IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2014 4591

FINDING INTO DEATH WITHOUT INQUEST

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

I, CAITLIN ENGLISH, Coroner having investigated the death of Baby B

without holding an inquest:
find that the identity of the deceased was Baby B
born on 24 August 2014
and the death occurred on 25 August 2014
at the Royal Children's Hospital, 50 Flemington Road, Parkville, Victoria
from:

I(a) HYPOXIC-ISCHAEMIC ENCEPHALOPATHY AND MULTISYSTEM FAILURE IN THE SETTING OF EXTREME PREMATURITY AND OBSTRUCTED LABOUR

Pursuant to section 67(1) of the **Coroners Act 2008**, there is a public interest to be served in making findings with respect to **the following circumstances**:

Background

1. Baby B was one day old when he died on 28 August 2014. Baby B was the fourth child born to his mother.

2. Following a breech birth in the back of an ambulance on 24 August 2014, Baby B was diagnosed as having a poor prognosis due to severe hypoxic-ischaemic injury to several organs. On 25 August 2014 palliative care was initiated, and Baby B died shortly after 11.40 pm in his mother's arms at the Royal Children's Hospital.

Coronial investigation

3. Baby B's death was reported to the Coroner as it fell within the definition of a reportable death within the meaning of the *Coroners Act 2008* as it was unexpected.

4. Coroners independently investigate reportable deaths to establish, if possible, the identity of the deceased person, the medical cause of death and in most cases the circumstances in which the death occurred. The 'circumstances in which the death occurred' is confined to background or surrounding circumstances which are sufficiently proximate and causally related to the death. The role of the coroner is to establish facts[1], not to cast blame or determine criminal or civil liability or disciplinary matters.

5. In making this Finding, I have conducted an examination of the evidence, including all the statements and reports contained within the coronial brief. Baby B's mother and father declined to give statements to the police investigator. I also sought advice from the Coroners Prevention Unit.

6. I take into account section 8 of the *Coroners Act 2008*, particularly section 8(e) and the public interest in protecting the personal information of Baby B's parents, and have redacted their and Baby B's identities for distributing this Finding and publishing it on the Internet.

Identity

7. Dr Lyndall Smythe, a forensic odontologist at the Victorian Institute of Forensic Medicine prepared an identification report dated 15 September 2014 identifying Baby B, born 24 August 2014. Identity is not in dispute and requires no further investigation.

Circumstances proximate to death

8. In early 2014 Baby B's mother was residing in Woori Yallock and in a relationship with Baby B's father when she became pregnant with Baby B. Her antenatal care during pregnancy was limited and there is evidence she was using methamphetamines at times during her pregnancy.

9. On 24 August 2014 Baby B's mother began to feel abdominal pain. She took Valium (diazepam) and waited for the pain to subside. An ambulance was called at approximately 6.30pm, after her membranes ruptured.

10. A Mooroolbark ambulance arrived at approximately 6.55pm and an additional ambulance arrived at 7.12pm. Baby B's mother was observed to have fresh puncture wounds in her

[1] In the coronial jurisdiction facts must be established on the balance of probabilities subject to the principles enunciated in *Briginshaw v Briginshaw* (1938) 60 CLR 336. The effect of this and similar authorities is that coroners should not make adverse findings against, or comments about, individuals unless the evidence provides a comfortable level of satisfaction as to those matters taking into account the consequences of such findings or comments.

arms but denied recent intravenous drug use. Baby B's mother admitted to methamphetamine use '*earlier in the week*'.

11. Attending ambulance officers sought advice from the Paediatric Infant and Perinatal Emergency Retrieval Service (PIPER) and were advised to conduct a vaginal examination. The attending ambulance officers determined that delivery was not imminent, and Baby B's mother was placed in the ambulance for transport to the Austin Mercy Hospital.

12. At approximately 7.48pm Baby B's mother reported an urge to push and Baby B's legs and body were delivered at approximately 7.50pm, in the back of the ambulance. By this time, a MICA paramedic had met with the ambulance. The ambulance pulled to the side of the road in Chirnside Park and the MICA paramedic attempted to deliver Baby B's head using the Mauriceau-Smellie-Veit manoeuvre. The initial attempt was unsuccessful, however Baby B's head was successfully delivered at approximately 7.55pm. Baby B was not breathing, pulseless and unresponsive. His APGAR score was zero. Paramedics initiated CPR and Baby B experienced spontaneous circulation approximately every two minutes but could not sustain it and CPR was resumed accordingly. The placenta was delivered in the ambulance.

