IN THE CORONERS COURT Court Reference: COR 2017 4078

OF VICTORIA

AT MELBOURNE

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 63(2)

Section 67 of the Coroners Act 2008

This Finding has been redacted to de-identify the deceased

Findings of:	**AUDREY JAMIESON, CORONER**
Deceased:	**BABY S**
Date of birth:	**14 August 2017**
Date of death:	**16 August 2017**
Cause of death:	**Sepsis**
Place of death:	**Royal Children's Hospital, 50 Flemington Rd, Parkville, Victoria 3052**

CONTENTS PAGE

Pursuant to section 67(1) of the **Coroners Act 2008**, I make findings with respect to **the following circumstances**:

1. At 12.19am on 14 August 2017, Baby S[1] was born by emergency caesarean section at the Angliss Hospital in Upper Ferntree Gully. Baby S had a lotus birth (or umbilical cord nonseverance)[2] and vaginal seeding.[3] She was the first child born to Libby Stuart and Andrew Stuart. As Baby S was premature and at a low birth weight, she was transferred to the Angliss Hospital Special Care Nursery (SCN) at approximately 4.40pm, approximately 16 hours after her birth.

2. On 15 August 2017 at 11.45pm, hospital staff arranged for an urgent clinical review of Baby S as she was grunting, pale and had a mottled appearance. At 11.55pm, she was reviewed by Resident Medical Officer Dr Jennifer Martin. Baby S's abdomen was distended, and she had a hypothermic temperature (35.8°C). In light of her symptoms, Paediatric Consultant Dr Peter Forrest was contacted by telephone. The physicians discussed sepsis[4] as a possible cause of her symptoms.

3. On 16 August 2017 at approximately 1.30am, Baby S was provided antibiotics, benzylpenicillin as well as gentamicin, and blood cultures were also taken for testing. At 5.30am, a further review of Baby S was conducted that identified ongoing grunting, increased work of breathing and increasing lethargy. At 5.45am, cefotaxime (an additional antibiotic) was provided to address potential meningitis.

4. At 6.00am, Dr Forrest arrived at the SCN subsequent to being called to attend to Baby S. Multiple normal saline boluses (40mls/kg total) were given and a normal saline IV infusion was started. On examination, Baby S had a normal heart and respiratory rate however she required 30% oxygen in the cot to maintain normal oxygen saturation. She appeared pale and mildly jaundiced, with reduced peripheral perfusion, low tone and minimal spontaneous movements. Baby S had a developing red rash to her lower back

[1] The child's name and her parent's names have been redacted and pseudonyms inserted.

[2] Lotus birth is the practice of leaving the umbilical cord uncut after childbirth so that the baby is left attached to the placenta until the cord naturally separates at the umbilicus.

[3] Vaginal seeding is the process of placing vaginal fluid on a newborn, born by caesarean section. The process is intended to expose the newborn to the same bacteria as if it were born vaginally.

[4] Sepsis is a life-threatening condition that arises when the body's response to infection causes injury to its own tissues and organs. As severity worsens, signs of shock (e.g., cool skin and cyanosis) and organ dysfunction develop (e.g. acute kidney injury, altered mental status).

and buttocks, and her abdomen was mildly distended. Dr Forrest also suspected ambiguous genitalia and hence considered the diagnosis of congenital adrenal hyperplasia (CAH).[5] Dr Forrest's differential diagnosis list included sepsis (bacteraemia,[6] urinary tract infection, pneumonia or meningitis), CAH, necrotising enterocolitis (NEC),[7] a metabolic condition, a congenital cardiac disorder, a clotting disorder (as no Vitamin K had been administered to Baby S), severe dehydration, recurrence of hypoglycaemia and acute renal impairment.

5. At approximately 6.30am, Dr Martin, discussed Baby S's differential diagnosis and medical management plan with the Paediatric Infant Perinatal Retrieval (PIPER).[8] At approximately 6.40am, Dr Forrest spoke directly to PIPER Consultant Professor Andrew Stewart, and informed him that Baby S had improved with the fluid boluses and her work of breathing was reduced. The PIPER team were provided a detailed and comprehensive medical history. The team were informed of Baby S's lotus birth but were not aware that she had vaginal seeding.

6. Further bloods tests were taken to investigate for CAH and IV hydrocortisone was given as a potential treatment. At 7.30am, Continuous Positive Airway Pressure (CPAP)[9] was commenced at 7cm of water, in 30% oxygen. At 7.35am, Dr Forrest reviewed Baby S and noted that her colour and tone had improved on CPAP and that she appeared stable. At 8.00am, Baby S's observations[10] were normal and she remained stable on CPAP.

7. At approximately 8.15am, Dr Martin contacted PIPER again to update them on Baby S's progress. The PIPER team arrived soon after and Dr Martin was advised to handover

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[5] Congenital adrenal hyperplasia (CAH) is an autosomal recessive condition caused by deficiency of one of a range of enzymes required to make cortisol, aldosterone and androgens. Clinical features include varying degrees of genital ambiguity in the neonate and metabolic derangements such metabolic acidosis, hyperkalaemia, hyponatraemia and hypoglycaemia.

[6] A bacterial infection of the blood.

[7] Necrotising enterocolitis (NEC) is when sections of the bowel tissue die. NEC is the most common gastrointestinal emergency in neonates and can present late in low birth weight babies. Early or suspected NEC is difficult to diagnose and early treatment with orders for nil by mouth and broad-spectrum antibiotics should be considered.

[8] PIPER is a state-wide service which provides accessible and timely expert advice to health care providers for paediatrics and high-risk obstetric care.

[9] CPAP is a mode of delivering non-invasive ventilation. The use of continuous positive pressure to maintain a continuous level of positive airway pressure. CPAP uses mild air pressure to keep an airway open. CPAP typically is used for people who have breathing problems, such as sleep apnoea.

[10] All vital signs were normal at this time; heart rate 136, respiratory rate 45.

directly to the retrieval team who were to transfer Baby S to the Royal Children's Hospital (RCH). On initial assessment, Baby S was pale, hypothermic (36.1°C), hypotensive (a low mean blood pressure of 20mmHg), had no spontaneous movements, increasing abdominal distension and grey/green discolouration. Baby S's treatment plan was discussed over the phone with Professor Stewart at 8.44am, 9.30am and at 10.22am.

8. Baby S was quickly intubated, and further treatment was initiated by PIPER, including metronidazole to cover for NEC, a blood transfusion (at 9.20am) and intramuscular vitamin K (at 9.25am). A further normal saline bolus 10ml/kg was given to Baby S, and prostaglandin[11] as well as adrenaline infusions were started. Two sodium bicarbonate corrections were given due to acidosis. Pancuronium[12] was also given to Baby S.

9. Prior to departure to the RCH, the PIPER doctor discussed Baby S's medical management with her parents. They were advised that she was extremely unwell and had a risk of deterioration and death during transfer. At 11.49am, Baby S departed with PIPER. Upon departure from the Angliss Hospital, Baby S's endotracheal tube[13] was documented to be in a good position, there was chest wall movement and her heart rate was stable. Baby S was requiring 100% oxygen, oxygen saturations remained low at 88-92%.

