administered a Hepatitis B vaccine and subject to a Newborn Screening test, which involved pricking his heel and placing the blood on a card. He was observed by nursing staff on the morning of 9 January to be alert, pink and crying during the vaccination. A standard form "Newborn Examination", which it is noted 'must be completed before baby leaves hospital', was carried out at approximately midday on 9 January by Dr Gonzaga, the ward Medical Officer from the obstetrics team. No abnormalities or cause for concern were noted, except for slight facial jaundice. Noah was not reviewed again by the paediatric team, prior to discharge and it would be appear from the Hospital record that the paediatric team were not consulted about the decision to discharge Noah.

7. The Newborn Feeding Chart records Noah taking his three feeds well during the day on 9 January 2014 and records further wet and dirty nappies. It is also recorded that he had a vomit just after midday, which was of sufficient concern to Ms Walsh that she buzzed the nurse. Ms Walsh was reassured by the nurse that the vomit was normal. The nurse observed

that Noah was pink, had a loud cry and that his respiration rate at this point was normal, at 46. She did not consider it necessary to consult the paediatric team about the matter.

8. Ms Walsh and Noah were discharged at 4.35pm. At home, overnight, Noah was unsettled. From approximately 9pm his breathing began to have a grunting quality. He was not completing feeds and had some bilious vomits. When the domiciliary midwife attended at Noah's house at 9.45am on the morning of 10 January 2014, Noah's parents expressed their concerns to her. The midwife attempted to bottle feed Noah but after two sucks he became gurgly. She was shown the blanket on which he had earlier vomited and noted that it was very yellow with an offensive smell. She observed that Noah was pink and warm. His respiratory rate was 28. There was no noticeable rib retraction. She rang the Hospital and advised Noah's parents to take him to the Emergency Department.

9. Noah was seen at the Emergency Department of the Latrobe Regional Hospital at 10.42am. By this point Noah was noted to have "grunting respiration, intercostal recession, cyanosed (blue) around the mouth, vomit containing bile from the mouth and nose, and chest crackles indicating fluid or infection on the lungs." In short it was apparent that Noah was extremely unwell. A working diagnosis of fulminant sepsis was made. He was treated with intravenous antibiotics and transferred to the special care nursery. Over the course of the day, and in consultation with the Newborn Emergency Transport Team, numerous interventions were attempted. These are set out in some detail, together with the results of blood tests and imaging, and Noah's vital signs as recorded over the course of the day, in the statement of the consultant paediatrician, Dr Tam. Ultimately, Noah continued to deteriorate and was pronounced dead at 5.45pm.

10. Blood culture results later confirmed the clinical diagnosis of overwhelming sepsis, with Escherichia Coli (E.coli) identified as the bacteria which caused the infection.

11. Noah's family requested that no autopsy be performed and it was subsequently directed that no autopsy was required for the investigation. Based primarily on the medical record, Forensic Pathologist, Melissa Baker, of the Victorian Institute of Forensic Medicine, concluded that a reasonable cause of death would be 'Escherichia Coli sepsis in a low birth weight infant."

Review by Independent Expert

12. A brief of evidence was subsequently prepared for the Coroner containing the medical records of Noah and his mother, statements from his father and grandmother, and statements from relevant hospital staff involved in Noah's care. This material was in turn provided to an independent expert, neonatologist Dr Andrew Watkins, for review. On 13 June 2012, Dr Watkins provided a comprehensive report to the Coroner which included the following comments and conclusions:

    A. Although Noah was small for gestational age (SGA) and therefore qualified for admission to the Special Care Nursery, Dr Tam's decision, in all the circumstances,

to allow a trial of ward care was reasonable. Admission to the Special Care Nursery is not without risks and separates baby from mother at a critical time. It should not be done unnecessarily. SGA infants are managed cautiously for a range of reasons, but not because SGA is a strong risk factor for sepsis. Noah's initial progress appears to have vindicated Dr Tam's decision to allow him to be cared for on the ward. .