13. Baby B's mother and Baby B were transported to Maroondah Hospital. Maroondah Hospital staff commenced intubation and ventilation, took blood samples and administered medications including vitamin K, antibiotics, saline and glucose. At 10.10pm and 10.22pm, Baby B suffered further cardiac arrest and CPR was commenced, with Baby B returning to spontaneous circulation on both occasions. Maroondah Hospital had determined that it had insufficient capacity to manage Baby B's condition and he was transported to the Royal Children's Hospital by the Neonatal Emergency Transport Service at 11.00pm.

14. Baby B arrived at the Royal Children's Hospital at approximately 12.02am on 25 August 2014. At the Royal Children's Hospital, Baby B required mechanical ventilation, had ongoing hypotension requiring inotropic support, had clinical and electrical seizures, was treated for presumed sepsis and was made comfortable with morphine infusion. Dr Leah Hickey assessed Baby B as having a poor prognosis due to sustaining severe hypoxic ischaemic injury to several organs.

15. Baby B's mother, who had received initial post-partum care at Maroondah Hospital before leaving the hospital against medical advice, attended the Royal Children's Hospital with Baby B's father. Baby B's condition continued to deteriorate and, following discussions between treating practitioners and his parents, Baby B's care was redirected from intensive

to palliative. Baby B's respiratory support was removed, and he died in his mother's arms at 11.40pm.

Post Mortem Examination

16. On 10 September 2014, Dr Matthew Lynch, a Forensic Pathologist practising at the Victorian Institute of Forensic Medicine, conducted an external examination of Baby B's body. Dr Lynch completed a report, dated 17 September 2014. Dr Lynch formulated the cause of death as '*I(a) Hypoxic-ischaemic encephalopathy and multisystem failure in the setting of extreme prematurity and obstructed labour*'. I accept Dr Lynch's opinion as to the medical cause of death.

17. Histopathology report of the maternal placenta (provided by Eastern Health Pathology) showed evidence of mild/early acute chorioamionitis[2] with no funsinitis.[3]

Further investigation

Coroners Prevention Unit Review

18. The Coroners Prevention Unit (CPU) is a specialist service for Coroners, within the Coroners Court of Victoria. The CPU was created to strengthen the Coroners' prevention role and provide professional assistance on issues pertaining to public health and safety.

19. I directed the CPU Health and Medical Investigation Team to review Baby B's case, including his treatment and medical records and Baby B's mother's antenatal care.

20. The CPU considered Baby B's mother's alleged drug use and her antenatal care to determine their role, if any, in Baby B's death.

21. The CPU also considered the role of the Department of Health and Human Services (DHHS).[4]

Methamphetamine use

22. The extent of Baby B's mother's use of ice during her pregnancy with Baby B is not known. Dr Rana surmises '*she was probably on ice until 7 weeks of pregnancy*' and that Baby B's mother stated to her she stopped using ice as soon as she knew she was pregnant.[5]

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[2] Chorioamnionitis is an infection of the chorion and amnion (the sack and fluid surrounding the foetus).
[3] Infection/inflammation of the umbilical cord.
[4] I note that, at the time of Baby B's death, the relevant Department for these issues was the Department of Human Services, which was abolished effective 1 January 2015. For the sake of simplicity, I will use the name DHHS to refer to both the present Department of Health and Human Services and the past Department of Human Services throughout the remainder of this finding.
[5] Statement of Dr Usman Rana dated 25 February 2015, Coronial Brief

Dr Acabado noted she had a past history which included '*substance abuse*' and that in January 2014 he had referred her to a psychologist on a mental health plan for depression, anxiety disorder and substance abuse. Baby B's mother told him she was seeing a drug and alcohol counsellor twice a week. He cautioned her about daily (tobacco) smoking. The only other evidence of Baby B's mother's ice use is in the statement of ambulance officer Stefanie Tymms who attended her in labour on 24 August 2014. Ms Tymms states Baby B's mother denied IV drug use '*but stated she had used "ice" earlier in the week.*' [6]

23. By way of background, CPU advised that the use of methamphetamine during pregnancy is associated with intrauterine growth restriction and increased neonatal and maternal morbidity and mortality, secondary to pre-eclampsia, placental abruption, pre-term birth and stillbirth.[7] There is also increased risk to the foetus of intoxication and withdrawal following delivery.

24. Relevantly to this case, CPU advised methamphetamine use is associated with poor antenatal care and leads to challenges for obstetric management of addicted mothers. Additionally, intravenous illicit substance use, such as intravenous methamphetamine use, can be a significant risk factor in chorioamnionitis.

25. The CPU advised that the Royal Australian College of General Practitioners (RACGP) guidelines concerning antenatal care at the time did not list resources such as dedicated services that are able to address the needs of mothers affected by substance use.