10. On route with PIPER, the ambulance had to pull over on the freeway due to Baby S's instability; she had further deterioration with oxygen desaturation to 20%. A needle aspiration[14] was preformed due to unequal air entry and suspicion of a pneumothorax[15] but no air was aspirated. At 12.00pm, an initial adrenaline bolus was given intravenously as Baby S's heart rate had dropped to 80 beats per minute (bpm). In telephone consultation with Professor Stewart, the decision was made to continue moving toward the RCH Emergency Department (ED) with adrenalin boluses every five minutes. A normal saline bolus was also given.

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[11] Prostaglandin in a medication used to in newborn babies with certain suspected congenital cardiac defects to ensure adequate flow of oxygenated blood.

[12] A paralysing agent.

[13] Placement of a flexible plastic or rubber tube into the trachea (windpipe) to maintain an open airway.

[14] A small-bore needle is inserted through the side of the chest into the pleural space. It is used to remove air (pneumothorax) from the intrathoracic space, usually in an emergency situation.

[15] A collection of air or gas in the chest or pleural space that causes part or all of a lung to collapse.

11. On arrival at 12.25pm at the RCH ED, the PIPER team was met by Professor Stewart and Dr Kevin Wheeler. External cardiac compressions were commenced immediately due to Baby S's low heart rate of 40 bpm. Compressions were continued on route to the Neonatal Intensive Care Unit (NICU). Arrival time on the ward was 12.35pm. Another adrenaline bolus and normal saline bolus was given on arrival. Baby S's pupils were fixed and dilated, her oxygen saturations were unrecordable and her heart rate was dropping with pauses in compressions. The decision was made by both the PIPER and NICU consultants to continue compressions until Baby S's parents arrived, but no further medication was given.

12. At 1.00pm, Mr Stuart and Mrs Stuart arrived, they were told Baby S's prognosis and chest compressions were ceased. At 1.03pm, Baby S was given to her parents. Baby S was declared deceased at 1.30pm on 16 August 2017.

INVESTIGATIONS

Forensic pathology investigation

13. Dr Sarah Parsons, Forensic Pathologist at the Victorian Institute of Forensic Medicine (VIFM), performed an autopsy upon the body of Baby S, reviewed the medical records of the Angliss Hospital, a post mortem computed tomography (CT) scan and referred to the Victoria Police Report of Death, Form 83.

14. Dr Parsons summary of autopsy findings included:

    a. Bilateral pleural effusions;[16]

    b. Haemorrhagic epicardium;[17]

    c. Pneumatosis coli[18] in keeping with necrotising enterocolitis;[19]

    d. Fibrin thrombi in the lungs, and[20]

[16] The build-up of excess fluid between the layers of the pleura (membrane) outside the lungs.

[17] Bleeding from the serous membrane that forms the innermost layer of the pericardium, attached to the muscles of the wall of the heart.

[18] Gas cysts in the bowel wall.

[19] A medical condition where a portion of the bowel dies.

e. The umbilical cord showed an infiltrate of neutrophils[21] which extend into Wharton's jelly.[22] The degree of inflammation is likely to represent at least a stage II foetal inflammatory response.[23]

15. Dr Parsons commented that microbiological analysis of Baby S's body did not culture any bacteria or viruses. Dr Parsons noted that Baby S was given IV antibiotics in hospital and this was possibly the reason for the negative post mortem microbiology. She also noted that Baby S was a female infant with genitalia presenting on the normal spectrum; there was no indication of CAH.

16. Dr Parsons stated that the placenta was of low weight but otherwise appeared normal. The umbilical stump, however, showed a heavy infiltrate of neutrophils which extend into Wharton's jelly. Dr Parsons provided the autopsy slides, photographs and draft report to the Royal Women's Hospital for review. According to Dr Collett '*the degree of inflammation is likely to represent at least a stage II foetal inflammatory response. This raises the possibility of a foetal peripartum infection.*[24] *It is not known if this inflammatory response can develop in the cord post-delivery in the setting of a lotus birth*.'

17. Dr Parsons identified very early necrotising enterocolitis. She also identified cellular and myxoid[25] changes of the meninges,[26] and noted that the cause and or significance of these changes was uncertain. There was no evidence of meningitis. Dr Parsons stated that there was inflammation in the peri-pancreatic and soft tissue and a heavy neutrophilic infiltrate in the umbilical cord stump. Dr Parsons identified a raised C-reactive protein which is indicative of infection.

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[20] A blood clot formed by repeated deposits of fibrin (a protein involved in blood clotting) from the circulating blood.

[21] A type of white blood cell that protect from infections, among other functions. These are the first cells to arrive at the site of a bacterial infection.

[22] Wharton's jelly is a gelatinous substance within the umbilical cord, largely made up of mucopolysaccharides (hyaluronic acid and chondroitin sulfate).

[23] The foetal inflammatory response syndrome (FIRS) is a condition characterized by systemic inflammation and an elevation of foetal plasma interleukin-6.

[24] An infection may have occurred during the short period before, during and immediately after birth.

[25] "resembling mucus".

[26] The meninges are the membranous coverings of the brain and spinal cord.

18. Toxicological analysis on post mortem specimens has detected morphine, which was administered to Baby S as part of the resuscitation process.

Lotus Birth and Vaginal Seeding

19. Dr Parsons referred to the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) website for the definition of seeding:

> *Seeding is undertaken in women whose baby has been born by caesarean section. The mother's vaginal fluids are applied to the baby's mouth, face and body shortly after birth. The intention behind seeding is to expose the baby delivered by caesarean section to bacteria similar to that of babies born vaginally. While the transfer of bacteria at the time of birth can alter developing microbiota, and babies will have a different exposure and balance of bacteria depending on their mode of birth, the health implications for babies requires further research.*

20. Dr Parsons stated that the Royal College of Obstetricians and Gynaecologists (RCOG) in the UK had issued a statement on umbilical non-severance or lotus birth, which was available on their website:

> (At the time of issuing this statement), *no research exists on lotus births and there is currently no medical evidence that it is of benefit to the baby...*
>
> Dr Patrick O'Brien, RCOG spokesperson, said:
>
> *Before choosing umbilical non-severance, all women should be fully informed of the potential risks, which may include infection and associated risks to the baby's health. If left for a period of time after the birth, there is a risk of infection in the placenta which can consequently spread to the baby. The placenta is particularly prone to infection as it contains blood. Within a short time after birth, once the umbilical cord has stopped pulsating, the placenta has no circulation and is essentially dead tissue.*
>
> *If women do opt for umbilical non-severance, the RCOG strongly recommends that their babies be monitored carefully for any signs of infection.*[27]

[27] Royal College of Obstetricians and Gynaecologists, *RCOG statement on umbilical non-severance or "lotus birth"*, (1 December 2008) Internet Archive <https://www.rcog.org.uk/en/news/rcog-statement-on-umbilical-non-severance-or-lotus-birth> date accessed 12 April 2017.

21. Dr Parsons commented that the medical literature on seeding and lotus births is scant and she recommended seeking an opinion on these practices should be sought from a clinical neonatologist.

Medical Cause of Death

22. Dr Parsons ascribed the medical cause of Baby S's death to sepsis.

Coroners Prevention Unit Investigation

23. Mrs Stuart raised a number of concerns in relation to her daughter's medical management. In light of these concerns as well as my own, I requested that the Coroners Prevention Unit (CPU)[28] review the circumstances surrounding Baby S's death. Specifically, I requested a review of the intrapartum and newborn care provided by staff at the Angliss Hospital.