B. Where a decision is made to manage a SGA baby on the ward with their mother, this should occur under close paediatric supervision. Noah was appropriately reviewed by the paediatric team on the morning of the 8 January. However, once on the ward, Noah appears to have been largely managed as a normal term baby, which he was not, at least when seen in full context. There was no recording of observations of temperature, heart rate or respiratory rate after the first hours of life, there was no comprehensive predischarge check by the paediatric team which included these types of observations, their was no involvement of the paediatric team in planning for his discharge or in engaging in the risk-benefit analysis which should precede a decision to allow early discharge. In short, the protocols under which Noah was managed were appropriate for a normal term baby but not for an SGA baby like Noah, and this may have been material in him being sent home when he was, probably inappropriately.

C. Had Noah been subject to closer supervision and monitoring by the paediatric team while in the hospital and prior to discharge and/or had he remained in hospital on the evening of 9 April 2014, as would have been usual and, in most circumstances, appropriate for an SGA baby of his size, the clinical signs of his infection may have been detected earlier and medical intervention commenced at a point when Noah was still able to be saved. However, had this earlier detection occurred, it would have been fortuitous, given that the reasons for greater precaution with SGA babies are not related to increased susceptibility to sepsis.

D. On the face of it, Noah had no definite risk factors for sepsis, having been born after elective induction for presumed placental insufficiency, without prolonged ruptured membranes and without any perinatal depression or need for resuscitation. One risk factor which may have proven in retrospect to have been important was the episode of possible, unconfirmed maternal urinary tract infection on 2 January. This had been treated, but treatment would not have eliminated maternal colonisation or the risk to Noah. However, all that would have indicated in Noah on the basis of evidence available at the time would have been closer observation for 48 hours.

E. It is not possible to determine when the first subtle signs of Noah's infection might have been capable of detection, had he been more closely observed by the paediatric team. It is unlikely that the vomiting on the morning of 8 January was anything more

than the normal vomiting seen in so many infants. Noah's infection was severe and fulminate, had he already been infected at this point it is expected that his dramatic deterioration would have commenced earlier. Given the speed with which such illnesses progress, he may not have had any definite signs of infection on the afternoon of 9 January prior to discharge. However, because he was not subject to closer monitoring and observation that day, and was not even assigned a midwife on the afternoon of 9 January, what signs there were and/or their significance cannot be resolved at this point.

F. It is clear that his respiratory distress (grunting), lethargy and poor feeding on the night of 9 January were early signs of sepsis. Had he remained in hospital at this point, or had medical assistance been sought at this stage the outcome may have been happier. No blame attaches to Noah's parents in this regard as they do not appear to have been warned about early signs of sepsis and such signs are commonly subtle. [And it might also be noted that those subtle signs may correspond with normal infant behaviours, of the type that Noah's parents had been reassured about in their brief hospital stay.]

G. By the time of Noah's presentation at the Emergency Department on 10 January the situation was probably irretrievable. His acute resuscitation on 10 January was conducted competently under difficult circumstances.

H. A further matter that cannot be ruled out at this point is the possibility of aggravating or predisposing factors in Noah, in particular, immunological deficit, urinary tract abnormality or galactosaemia.

13. In response to this final observation, further inquiries were made about whether it was possible to:

- revisit the available imagining to establish whether Noah's thymic volume was normal; and
- conduct further testing on Noah's Newborn Screening Card for galactosaemia.

Unfortunately, there were no further tests which could be conducted to either establish or exclude the presence of aggravating or predisposing factors.

Changes to Hospital Procedures

14. In an investigation which followed Noah's death, the Latrobe Regional Hospital identified a number of improvements that could be made to their work practices and documentation.

15. As a result, there have been a number of changes to the protocols and procedures for managing "qualified" babies in the maternity ward of the Hospital. "Qualified" babies are those who are assessed as requiring ongoing paediatric care, for example, due to the fact that, like Noah, they are small for gestational age. The criteria that determine which babies

must or may be referred, by formal written referral, to a paediatrician for initial assessment at birth are set out in a statement to the Court by the Angela Scully, Nurse Unit Manager of the maternity ward, dated 16 November 2012. This statement also sets out the safeguards that are in place to ensure that the care and management of "qualified' babies is appropriately overseen by the paediatric team. These safeguards includes the following:

A. Once a baby is "qualified", the midwife in charge must notify the admissions office that the baby has been "qualified" and labels are generated with the treating paediatrician's name. This means that the baby is on the hospital BOSS, I.T. system as a patient.