26. The Royal Women's Hospital operates the Women's Alcohol and Drug Service, providing State-wide services catering to pregnant women with complex substance use and infants exposed to drugs and alcohol during pregnancy.

Baby B's mother's antenatal care

27. Baby B's mother attended three appointments with two different General Practitioners (GPs) during the early antenatal period.

28. On 16 April 2014, Baby B's mother attended Emma Court Family Clinic, Woori Yallock, regarding suspected pregnancy. Dr Usman Rana's notes state that Baby B's mother had taken a urine pregnancy test, which was positive, and that she '*has been on ICE, alcohol, cannabis ... advised to quit smoking, advised to stop ICE as it causes foetal abnormalities, also no drinking alcohol*'. Dr Rana stated that, on questioning, Baby B's mother '*admitted*

[6] Statement of Stefanie Tymms dated 5 December 2014, Coronial brief
[7] G. Chang, 'Overview of substance misuse in pregnant women', *Wolters Kluwer Health*, 3 Feb 2015.

that she stopped using ICE as soon as she knew she was pregnant' and that she '*was probably on ICE until 7 weeks of pregnancy*'. Dr Rana noted that there were '*no signs of IV drug abuse*'. Dr Rana ordered blood tests but Baby B's mother did not follow them up and Dr Rana did not receive any pathology results.

29. There is no evidence that Dr Rana was aware of Baby B's mother's historical involvement with Child Protection Services or that her other children were not in her care due to ongoing Child Protection concerns.

30. On 8 May 2014, Baby B's mother saw Dr Ronie Acabado at the Main Street Medical Clinic, Lilydale. Baby B's mother reported having a positive pregnancy test and a pelvic ultrasound three week prior but did not provide test or scan results. Dr Acabado noted that Baby B's mother's medical history included substance abuse and that she was a daily smoker.

31. Dr Acabado confirmed Baby B's mother's pregnancy (by way of ultrasound report dated 12 May 2014) and stated it was a single, intrauterine pregnancy with no anomaly and that pathology revealed low vitamin D and positive antibodies to Hepatitis C.

32. Dr Acabado also arranged a referral for Baby B's mother to the Angliss Hospital maternity clinic. She had previously been referred to a psychologist for mental health issues and substance abuse.

33. On 26 May 2014 Baby B's mother saw Dr Acabado for follow up. Baby B's mother advised Dr Acabado that she was seeing a drug and alcohol counsellor twice weekly. He sent a letter to Box Hill Maternity Booking.

34. Dr Acabado left the Main Street Medical Centre in July 2014. There is evidence on the medical file from 30 January 2014 when he assessed her for a mental health plan that Dr Acabado was aware that Baby B's mother's '*...youngest son and oldest son is with their grandmother (Under DHS) ...*'.[8]

35. Baby B's mother did not attend any further medical appointments for antenatal care.

36. Although routine blood tests and ultrasound were requested, and a referral made to Eastern Health's Maternity Services, Baby B's mother did not attend the Eastern Health Maternity Services appointment and no follow-up was conducted regarding her antenatal appointment.

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[8] Main Street Medical Centre, Mental Health Treatment Plan for Baby B's mother by Dr Ronie Acabado dated 30 January 2014.

37. Dr Chris Georgiou, Director of Obstetrics at Eastern Health was asked about the booking process for appointments in 2014. He advised following Dr Acabado's referral of Baby B's mother to Angliss Hospital Maternity clinic, a text message was sent to Baby B's mother, which required her to go online to complete either a booking form or a hard copy maternity booking registration form. It is unclear whether there was further follow up when neither were completed.

38. Dr Georgiou has advised that in February 2015 a thorough review of the booking process was undertaken which highlighted some gaps in the service and a new process was put in place immediately. The main changes included reviewing GP referrals fortnightly and follow up plans for patients and GPs when booking forms are not completed. He stated:

'Review is on-going and further work is being done to assess whether reviews of the referral and booking status may be possible in the future.'[9]

39. Baby B's breech presentation was a risk that was not identified. If Baby B's mother had attended antenatal screening, Baby B's breech presentation may have been identified and appropriate advice given to her to urgently present to a hospital at the onset of labour.

Role of DHHS

40. The *Children, Youth and Families Act 2005* (Vic), requires doctors, nurses, midwives and other professionals to make Child Protection notifications to the Department of Health and Human Services if they consider a child is in need of protection.[10] In relation to unborn children, a person may notify DHHS where they have significant concerns for the child's wellbeing after birth.[11] DHHS is unable to investigate until after the birth, but may provide advice to the reporter and pregnant woman, and may refer the matter to community-based support services. However, there is no ability to compel a pregnant woman to accept services or advice.