24. The CPU reviewed a multitude of sources including the:

    a. Victoria Police Report of Death for the Coroner;

    b. VIFM Medical Examiner's Report (MER);

    c. E - Medical deposition form;

    d. Medical Records (Eastern Health/Angliss Hospital);

    e. Medical Records (Royal Children's Hospital);

    f. Statement of Associate Professor Christos Georgiou (Director of Obstetrics at Angliss Hospital);

    g. Statement by Dr Sugandha Kumar (Consultant Obstetrician at Angliss Hospital);

    h. Statement by Gail Bousi (Doula);

    i. Statement by Dr Peter Forrest (Consultant Paediatrician at Angliss Hospital);

[28] The Coroners Prevention Unit (CPU) was established in 2008 to strengthen the prevention role of the coroner. The unit assists the coroner with research in matters related to public health and safety and in relation to the formulation of prevention recommendations, as well as assisting in monitoring and evaluating the effectiveness of the recommendations. The CPU comprises a team with training in medicine, nursing, law, public health and the social sciences.

j. Statement by Dr Jennifer Martin (Resident Medical Officer at Angliss Hospital);

k. Statement by Dr Tegan French (Paediatrician Registrar at Angliss Hospital)

l. Statement by Associate Professor Andrew Stewart (Director of PIPER)

m. Family letters of concern (emails dated 31 October 2017 and 7 January 2018)

Relevant Medical History

25. Mrs Stuart had a family history of diabetes and therefore had a risk of gestational diabetes.[29] However, it was unknown whether she had gestational diabetes as she was unable to tolerate the glucose testing required.[30]

26. Mrs Stuart's initial antenatal investigations were normal however her pregnancy was later complicated by breech presentation[31] requiring an elective caesarean section. At 34 to 36 weeks gestation, Mrs Stuart declined routine GBS[32] screening.

27. Mrs Stuart was initially seen by a Consultant Obstetrician Dr Sugandha Kumar. At 19 weeks gestation, Mrs Stuart requested a transfer to public maternity care through the Angliss Hospital. Mrs Stuart was then reviewed by multiple obstetricians at the Angliss Hospital including Professor Christos Georgiou, Dr Kumar and Dr Lee.

28. At 22 weeks gestation on 3 May 2017, Mrs Stuart was reviewed by Professor Georgiou. He noted that previous ultrasound scans indicated that the fetus was smaller than expected for her gestational age and specifically noted that he was concerned about the baby's growth. Following this consultation, Mrs Stuart was changed to the 'red pathway'[33] of antenatal care which required a combination of antenatal consultations with both midwives and medical practitioners.

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[29] Gestational diabetes is a diabetes that occurs when you are pregnant and is associated with obstetric and neonatal complications.

[30] Glucose challenge testing.

[31] The baby is bottom first, with the thighs against the chest and feet up by the ears.

[32] Group B Streptococcus (GBS) is a bacterial pathogen commonly found in the vaginal tract. Australian maternity hospitals screen pregnant women for GBS infection to reduce the risk of GBS infection in newborn infants.

[33] Previously Mrs Stuart was on the 'green pathway' of antenatal care which meant that most of her antenatal consultations was with midwives. The 'red pathway' meant that there would be increased antenatal consultation with medical practitioners. Professor Georgiou also noted that the 'red pathway' has now been changed so that

29. Mr Stuart and Mrs Stuart wrote an extensive birth plan[34] which included a lotus birth. The plan also requested vaginal seeding, which involved no antibiotics and the baby to be passed to Mrs Stuart for post-birth swabbing of the baby's mouth, face and body. If the baby required admission to the Neonatal Intensive Care Unit (NICU), the plan requested no vaccinations, no antibiotics and a lotus birth if possible. There was limited documentation in the medical records regarding discussion of the risks of Mrs Stuart's birth plan.

30. The plan for a lotus birth was discussed with Professor Georgiou. Professor Georgiou had observed a limited number of lotus births in the UK and Australia. In his statement to the Court, Professor Georgiou did not indicate any discussion with Baby S's parents in relation to the risks of lotus birth. He made the following comment:

> *I knew the midwives at the hospital had some experience with lotus births, and I did not consider Mrs Stuart's desire for a lotus birth to be a particular problem. However, I did advise her that there were some scenarios in which a lotus birth would not be possible. These included situations in which herself or the baby were at risk of morbidity or mortality. For example: if she suffered a haemorrhage at delivery, and/or if the baby required active resuscitation.*

31. On 26 May 2017, 9 June 2017 and 27 July 2017, Mrs Stuart was reviewed by Dr Kumar. Dr Kumar outlined multiple discussions with Mrs Stuart regarding the plan for lotus birth and vaginal seeding in her statement. At initial consultations, Mrs Stuart was advised that a lotus birth was possible if there were no complications at birth and that it may be difficult if she required a caesarean section. Dr Kumar stated:

> *I also advised her that there was a risk of infection associated with a lotus birth and I explained that this risk arose because the placenta, which would then be dead tissue, remained attached to the baby.*
>
> *When the risk of infection was raised with her,* (Mrs Stuart) *said it would not be a problem because she had a salt basket to put the placenta in and given that the baby*

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any woman over the age of 40 years old or any pregnancy conceived with assisted reproductive technology would be placed on the 'red pathway.'

[34] A copy of the birth plan is on the Court file.

was scheduled to be born in August, the weather would not be hot, so she did not believe there was any great risk of infection.

32. Dr Kumar first reviewed the birth plan at a consultation on 9 June 2017. Dr Kumar advised Mrs Stuart that the hospital staff would not perform the swabbing required for vaginal seeding. Dr Kumar also stated:

I advised Mrs Stuart against vaginal seeding, noting there was insufficient data regarding its potential benefits, and that it was associated with a risk of infection to the baby. When it became apparent that, despite my advice to the contrary, Mrs Stuart still wanted to undertake vaginal seeding, I advised that, as a minimum safety mechanism, she should undertake GBS testing. However, Mrs Stuart declined GBS testing.

33. From 32 weeks gestation, Baby S remained in breech presentation. On 27 July 2017, Dr Kumar booked Mrs Stuart an elective caesarean section on Dr Lee's operating list due to breech presentation. During this consultation, Mrs Stuart declined GBS testing and the pertussis vaccination.[35] Mrs Stuart reiterated her request for a lotus birth and Dr Kumar said that she recommended that she discuss the plan with Dr Lee. Dr Kumar stated that she reiterated her earlier advice against vaginal seeding and offered Mrs Stuart the option of seeing another specialist for a second opinion on these matters, but Mrs Stuart declined. Dr Kumar stated:

I again advised her that a lotus birth may not be possible as there was a potential risk of bleeding associated with the incision site at a caesarean section. She said she understood this and would agree to the cord being cut if there was excessive bleeding at the time of the caesarean section. I also advised Mrs Stuart that a lotus birth would only be possible if the baby was born in a good condition and did not require active resuscitation. I also advised Mrs Stuart that there was a risk of infection to the Baby Sssociated with a lotus birth.

[35] Pertussis (whooping cough) vaccination is recommended in the third trimester of pregnancy to provide optimal passive immunity to the newborn (maternal pertussis vaccination during pregnancy provides transfer of immunity to the fetus). Pertussis in newborn infants can cause a severe respiratory infection.