B. Using the BOSS system, a paediatric team task list is printed up to three times a day for each staff handover. This ensures that the paediatric team is always aware of all "qualified" babies in the ward and not just those in the Special Care Nursery.

C. All "qualified" babies must be checked daily by the paediatric team and cannot be discharged home or from "qualified" status without a formal check from the paediatric team, under the supervision of a paediatrician. Any change in status must be acknowledged in writing by a senior member of the paediatric team. A "qualified" baby may only be discharged home after an appointment is made for follow up with a paediatrician, a discharge medical check is completed and documented in the Child Health Record by a member of the paediatric team and a discharge summary completed by a member of the paediatric team. This ensures that a "qualified" baby can only be discharged by a member of the paediatric team.

D. Nursing staff also receive electronic lists of all patients on the ward via "Trend Care" and "qualified" babies must be noted with their diagnosis (e.g. SGA). These lists are provided three times a day during staff handover. This helps ensures that particular care and review requirements of "qualified" babies who are nursed on the ward are not overlooked.

Family's Concerns

16. As one might expect in a case involving the sudden death of a newborn on the day following his discharge from hospital, Noah's parents have raised many questions and concerns about the adequacy of his care. This Court has attempted to provide a forum for those questions and concerns to be ventilated and, where possible, addressed. As noted above, the Court engaged an independent expert, Dr Watkins, to review the entire brief and the medical records. Dr Watkins' Report was provided to Noah's parents, whereupon the Regional Coroner, who originally had the carriage of the matter, invited the family, at two separate directions hearings, to carefully read the Report and put in writing any issues they believed remained unresolved. With the consent of the Hospital, the Regional Coroner also encouraged Noah's parents to meet directly with relevant Hospital staff to discuss their questions and concerns.

17. When the matter was subsequently transferred to the Melbourne Registry of the Court and I assumed carriage of the matter, a further mention hearing was listed for the primary purpose of inviting Noah's parents to identify any unresolved issues which might warrant an inquest, notwithstanding the matters contained in both Dr Watkins' Report and the information received from the Hospital about changes to practice and procedure following Noah's death. At the conclusion of this mention hearing, I agreed to postpone my decision on whether to conduct an inquest pending receipt of a list of outstanding questions for both the Hospital and Dr Watkins. In due course, two lists of questions were provided.

18. The questions for the Hospital were on-forwarded and, in my view, adequately answered with reference to the medical records and statements already provided by Hospital staff. The exercise identified, and in my view resolved, some areas of misunderstanding, for example about who was involved in Noah's care and in what manner. The exercise also identified that there were other issues of contest between the Hospital and Noah's parents that were unlikely to be resolved, for example about what was or was not communicated at various times and about Noah's presentation while in the maternity ward. In light of Dr Watkins' Report and concessions and changes made by the Hospital following Noah's death, I did not consider it necessary to resolve these further issues as part of the coronial investigation.

19. The second list of questions submitted by Noah's parents, those directed at Dr Watkins, were not forwarded to him. In my view the questions had already been answered, as far as possible, by Dr Watkins in his initial Report or were not of relevance to the coronial investigation. On that basis, I did not consider it appropriate for the Court to re-engage Dr Watkins to provide a supplementary report.

20. Noah's parents were advised, via their legal representatives, that I considered I had sufficient information to finalise the investigation by way of a Chambers Finding. In response, a Formal Request for Inquest was filed on behalf of Noah's parents, in which it was submitted that the following questions remained unresolved and warranted an inquest:

    A. whether it was appropriate for Noah to be nursed on the ward, rather than placed in the Special Care Nursery, in view of his low birth weight;

    B. whether Noah was monitored and reviewed sufficiently closely by hospital medical staff in view of his low birth weight and the potential risks posed by:

        i. the possible urinary tract infection suffered by his mother in the week preceding his birth; and

        ii. his ingestion of meconium.

    C. whether hospital records which record information about Noah's progress, (including his feeding, the degree and nature of his vomiting, his alertness and other vital signs) are accurate;

D. whether hospital medical staff paid sufficient regard to the concerns expressed by Noah's family, particularly with regard to his vomiting;

E. whether the matters observed and raised by Noah's family were in fact early clinical indications of Noah's infection, which, if heeded by hospital medical staff, would have allowed for earlier intervention; and

F. whether hospital staff erred in allowing Noah to be discharged on 9 January, in view of his low birth weight, risk factors and the concerns expressed by his family.