41. In this case, DHHS was involved with Baby B's mother until 19 May 2014, in respect of her third child. DHHS was unaware of Baby B's mother's pregnancy. Baby B's mother's pregnancy was not medically confirmed until a week after DHHS's withdrawal, on 26 May 2014.

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[9] Statement of Christos Georgiou dated 18 June 2015.
[10] Section 184.
[11] Section 29.

42. The two GPs that Baby B's mother saw were not her regular practitioners (she did not appear to have a regular GP) and, although they were aware of her past methamphetamine use, they were not aware whether she was continuing to use ice during her pregnancy.

43. Following Baby B's birth on 25 August 2014, DHHS was notified of concerns regarding Baby B's mother's lack of antenatal care, DHHS's previous involvement with Baby B's mother's older children and difficulty contacting Baby B's parents during the first 24 hours of his admission to the Royal Children's Hospital.

44. DHHS was not aware of Baby B's mother's pregnancy until after Baby B's delivery.

Substance use in pregnancy

45. A number of factors contributed to Baby B's death including the absence of ante-natal care and Baby B's mother's drug use during pregnancy.

46. Methamphetamine use is an emerging problem in rural and metropolitan Victoria, with evidence of increasing purity, fatal overdose and arrests for possession and trafficking in the last decade.[12] The number of deaths in Australia associated with methamphetamine use doubled between 2009 and 2015. Toxicity was the most frequent cause of death, but deaths by suicide, accident and natural disease made up more than half of the deaths in this period.[13]

47. Methamphetamine has a substantial and increasing burden on individual and community health as evidenced by methamphetamine related violence, family breakdown and crime in addition to escalating demands on ambulance services and emergency departments.[14]

48. The obstetric management of women who are addicted to methamphetamine is clearly challenging. Methamphetamine use during pregnancy is associated with intrauterine growth restriction and increased neonatal and maternal morbidity and mortality secondary to pre-eclampsia, placental abruption, preterm birth and stillbirth.[15] The foetus and neonate are less

[12] Penington Institute, 'Impacts of Methamphetamine in Victoria: A community assessment'. Report for the Victorian Department of Health, June 2014. Accessed 19 November 2014. Available online from www.penington.org.au.
[13] Shane Darke, Sharlene Kaye and Johan Duflou, 'Rates, characteristics and circumstances of methamphetamine-related death in Australia: a national 7-year-study' (2017) 112(12) *Addiction* 2191.
[14] Penington Institute, 'Impacts of Methamphetamine in Victoria: A community assessment'. Report for the Victorian Department of Health, June 2014. Accessed 19 November 2014. Available online from www.penington.org.au.
[15] Chang G. Overview of illicit drug use in pregnant women. UpToDate. Last updated 17 October 2014. Accessed 19 November 2014.

able to clear methamphetamine from their circulation and may be at risk of intoxication and withdrawal after delivery.[16]

49. According to the Royal Australian College of Obstetricians and Gynaecologists' (RANZCOG) endorsed substance use in pregnancy clinical guideline,[17] substance use is associated not only with adverse pregnancy outcomes, but with a cascade of health, legal, social, and financial problems that adversely affect the welfare of the mother and child. For these reasons, broad psychosocial assessment is necessary to help understand the reasons for the woman's substance use for the purpose of addressing these issues.[18]

Opportunities for prevention

50. I accept the CPU advice that a contributory factor to Baby B's death was the absence of antenatal care in the setting of Baby B's mother's apparent use of ice at times during the pregnancy.

51. As previously noted, Eastern Health Maternity Services has revised their follow-up procedures and now follow-up any bookings not confirmed by further attempts to contact the woman and informing the woman's GP. Eastern Health reports that the review of follow-up procedures is ongoing and further work is being done to assess whether weekly reviews of the referral and booking status may be possible in the future. I consider that this is a positive development that promotes identification of high-risk women, particularly those who may not attend appointments.

52. The CPU advised this death, and a similar death of Baby W[19] provided an opportunity to promote systematic risk assessment of substance use by pregnant women and individualised collaborative case planning. The same recommendations have been made in Baby W's Finding.

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[16] Jenner L and Lee N, 'Treatment Approaches for Users of Methamphetamine: A Practical Guide for Frontline Workers', Australian Government Department of Health and Ageing, Canberra, 2008. Accessed 19 November 2014. Available online from http://www.nationaldrugstrategy.gov.au/internet/drugstrategy/Publishing.nsf/content/8D2E281FAC2346BBCA25764D007D2D3A/$File/tremeth.pdf

[17] The RANZCOG website provides a list of clinical guideline statements. The advice in this guideline has been formally endorsed by RANZCOG, after it has undergone a formal endorsement process.