34. On 2 August 2017, Mrs Stuart consulted Dr Lee. Dr Lee recommended that Mrs Stuart undergo an external cephalic version[36] to facilitate a vaginal delivery. This was scheduled to occur on 16 August 2017 but did not proceed due to Baby S's preterm birth.

35. At 6.45pm on 13 August 2017, Mrs Stuart had spontaneous premature preterm rupture of membranes at home, the liquid was clear. She presented to the Angliss Hospital at 10.15pm on the same day. Mrs Stuart was afebrile with normal vital signs. At this time Mrs Stuart declined prophylactic antibiotics and antenatal steroid loading.[37] A high vaginal swab for GBS was not performed. Eastern Health maternity admission notes document the GBS status as "declined".

36. At 11.10pm, Mrs Stuart was taken to the operating theatre for a semi-emergency caesarean section under spinal anaesthesia due to premature preterm rupture of membranes and extended breech lie. The caesarean section was conducted by Dr Kumar. Mrs Stuart was not in active labour and there were no acute concerns at the time.

37. At 12.19am on 14 August 2017, Baby S was born in good condition; she did not require any initial resuscitation. The paediatric HMO present at the birth was aware of the parental wishes for a lotus birth and this plan was continued. After Baby S was born, Vitamin K[38] and Hepatitis B vaccination were declined.

38. Pursuant to the Angliss Hospital guidelines, Baby S met two criteria for Special Care Nursery (SCN) admission for monitoring; prematurity and low birth weight (LBW) under 2500g.[39] Baby S's parents initially refused admission and a Refusal of Treatment Certificate was signed by Mrs Stuart following discussion with the paediatric HMO at approximately 5.00am on 14 August 2017.

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[36] External cephalic version (ECV) is the process by which a breech baby is manually turned within the uterus to enable vaginal delivery.

[37] Corticosteroid therapy is administered prior to delivery to reduce the incidence and severity of respiratory distress syndrome and mortality in premature infants.

[38] Vitamin K is given at birth as prophylaxis for the prevention of haemorrhagic disease of the newborn.

[39] Low birth weight (LBW) is defined by the World Health Organization as a birth weight of 2,499 g or less, regardless of gestational age. Baby S's birth weight was 2070g.

39. All infants born premature and at a low birthweight are at risk of both hypoglycaemia (low blood sugar) and hypothermia (low body temperature). The CPU informed me that Eastern Health had appropriate policies to ensure regular monitoring for both. Mr Stuart and Mrs Stuart initially declined blood sugar testing. Subsequently, the first blood sugar investigation was able to be conducted, and Baby S's blood sugars were normal at that time.

40. At 3.40pm on 14 August 2017, Locum Paediatric Registrar Dr Tegan French reviewed Baby S for hypoglycaemia of 1.3mmol/l. Dr French explained to Mrs Stuart and Mrs Stuart that Baby S needed to be admitted to SCN for further monitoring and management of the hypoglycaemia. Dr French explained the hospital's protocol and provided the parents with a copy of the hospital's protocols for management of infants at risk of hypoglycaemia. Following this discussion, Baby S's parents agreed to a SCN admission.

41. At 4.40pm when she was approximately 16 hours old, Baby S was transferred to the SCN. Upon arrival to SCN, Baby S presented with persistent hypoglycaemia (blood sugar <2.6mmol/l) and hypothermia (temperature 35.6°C). Baby S appeared mottled and had low tone. She had no increased work of breathing and her abdomen was soft. An initial intravenous (IV) 10% dextrose[40] bolus[41] was given followed by a 10% dextrose infusion. No other blood tests were done at the time. Following the bolus, Baby S's colour and activity improved.

42. Dr French stated that:

> *I was concerned about the placenta which remained attached to Baby S, and the SCN nurses also raised their concern about this with me… …I explained that the placenta remaining attached creates a risk of infection. The nursing staff also explained that it would be difficult to nurse Baby S in the isolette with placenta attached. I told Baby S's parents that I strongly recommended removal of the placenta, and they agreed to this.*

[40] A sugar chemically identical to glucose.

[41] In medicine, a bolus is the administration of a discrete amount of medication, drug, or other compound within a specific time.

43. At 5.00pm when Baby S was approximately 17 hours of age, her parents consented to removal of the placenta and separation of the umbilical cord.

44. In the evening of 14 August 2017 and during the day on 15 August 2017, there were no concerns, Baby S's vital signs were normal and the results of an examination by Paediatric Consultant Dr Lam were also normal. Consequently, medical practitioners intended to wean Baby S off IV fluids and to grade up oral feeds. At 8.25pm, Baby S had a high blood sugar level of 12.2mmol/l and IV fluids were ceased accordingly at 9.00pm.

Review of Statements

Associate Professor Christos Georgiou

45. The Court sent statement questions to Associate Professor Christos Georgiou regarding Mrs Stuart's obstetric management. Most of his statement has been incorporated into the summary of circumstances at the beginning of this Finding. The remaining issues are summarised below. In particular, Professor Georgiou provided a summary of the Root Cause Analysis (RCA) conducted by the Angliss Hospital (referred to as 'the hospital' by Professor Georgiou).

46. The issues identified by the RCA were:

    a. Mrs Stuart had discussed her very specific birth plan with the midwives and consultants during her antenatal care. The treating team advised her that a lotus birth may be able to be facilitated but advised her against vaginal seeding;

    b. Mrs Stuart refused tests to determine her GBS status;

    c. On admission to the hospital, Mrs Stuart declined antibiotics and steroids for prematurity;

    d. Mrs Stuart initially declined transfer of Baby S to the special care nursery;

    e. Mrs Stuart did not disclose to hospital staff that she had been using unscreened donor breast milk. The risks associated with the use of unscreened donor milk is not standard information provided to patients antenatally;

f. Unbeknownst to hospital staff at the time, whilst Mrs Stuart and Baby S remained on the post-natal ward, Mrs Stuart had been performing vaginal seeding on an hourly basis. This was despite Mrs Stuart having previously been advised against such a practice;

g. Whilst there had been a discussion with Mrs Stuart surrounding the risks associated with a lotus birth, she was not accepting of those risks, and

h. Mrs Stuart did not initially consent to recommended interventions for baby Baby S, including admission to the SCN and testing of Baby S's blood sugar levels. It was queried whether staff escalated their concerns early enough to senior management.

47. The RCA recommendations were:

a. The hospital is to develop a policy regarding lotus births. This is underway;

b. The hospital should ensure that all staff escalate their concerns to the Chief Medical Officer or executive staff when parents refuse medical treatment or make unusual requests. We have repeatedly, through emails and our regular meetings, encouraged staff to escalate problems (including refusal of treatment);

c. Patients should be provided with consumer brochures detailing the risks associated with using unscreened donor breast milk. A patient brochure is currently being developed, and

d. Education should be provided to staff regarding the clinical indicators that need to be assessed for potential neonatal GBS infections when a woman's GBS status is unknown. Ongoing education for this occurs during midwifery education sessions and we have a policy/flow chart for this.

Consultant Obstetrician Dr Sugandha Kumar

48. The majority of Dr Kumar’s statement has been incorporated into the summary of circumstances and relevant medical history sections at the earlier in this Finding. Dr Kumar outlined her discussions regarding the risks of Mrs Stuart’s birth plan in relation to a lotus birth and vaginal seeding.