21. I refused this request. As outlined above, matters A, B, E and F had already been comprehensively and authoritatively addressed by Dr Watkins. With respect to matters C and D, in my reasons I noted, amongst other things, that I was satisfied that any contest between Noah's family, hospital staff and hospital records about his condition and progress between birth and discharge was not likely to be further resolved at inquest. Moreover, I noted that I was satisfied that the significance of any particular observations of Noah during his hospital stay as potential warning signs of his fatal infection could never be more than speculative. In that regard, I recalled Dr Watkins' conclusion that Noah had a severe, fulminant infection that progressed rapidly and that had any of the "symptoms" noted on the days prior to his discharge been in fact symptomatic of a gram negative infection, rather than common behaviours seen in many healthy babies, "things would probably have erupted sooner than they ultimately did". I recalled that Dr Watkins had surmised that, even on the afternoon of Noah's discharge, the infection may have remained subclinical and/or any symptoms, such as they were, were likely to have been subtle. A formal inquest was not going to throw any further light on this.

22. I also noted in my reasons that the systemic shortcomings at the Hospital revealed by Noah's death and commented upon by Dr Watkins, appeared to have been subsequently acknowledged and addressed by the Hospital. At any rate, Dr Watkins' Report concluded that a clear nexus could not necessarily be established between these systemic issues and Noah's death.

23. Noah's parents were advised, via their legal representatives, of their right to appeal my decision not to conduct an inquest. The period for appeal has now elapsed and no appeal has been commenced.

Conclusion

24. Noah Sheekey died, just three days old, as a result of overwhelming gram negative sepsis. He had been born significantly small for his gestational age at the Latrobe Regional Hospital on 7 January 2009. Although eligible for admission to the Special Care Nursery, he had been cared for on the ward with his mother, because his presentation at birth, size aside, was

unremarkable. He was reviewed by the paediatric team on the day following his birth and again by the paediatric registrar the next morning. He was discharged from the Hospital at two days old. The paediatric team was not involved in the decision to discharge him and did not conduct his pre-discharge check. He was readmitted, very ill, to the Hospital the morning following his discharge and, despite extensive efforts over the course of the day, could not be saved.

25. It is likely that Noah acquired the organisms which caused the infection from the maternal flora at birth. This would have been followed by a silent incubation period and then a period of rapid decline. A possible identifiable risk factor antenatally was a history of suspected maternal urinary tract infection five days before Noah's birth.

26. As outlined in paragraph 12 above, an independent expert who reviewed the coronial brief and medical records identified several shortcomings with the management of Noah's care and discharge given his small gestational age. Had more appropriate protocols been in place and/or been observed Noah would have been monitored more closely during his time in Hospital, and may not have been discharged so soon after his birth. Had this occurred, particularly had he remained in Hospital on the evening of 9 January 2009, the symptoms of his infection *may* have been detected sooner. If a course of treatment had thus been embarked upon earlier, it *may* have saved him. However, these hypothetical assertions, must be tempered with an acknowledgement that the signs of his infection were probably only subtly manifest, if at all, before his discharge and the factors which indicated the need for closer and ongoing monitoring by the paediatric team, did not primarily include an increased risk of sepsis. It is for that reason that Dr Watkins has stated that had Noah been managed differently and observed more closely by more experienced staff, the outcome may have been different "*but this would have been fortuitous and unrelated to the reasons for doing so*".

27. For their part, the Latrobe Regional Hospital has acknowledged the need to strengthen and improve their protocols relating to the care of "qualified" infants like Noah, to ensure that the paediatric team remain appropriately engaged with them, regardless of whether they are nursed in the Special Care Nursery or on the Ward.

28. In light of the review undertaken and changes implemented by the Hospital in the years following Noah's death, I do not consider there is any value in now making any formal recommendation in relation to this case.

Pursuant to rule 64(3) of the Coroners Court Rules 2009, and at the request of Noah's father, I order that this finding be published on the internet:

I direct that a copy of this finding be provided to the following:

The Senior Next of Kin, via his legal representatives; and

The Latrobe Regional Hospital

Signature:

JACINTA HEFFEY
CORONER
Date: **19 November 2014**