[18] Minozzi S, 'Psychosocial treatments for drugs and alcohol abusing adolescents', Cochrane Database of Systematic Reviews 2011 Issue 3; Royal Australian College of Obstetricians and Gynaecologists, Clinical Practice Guideline 'Substance Use in Pregnancy.' Endorsed July 2011. Accessed 23 December 2014.

[19] Also see the Finding without Inquest into the death of Baby W, COR 2014 0201.

53. DHHS has produced resources for health practitioners, such as the electronic Neo Natal Handbook which provides information about the clinical management of conditions regularly encountered by health professionals caring for newborns.

54. DHHS has also produced an electronic Maternity Handbook. The chapter on *'Substance Use during Pregnancy'* highlights the necessity of assertive follow up by primary care providers, which includes checking on referrals made on behalf of pregnant women using substances to establish the woman attended the maternity service for pregnancy care. The initial point of contact for a pregnant woman using substances may include GPs, child protection workers, alcohol and drug workers psychiatrists, midwives and allied health workers.

55. The information in *'Substance Use during Pregnancy'* includes what to do when a woman has not attended their appointments or pregnancy care, and direction on how and when to share information about high risk individuals to relevant agencies or organisations. This includes an explanation to the woman when a consultation with a specialist service or other support worker is required.

Finding

56. I find that the identity of the deceased was Baby B, born 24 August 2014, who died on 25 August 2014 from I(a) Hypoxic-ischemic encephalopathy and multisystem failure in the setting of extreme prematurity and obstructed labour, at the Royal Children's Hospital, Parkville, Victoria.

RECOMMENDATIONS

Pursuant to section 72 of the *Coroners Act 2008* I make the following recommendations:

To Safer Care Victoria

1. That Safer Care Victoria Maternity and Newborn Clinical network replicate the 'Substance Use during Pregnancy' information[20] currently located in the electronic neonatal handbook within the electronic Maternity handbook. The 'Substance Use during Pregnancy' information highlights the necessity of assertive follow up by primary care providers,[21] which includes checking on referrals made on behalf of pregnant women using substances to establish the woman attended the maternity service for pregnancy care. The 'Substance Use

[20] The Victorian Department of Health and Human Services, 'Neonatal eHandbook' (2016). Accessed on 26 February 2018 at www2.health.vic.gov.au.

[21] The initial point of contact for a substance using pregnant woman may include GPs, child protection, alcohol and drug workers, psychiatrists, midwives and allied health workers.

during Pregnancy' information includes what to do when a woman has not attended their appointments or pregnancy care.

To the Victorian Department of Health and Human Services

2. That the Victorian Department of Health and Human Services articulates referral pathways to suitable home visitor services or outreach workers to follow up with the pregnant woman at home or wherever she might be found when a she fails to attend pregnancy care. The 'Substance Use during Pregnancy' information includes direction on how and when to share information about high risk individuals to relevant agencies or organisations. This includes an explanation to the woman when a consultation with a specialist service or other support worker is required.

3. That the Victorian Department of Health and Human Services undertake research to establish the current rate and timing of risk screening for substance use by pregnant women.

4. That the Victorian Department of Health and Human Services support maternity services in educating staff on how to frame the risk enquiry questions for substance use and the appropriate response upon disclosure.

5. That the Victorian Department of Health and Human Services undertake a review to identify opportunities in program delivery to improve early intervention by outreach services for women who are pregnant and use substances. This focus on early intervention will help to improve pregnancy outcomes and prevent the severity of parenting difficulties.

To the Royal Australian College of General Practitioners

6. That the Royal Australian College of General Practitioners develop a RACGP website link to the 'Substance Use during Pregnancy' information.

I convey my sincere condolences to Baby B's family.

I direct this Finding be published on the Internet.

I direct that a copy of this finding be provided to the following:
Baby B's mother
Baby B's father
Legal Counsel, Royal Children's Hospital

Mr Colin Grant, Ambulance Victoria

Legal Counsel, Department of Health and Human Services

Medico-Legal Officer, Eastern Health

Commissioner for Children and Young People

Main Street Medical Centre, Lilydale

Emma Court Family Clinic, Woori Yallock

Royal Australian College of General Practitioners

S/C Matthew Lindsay, Coroner's Investigator, Victoria Police

Signature:

CAITLIN ENGLISH
CORONER
Date: 26 October 2018