Doula Gail Bousi

49. Gail Bousi provided an outline with her involvement with Mrs Stuart and Mr Stuart. Ms Bousi had known the couple for approximately 18 years and was their doula. Ms Bousi is an Australian Doula College member and certified birth doula.

> *My first role as a doula is to inform and educate women and their partners about pregnancy and birth. Then to offer non-judgemental and unconditional support of their wishes and choices.*

50. Ms Bousi did not have experience with lotus births but ensured that the plan was discussed with and approved by with their obstetrician, Dr Kumar:

> *At this meeting we discussed their wish to have a lotus birth which I explained that I had no experience with but was willing to learn and support them as long as their OB and the hospital were also agreeable.*
>
> *From her own research Libby never came across any negative effects of a lotus birth and was also never given any information stating any possible risks of infection from any care providers or medical staff.*

51. Ms Bousi was aware of the plan for vaginal seeding. Ms Bousi was under the impression that the obstetrician, Dr Kumar, and the Angliss Hospital were agreeable to this plan. This was based on the signed birth plan.

Consultant Paediatrician Dr Peter Forrest

52. The majority of Dr Forrest's statement has been incorporated into the summary of circumstances at the beginning of this Finding. In particular, Dr Forrest outlined his involvement with Baby S and the events from approximately 12.20am on 16 August 2017.

53. During the early hours of 16 August 2017, when sepsis was initially considered as a diagnosis, the paediatric team were aware of the risk factors for infection including prematurity, lotus birth and unknown maternal GBS status. They were not initially aware of vaginal seeding. At 2.30am Professor Christos Georgiou, obstetric consultant, was advised by midwifery staff that the mother had practised seeding on the baby. The paediatric resident was first advised of this at 5.30am.

54. Dr Forrest also provided additional information in relation to the SCN workload during Baby S's decline on 16 August 2017. The SCN was at full capacity overnight with eight admitted babies being managed by two experienced neonatal nursing staff. Dr Forrest stated that he administered two normal saline boluses himself rather than waiting for a syringe pump to be set up. Extra staff commenced at 7.00am and were able to provide extra assistance after this time.

55. Between 7.35am and 8.15am, Dr Forrest stated that further escalation of respiratory support was considered prior to PIPER arrival however '*there was never any clinical indication that intubation was required*.' Dr Forrest expanded on this in his statement; he explained that intubation at the Angliss Hospital (a lower acuity SCN) is done when there is severe respiratory distress despite being on CPAP. This was not the case for Baby S; she was stable on CPAP. In addition, he stated:

> *The PIPER team have the expertise and appropriate equipment to intubate the baby safely after giving the baby sedation, analgesia and muscle blockade for paralysis, equivalent to a general anaesthetic.*

56. Dr Forrest provided the following Eastern Health protocols and policies:

    a. Special Care Nursery – Admission Criteria

    b. Management of infants at risk of hypoglycaemia

    c. Sepsis in Neonates Practice Guideline

    d. Vaginal Seeding

57. Dr Forrest outlined the findings of the case review at the Paediatric Morbidity and Mortality meeting held on 20 October 2017. The meeting discussed the potential differential diagnosis and that sepsis had not been confirmed. There had been no growth on any of the blood cultures or other tissues cultures; in particular, the blood culture performed prior to starting antibiotics had no microorganism growth. Baby S's case was also discussed at a subsequent meeting after the provisional autopsy results were available in 2018:

It was the opinion of the hospital paediatricians, that if a baby becomes unwell following a lotus birth and vaginal seeding, resulting in admission to the SCN, the baby should be started on antibiotics immediately and a recommendation made to the parents that the placenta be removed.

58. The issues identified in the case review were:

    a. The importance of early recognition of sepsis in newborns and the need for prompt antibiotic treatment for sepsis and treatment of associated shock.

    b. The difficulties in reaching an exact diagnosis in an unwell neonate whilst waiting for the results of investigations, particularly when blood collection is not possible due to poor tissue perfusion.

    c. Earlier respiratory support with CPAP at 6.45am prior to taking the blood tests may have lowered Baby S's carbon dioxide sooner, although doing so would have delayed inserting another IV cannula and giving additional IV fluid resuscitation to manage her metabolic acidosis and shock.

    d. In a critically unwell infant, it is best to not rely on just one IV access line due to the volume and number of different fluids that may be needed.

    e. The assistance and advice from the PIPER team, while in transit to the referring hospital, is crucial to the management of unwell infants, particularly when the differential diagnoses are not clear cut.

    f. The importance of seeking early assistance overnight from other senior staff within the hospital when a baby becomes unwell over a short period of time, particularly in situations in which the paediatrician on-call is required to attend the hospital from home.

59. Dr Forrest stated that a meetings between Baby S's parents and the Angliss Hospital had not occurred. A meeting had been scheduled for 15 September 2017, but it did not proceed. After the VIFM MER was made available to Dr Forrest, he sent a meeting invitation to Mr Stuart and Mrs Stuart. Dr Forrest stated that Baby S's parents did not responded to this invitation.

Paediatric Registrar Dr Tegan French

60. The majority of Dr French's statement has been incorporated into the case summary above. In particular, Dr French outlined her involvement with Baby S at the initial admission to SCN on 14 August 2017.

Director of PIPER Associate Professor Andrew Stewart

61. The majority of Professor Stewart's statement has been incorporated into the summary of circumstances at the beginning of this Finding. In particular, Professor Stewart outlined the level of experience of PIPER staff involved in Baby S's care.

62. The PIPER team sent to retrieve Baby S consisted of a doctor and a neonatal retrieval nurse who both had appropriate experience and credentials to manage the retrieval. The doctor was a consultant level senior neonatal trainee, who at the end of her six- month term with PIPER, commenced as a Consultant Neonatologist in a major tertiary neonatal unit in the UK. The nurse had post graduate qualifications in neonatal intensive care and had undertaken more than 70 emergency neonatal retrievals.

63. The case was reviewed at the PIPER Morbidity and Mortality meeting on 14 August 2017. The meeting focused on identifying adverse events related to PIPER's performance. No adverse events or gaps in care were identified in relation to PIPER's management and no recommendations for improvements were identified. The process did identify a possible delay in antibiotic administration by the Angliss Hospital. Professor Stewart stated that this was communicated to the Angliss Hospital paediatrician.

64. On 8 March 2018, Professor Stewart attended a meeting with Baby S's parents and RCH Neonatologists Dr Amanda Moody and Dr Natalie Duffy. The purpose of the meeting was to provide bereavement follow-up. Professor Stewart stated that Baby S's parents expressed anger at information on the VIFM MER and expressed feelings that they were being blamed for Baby S's death by delaying treatment recommendations. They strongly denied this. Professor Stewart stated that '*when they recounted aspects of Baby S's course from birth until transfer it was clear that some of their recall was inaccurate*.'

65. Professor Stewart provided Mrs Stuart and Mr Stuart with PIPER's version of events and emailed them a copy of the time stamped events and main interventions that were

recorded in the PIPER database. The RCH staff also encouraged them to engage with the Angliss Hospital staff to enable further discussion and explanations to take place. Professor Stewart contacted the Head of Paediatrics at Eastern Health to update them about the family meeting and ensure that there was a process in place for Eastern Health to make further efforts to engage with Baby S's parents.

Review and Assessment of Contributing Factors

Lotus Birth and Vaginal Seeding

Lotus Birth

66. The CPU informed me that Lotus birth is based on the belief keeping the placenta attached allows for a slower transition for the infant and the transfer of additional umbilical cord blood which includes stem cells. However, no evidence-based research exists on lotus births and there is currently no medical evidence that it is of benefit to the baby.[42] There is no current consensus statement on the practice from the RANZCOG. As previously stated, the UK RCOG statement on the practice states that there is a lack of research into the risks of lotus birth. RCOG spokesperson Dr O'Brien has indicated that lotus birth carries a unique risk of infection as it becomes dead tissue once the umbilical cord has stopped pulsating. The RCOG strongly recommends careful monitoring for signs of infection where an infant has a lotus birth.[43]

Vaginal seeding

67. Vaginal seeding is sometimes undertaken in women whose baby has been born by caesarean section. The purpose of seeding is to expose babies delivered by caesarean section to bacteria similar to that of babies born vaginally. This is done by applying the mother's vaginal fluids on a swab to the baby's mouth, face and body shortly after birth.

[42] Monroe, K. K. et al. (2018) 'Lotus Birth: A Case Series Report on Umbilical Nonseverance', Clinical Pediatrics. doi: 10.1177/0009922818806843. (First published 19 October 2018, accessed 21 November 2018).

[43] Royal College of Obstetricians and Gynaecologists, RCOG statement on umbilical non-severance or "lotus birth", (1 December 2008) Internet Archive <https://www.rcog.org.uk/en/news/rcog-statement-on-umbilical-non-severance-or-lotus-birth> date accessed 21 November 2018.

68. In 2016, RANZCOG released a statement[44] regarding the practice which advised hospital staff not to perform vaginal seeding '*because we believe the small risk of harm cannot be justified without evidence of benefit… Parents should be advised to mention that they performed vaginal seeding if their baby becomes unwell because this may influence a clinician's assessment of risk of serious infection.'*

69. The CPU informed me that the practice of vaginal seeding is still uncommon and the health implications for babies is unknown due to a lack of evidenced-based research.[45] Vaginal seeding can be complicated by neonatal infection, such as by GBS, which may be severe. The CPU advised me that risk of GBS infection in this case is of particular importance as Mrs Stuart was not screened for GBS colonisation and also declined intrapartum antibiotic prophylaxis.[46]

70. GBS are bacteria that occur naturally in the vagina and bowel in some women. Carrying GBS (colonisation) is normal and rarely harmful to healthy non-pregnant women. However, GBS can be transferred to a baby during birth. There is a small chance a baby who contacts GBS during labour will develop an infection and become seriously ill. GBS is the leading cause of early onset neonatal sepsis in developed countries. Giving antibiotics to the mother during labour reduces the risk of a baby developing a GBS infection soon after birth.

71. The RANZCOG guideline 'Maternal Group B Streptococcus in pregnancy: screening and management'[47] does not recommend vaginal seeding:

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[44] Royal College of Obstetricians and Gynaecologists, *Vaginal Seeding*, (4 January 2016) <https://www.ranzcog.edu.au/news/Vaginal-Seeding> date accessed 21 November 2018.

[45] Cunnington, A. J et al. (2016). *Vaginal seeding of infants born by caesarean section*, the BMJ. (23 February 2016) <http://dx.doi.org.elibrary.jcu.edu.au/10.1136/bmj.i227> date accessed 21 November 2018.

[46] Intravenous penicillin or ampicillin antibiotic prophylaxis is offered to all women at increased risk of early onset GBS sepsis just prior to delivery.

[47] Royal Australian and New Zealand College of Obstetricians and Gynaecologists, Maternal Group B Streptococcus in Pregnancy: Screening and Management, Guidelines and Media, <https://ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-%20MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-%20Obstetrics/Maternal-Group-B-Streptococcus-in-pregnancy-screening-and-management-%20(C-Obs-19)-Review-March-2016.pdf?ext=.pdf.> (accessed 5 December 2018).

Given the unproven benefits of this practice for infant immune system development, and the potential risk of early or late onset GBS disease as a consequence of infant colonisation, vaginal seeding should not be performed in GBS positive women.

72. Mrs Stuart's GBS status was unknown and therefore the risk of infection to Baby S from vaginal seeding was not quantifiable.

Hospital policies

73. At the time of Baby S's birth, there was no policy in place at Eastern Health regarding lotus birth or vaginal seeding. At the time of completing this Finding, Eastern Health advised me that it has not developed a guideline regarding Lotus Births. As the practice is not recommend by the health service, it was debated as to whether or not such a guideline should be developed - it was considered that to publish such a guideline may lead consumers to form a belief that Lotus Births are supported at Eastern Health facilities, which is not the case. It was further noted that guidelines are usually premised on evidence-based information. However, there is essentially no research into Lotus Births. This, combined with the fact that very few health services have a guideline regarding Lotus Births, meant that Eastern Health did not consider it had the appropriate information available to it in order to formally prepare and publish a guideline.

74. In July 2018, Eastern Health completed a policy regarding vaginal seeding, indicating that the health service does not recommend that practice. The policy also recommended that parents be advised of the signs of infection in their baby if they choose to undertake vaginal seeding. Additionally, all patients who express this wish must be seen by an Obstetric Consultant in the antenatal period. In the postpartum period, if the practice of vaginal seeding is disclosed, both the Consultant Obstetrician and Consultant Paediatrician are notified of this practice.

75. At the time of completing this Finding, Eastern Health updated me as to the status of the policy regarding vaginal seeding. The health service informed me that the policy had been developed as previously indicated but had not been formally accepted for implementation at Eastern Health facilities. It was ultimately decided not to ratify the policy for the same reasons the service determined not to create a policy regarding Lotus Birth. Instead, the information contained within the draft policy is used as a guide for health practitioners when counselling patients about vaginal seeding.

Non-Recommended Practices Clinical Practice Guideline

76. In light of the above, Eastern Health is now in the process of developing a generic guideline, which will canvass various practices that are not supported by Eastern Health. Whilst the precise title of the guideline is yet to be confirmed, the working title of the draft guideline is "Management of Women Requesting Non-Recommended Practices and/or Declining Safe Clinical Care in the Antenatal, lntrapartum and Postnatal Period". Eastern Health have informed me that the guideline is in the development phase and it will include, but is not limited to, the following topics:

    a. *vaginal seeding;*

    b. *lotus births;*

    c. *the use of donor breastmilk or non-biological mothers breastfeeding infants;*

    d. *women who decline intrapartum monitoring;*

    e. *women who decline antenatal swabs for GBS testing;*

    f. *GBS positive women who decline administration of intrapartum antibiotics;*

    g. *women who decline an induction of labour;*

    h. *women who decline a caesarean section;*

    i. *women requesting a physiological third stage of birth when it is clinically contra-indicated;*

    j. *women who decline the administration of vitamin K to their babies;*

    k. *women who decline immunisation of their babies; and*

    l. *women who insist on a waterbirth when it is clinically contra-indicated.*[48]

77. Given the current heath situation in Victoria and the additional pressures placed on medical staff, together with the various approvals that will be required once the draft

[48] Coronial File, *Signed Statement of Yvette Kozielski Medico-Legal Officer of Eastern Health*, dated 11 May 2020 p 2.

guideline has been completed, Eastern Health was unable to provide a proposed completion date.

Communication of risk

78. In correspondence to the Court, Mrs Stuart highlighted her reasons for choosing a lotus birth. She stated that she was not informed that the practices of seeding and lotus birth could be unsafe or harmful. Mrs Stuart stated that she would not have proceeded with either vaginal seeding or a lotus birth, had she been aware of the risk of harm to Baby S. Conversely, Dr Kumar has stated that she repeatedly highlighted the risk of infection to the baby.

79. Dr Kumar stated that Mrs Stuart was advised to have GBS testing to assess the risk of neonatal infection; this testing did not occur. Mrs Stuart declined routine GBS screening at 34 to 36 weeks gestation. Mrs Stuart advised her doula, Ms Bousi, that she planned to be tested for GBS a few days prior to the elected caesarean date of 25 August 2017 and was prepared to take antibiotics if she tested positive. However, Baby S was born prior to the proposed test date. Additionally, there were no vaginal swab specimens for microbiological testing following ruptured membranes.

80. Dr Kumar stated that she offered Mrs Stuart the option of seeing a second obstetrician for a second opinion on lotus birth and vaginal seeding due to her concern with a lack of parental understanding of the associated risks, however Mrs Stuart declined. Despite the apparent lack of parental understanding, Dr Kumar did not escalate her concerns any further and allowed a lotus birth to proceed following caesarean section.

Signs of Sepsis

81. The CPU informed me that neonatal infection can quickly lead to sepsis due immature immune function in newborns. Sepsis is the body's overwhelming and life-threatening response to infection that can lead to tissue damage, organ failure, and death. Neonatal sepsis often presents subtly or with minimal clinical signs. Signs of neonatal sepsis are often non-specific and include pallor, fever or hypothermia, hypoglycaemia, poor perfusion and abnormal vital signs.

82. At the time of her initial admission to the SCN on 14 August 2017 at 4.40pm, Baby S had signs of possible sepsis, including: hypoglycaemia, hypothermia, mottled

appearance and low tone. However, following initial treatment in SCN, all Baby S's symptoms improved. Baby S's symptoms resolved following SCN admission and during observations and medical assessments in SCN throughout the day on 15 August 2017.

Assessment of Sepsis Risk

83. The CPU advised that the Eastern Health 'Sepsis in Neonates Practice Guideline' in place at the time of Baby S's death appropriately followed the recommendations of the Victorian Government Department of Health Neonatal Handbook clinical standard for the clinical management of sepsis in neonates.[49] According to these guidelines, Baby S's only risk of early onset sepsis was due to prematurity at the time of her SCN admission. However, based on the Australian and World Health Organisation (WHO) definitions,[50] Baby S was only two days premature.

84. The practice of lotus birth and vaginal seeding were significant, additional sepsis risk-factors for Baby S. In light of the rarity of these practices, there was no reference to these practices in the neonatal sepsis guidelines. The CPU informed me that prematurity and low birth weight commonly cause hypoglycaemia and hypothermia. Baby S's symptoms were initially attributed to her prematurity and low birth weight,[51] rather than sepsis of infection, as her hypoglycaemia, hypothermia and appearance[52] improved with treatment.

85. At the time of Baby S's SCN admission, Paediatrician Dr French recognised the risk of infection associated with the attached placenta and counselled her parents for its removal. The risk of infection and investigations for infection were also discussed with the admitting consultant paediatrician. The plan was not for further blood tests[53] or antibiotics unless there was a change and deterioration in Baby S's condition.

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[49] Safer Care Victoria, *Sepsis in Neonates*, (April 2014) <http://www.health.vic.gov.au/neonatalhandbook/infections/sepsis.htm> date accessed 24 March 2020.

[50] WHO defines prematurity as a birth prior to 37 weeks gestation; Baby S was born at 36 weeks and 5 days gestation.

[51] Low birth weight (LBW) is defined by the WHO as a birth weight of 2,499 g or less, regardless of gestational age. Baby S's birth weight was 2070g.

[52] Baby S's colour and activity improved.

[53] Investigations for sepsis include a full blood count, CRP (an inflammatory marker in the blood) and blood culture.

86. The CPU noted that the paediatric team were not aware that Baby S had been given vaginal seeding until the morning of 16 August 2017, after she had deteriorated.

87. The Angliss Hospital neonatal sepsis guidelines recommend that infants born to mothers who are GBS positive, or their GBS status is unknown, should be investigated for infection early in some instances. In cases where there is inadequate intrapartum antibiotic prophylaxis, as in Baby S's case, it is recommended that infants have blood tests for infection at 12 hours of age.

Possible delay in antibiotic administration

88. The PIPER case review identified that there was a possible delay in antibiotic administration by the Angliss Hospital. Upon review of the medical records and statements, the CPU advised that antibiotics were administered in a timely manner following suspicion of sepsis:

- Overnight on 15 August 2017, Baby S had new signs of sepsis including grunting, pale colour, a mottled appearance and hypothermia;
- At this point, the paediatric consultant was contacted, and sepsis was immediately considered, and
- Shortly thereafter, Baby S received broad spectrum intravenous antibiotics pursuant to the recommended guidelines for the treatment of neonatal sepsis.

Barriers to Standard Medical Care, Alternative Birth Practices and Escalation

89. In her statement, Dr Kumar highlighted that Baby S's parents did not have a clear understanding of the risks associated with a lotus birth and vaginal seeding. However, Dr Kumar did not report a consultation with colleagues, particularly paediatric colleagues, regarding these practices.

90. The Angliss Hospital RCA highlighted the multiple barriers to standard obstetric and neonatal care in this case, most of which were due to alternative parental preferences. The parental requests for alternative birth practices, lack of parental understanding of risks and the multiple barriers to standard medical care should have highlighted the need for escalation to senior management or consultation with colleagues.

91. These issues have been addressed by the RCA recommendations for all staff to escalate concerns, parental refusal of medical treatment and unusual requests to the Chief Medical Officer or executive staff. However, it appears that there is no clear guideline or hospital process to ensure that new and alternative treatments, procedures or birth practices requested by women and their families are adequately assessed for risk. This is particularly important for birth practices that will have health implications for the newborn.

Further Correspondence

92. In July 2018, Mr Stuart and Mrs Stuart contacted the Court to request access to coronial documents, by way of their legal representatives. On 1 August 2018, the VIFM MER was provided to Mr Stuart and Mrs Stuart's legal representatives. On 8 January 2019, the legal representatives were provided with the statements retrieved and reviewed by the Court. I also informed Baby S's parents that I intended to finalise this matter by way of an in chambers Finding; I did not think it was necessary nor helpful to hear oral evidence from witnesses.

93. On 1 April 2019, Mrs Stuart wrote to the Court to raise her concerns about the possible fatal effect of Vitamin K administration to Baby S. Court Family Liaison Officers contact Mrs Stuart by telephone to assure her that I had received her correspondence and would address it in my Findings. In late 2019, correspondence from their legal representatives indicated that Baby S's parents did not wish to raise further issues and that they were awaiting my Findings.

COMMENTS

Pursuant to section 67(3) of the *Coroners Act 2008* (Vic), I make the following comments connected with the death:

1. In April 2019, Mrs Stuart raised her concern about a potentially fatal outcome for Baby S due to the administration of Vitamin K, despite the fact that she had specifically declined its use in her birth plan. Baby S did not receive a Vitamin K injection after her birth in deference to her parents' request. At 9.25am on 16 August 2017, Baby S was given an intramuscular injection of Vitamin K after her condition had significantly deteriorated and post-intubation by the PIPER team. This was done without parental

consent in the acute resuscitation setting as a treatment for possible haemorrhagic disease of a newborn child.

2. In her correspondence, Mrs Stuart correctly noted that Baby S's medical cause of death was sepsis. She also stated that she felt she may be '*clutching at straws*' but would not feel right if she did not raise her concern. This is completely understandable. The MER completed by Dr Parsons does not indicate any relationship between Baby S's cause of death and the administration of Vitamin K. Additionally, the CPU's review of the medical record indicates that the administration of Vitamin K, albeit without consent, was the reasonable and appropriate course of action in the circumstances.

3. My investigation has identified that Mr Stuart and Mrs Stuart do not believe that they were informed of the potential risks of a lotus birth nor vaginal seeding; whereas medical practitioners have stated that they had discussed these issues with Baby S's parents. I accept that the statements received by the medical practitioners correctly document any discussions stated in relation to risk factors for lotus birth and vaginal seeding. In particular, I accept that Dr Kumar had multiple conversations about the risks of both procedures with Baby S's parents. However, it is also apparent to me that Baby S's parents did not appreciate the nature nor the severity of these risks, particularly from Dr Kumar's recollection of Mr Stuart and Mrs Stuart's responses to these risks.

4. Baby S was at increased risk of infection due to vaginal seeding by a mother where the GBS status was unknown, additionally she did not receive intrapartum antibiotic prophylaxis.

5. In their case review, Eastern Health acknowledged that if a baby becomes unwell following a lotus birth and vaginal seeding, the baby should immediately commence antibiotics. The CPU also acknowledged that there is a general lack of knowledge in the paediatric community and lack of evidence-based research, clinical practice guidelines or consensus statements regarding the risks associated with lotus birth or vaginal seeding.

6. Currently there is little epidemiological data regarding the incidence and associated risks of lotus births and vaginal seeding and local data is particularly unknown. This case highlights the significant risk of sepsis and infection associated with the practice and the

need to increase awareness of both expectant parents and medical professionals regarding the risks.

7. Baby S's death highlights the importance of communicating relevant clinical information between the treating teams. In this case, the plan and practice of lotus birth and vaginal seeding was important and relevant clinical information required by the paediatricians who were assessing and treating a deteriorating newborn baby.

8. The CPU advised that Baby S's medical management in the SCN was appropriate, in light of the information available to them at that time. However, it is difficult to determine whether further investigations for sepsis were warranted at the time of Baby S's SCN admission and therefore whether antibiotics could have been administered earlier. I also note that it is not clear whether earlier investigations and treatment would have changed the ultimate outcome and prevented Baby S's death. In hindsight, Baby S's death may have been avoidable had there been an earlier awareness of all risk factors for sepsis, an earlier investigation for infection or earlier administration of antibiotics. However, this is based on a retrospective analysis that cannot be said with certainty.

9. Eastern Health has undertaken appropriate reviews in the wake of Baby S's death and subsequently implemented preventative measures. I acknowledge that there is a general lack of knowledge in the paediatric community and lack of evidence-based research, clinical practice guidelines or consensus statements regarding the risks associated with lotus birth or vaginal seeding. Currently there is little epidemiological data regarding the incidence and associated risks of lotus births and vaginal seeding and local data is particularly unknown.

10. Baby S's death has highlighted the significant risk of sepsis and infection associated with the practice and the need to increase awareness of both expectant parents and medical professionals regarding the risks. Baby S's death has also emphasised the need for clinical practice guidelines or a consensus statement that address the risks associated with lotus birth and vaginal seeding. Additionally, it is clear that any birth plan involving lotus birth or vaginal seeding requires ongoing, clear communication between hospital maternity and paediatric teams. I endorse Eastern Health's commitment to creating a policy for non-recommend practices for women in the antenatal, intrapartum and postnatal periods. However, the lack of state or national guidelines surrounding

lotus birth and vaginal seeding combined with lack of research indicates a gap in public health. A pertinent recommendation will follow.

11. In the RCA, Eastern Health considered that when patients refuse medical treatment or make unusual request, all staff should escalate their concerns to the Chief Medical Officer or executive staff. I agree with this practice; Baby S's death has highlighted that particular deliberation of new or alternative practices is required, especially where there is little evidence of the risks involved. However, escalating these types of concerns could be appropriately escalated to a clinically relevant group or committee, rather than an individual. I am informed that such groups are common amongst other hospital networks. A pertinent recommendation will follow.

RECOMMENDATIONS

Pursuant to section 72(2) of the *Coroners Act 2008* (Vic), I make the following recommendations:

1. With the aim of promoting public health and safety and preventing like deaths, I recommend that Safer Care Victoria Maternity and Newborn Clinical Network groups formulate clinical practice guidelines or consensus statements in relation to lotus birth and vaginal seeding in consultation with the Royal Australian and New Zealand College of Obstetricians and Gynaecologists, the Consultative Council of Obstetric and Paediatric Mortality and Morbidity, and other relevant experts.

2. With the aim of promoting public health and safety and preventing like deaths, I recommend that Eastern Health services institute a review of new or alternative practices by a clinically relevant hospital committee, which include experienced senior medical staff, to thoroughly assess new or alternative practices for their risks and evidence basis and ultimately approve whether the new practice should be allowed to proceed.

FINDINGS

The investigation has identified that the medical care and treatment provided to Baby S by the Angliss Hospital and the Paediatric Infant Perinatal Retrieval team was reasonable and appropriate in the circumstances. It is not clear whether further investigations for sepsis upon Baby S's admission to the Special Care Nursery would have resulted in treatment that may have prevented her death.

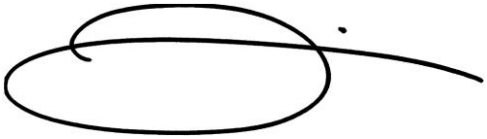
The investigation has also identified that Baby S's most significant and severe risk factors for sepsis were vaginal seeding and lotus birth. Forensic examination could not conclusively identify the original site of infection leading to sepsis; it appears likely that a foetal peripartum infection occurred in Baby S's umbilical stump, however, I am unable to make a definitive finding on this point.

I accept and adopt the cause of death ascribed by Dr Sarah Parsons and I find that Baby S died from sepsis, in the setting of a lotus birth.

Pursuant to section 73(1A) of the *Coroners Act 2008* (Vic), I order that this Finding be published on the internet.

I direct that a copy of this finding be provided to the following:
Mrs Stuart & Mr Stuart
The Angliss Hospital, Eastern Health
Associate Professor Andrew Stewart, Paediatric Infant Perinatal Emergency Retrieval
Safer Care Victoria
Consultative Council on Obstetric and Paediatric Mortality and Morbidity
Royal Australian & New Zealand College of Obstetricians & Gynaecologists

Signature:



AUDREY JAMIESON
CORONER
Date**: 21 May 2020**