IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2007 / 0350

# FINDING INTO DEATH WITH INQUEST

*Form 37 Rule 60(1)*
*Section 67 of the* ***Coroners Act 2008***

**Inquest into the Death of:** BRADLEY PIPER

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| Delivered On: | 2 July 2013 |
| Delivered At: | Coroners Court of Victoria<br>Level 11, 222 Exhibition Street<br>Melbourne 3000 |
| Hearing Dates: | 23 July 2012 and 8 March 2013 |
| Findings of: | JOHN OLLE, CORONER |
| Representation: | Ms J. Forbes on behalf of Kilmore Hospital and Dr J. Griffiths |
| Police Coronial Support Unit | Leading Senior Constable Tania Cristiano |

I, JOHN OLLE, Coroner having investigated the death of BRADLEY PIPER.

AND having held an inquest in relation to this death on 23 July 2012 and 8 March 2013
at Melbourne
find that the identity of the deceased was BRADLEY KEITH PIPER
born on 22 January 2007
and the death occurred on 26 January 2007
at Monash Medical Centre, Post Natal Ward, 246 Clayton Road, Clayton 3168
**from:**

1 (a) PERINATAL ASPHYXIA

**in the following circumstances:**

1. Bradley Piper (Bradley) was born at Kilmore and District Hospital (the hospital) on 22 January 2007 to Michelle and Henk Piper. He was born prematurely at 34 weeks gestation.
2. On delivery, Bradley required resuscitation and subsequent transfer admission to the Neonatal Intensive Care Unit (NICU) at Monash Medical Centre. Bradley died on 26 January 2007.
3. At inquest, I heard evidence of Dr Griffiths, Visiting Medical Officer at the hospital and various members of nursing staff involved in the care and management of Bradley's delivery. They were impressive witnesses.
4. Various expert witnesses provided statements, and subsequently participated in 'the hot tub' procedure[1] (the hot tub) on 8 March 2013. Their participation has greatly assisted my investigation.
5. I note the dignity exhibited by Michelle and Henk throughout the inquest. I offer my sincere condolences for their loss.
6. The submission of Ms Forbes[2] (the submission) is succinct and accurate. I have made extensive references to the submission throughout my finding.

> "Whilst comment has been made of particular aspects of the medical care provided at the hospital, the evidence does not connect any aspect of care with Bradley's

[1] Procedure at inquest in which expert witnesses give concurrent evidence

[2] Counsel for the hospital and Dr Griffiths

condition on delivery. As Dr Watkins said, *"I suspect the die was largely cast before the time of birth"*. This opinion was reinforced in the viva voce evidence of the experts when they gave concurrent evidence. Dr Watkins confirmed that *"much or all of the insult that Bradley had sustained had occurred before the last hour or so of labour"*.[3]

**Issues addressed at the hot tub**

Identification of premature labour

7. Dr Griffiths was aware of the threat of pre term labour. He assessed and treated Michelle on presentation as not being in labour, but was conversant of the threat of premature labour. Dr Griffiths set out the basis for his clinical judgement.[4]

8. I endorse the following summation:

> "The concurrent expert evidence given viva voce opined that the onset of preterm labour should have been identified as having been established at around 2.45pm. Dr Freeman, Dr Raegan and Dr Demeduik all provided reports consistent with this viva voce opinion. Although Dr Watkin's report is based on a presumption of premature labour being diagnosed initially, he did not persist with this differing opinion and his silence in that point in questioning indicates his acceptance of the view expressed by Dr Raegan".[5]

9. I am satisfied Michelle was being treated for threatened pre term labour, whilst conducting appropriate 'investigations to determine whether labour might ensue'.

Fibronectin Test

10. Dr Griffiths and Dr Raegan disagreed on the reliance placed by Dr Griffiths on the result of the Fibronectin Test (the test). According to Dr Griffiths he placed little reliance on the result of the test, in preference to his clinical findings. Dr Raegan expressed concern Dr Griffiths relied too heavily on the result of the test. In the final analysis, expert opinion accepted irrespective of the shortcomings in the conduct of the test, the outcome was reliable.

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[3] The submission - paragraph 8

[4] The submission – paragraph 11

[5] Paragraph 14 submission

Monitoring of mother and baby

**CTG Tracing**

11. I endorse the following:

"The welfare of the baby was monitored during the time at Kilmore Hospital by manual recording of fetal heart rate, by observation of CTG tracing and by direct observation during the ultrasound. The CTG tracing covered the period from approximately 9.07am until 11.15am and then the period between 2.40pm to 3.05pm. Recording of the fetal heart rate at times does not appear in the nursing observations, but has been recorded directly onto the CTG tracing. The CTG tracing to 11.15am did not reveal any fetal difficulties and the ultrasound confirmed this.

There was a delay in reattaching the CTG after Michelle's return to the ward following the ultrasound. This was due to Midwife East being unaware that she had arrived back on the ward. The CTG was reattached after it was used on another patient. When asked whether the CTG monitoring should have continued from after the ultrasound to 2.40pm, Dr Raegan expressed the view that, if nothing had changed, then there was no reason to continue applying CTG continuously. Dr Demeduik concurred with this view. Midwife East's evidence was that nothing in particular had changed until such time as she reattached the CTG.

On the later (7th) CTG tracing, the machine was removed in order to send the report to Dr Griffiths at 3.05pm. The expert opinion of Dr Raegan is that monitoring should have been recommenced from this time. There is no direct evidence as to the reasons why the CTG was not reattached at that time. However, the following mattes arise from the evidence: on being sent the CTG tracing, Dr Griffiths asked for a number of steps to be taken; a second fibronectin test, an examination of the cervix; the administration of pethidine for pain relief and stemetil for which IV access was required and puffs of salbutamol. The nursing staff decided to move Michelle to the labour ward, largely for reasons of privacy and comfort during these tests and treatment. This occurred at about the time of handover between shifts. While the witnesses were not questioned specifically about the reason for not reattaching the CTG during this time, it is clear that time other investigations of mother and baby were being actively pursued.

From this time events moved very quickly, and although it could not have been known at 3.05pm, the practitioners were facing a precipitate labour. The length (or speed) of labour could not be predicted. There was **no** information that should have alerted the practitioners to the likelihood that delivery was imminent, as turned out to be the case.

The availability of a CTG tracing between 3.00pm and 4.00pm would undoubtedly provide a further piece of information. However, it is not contended that any event in that time frame may explain the outcome of the labour, nor that any different course of action may have been available to the clinicians with additional information. It is submitted that the absence of CTG monitoring after 3.00pm had no bearing on the action of the clinicians or the outcome.

Likewise, the experts were of the opinion that a cervical examination at or shortly after 3.00pm would have been expected. Such an examination may have confirmed, that which was suspected at the time; that labour was then established. However, again, as Dr Raegen said in his evidence, had an examination confirmed at cervix of 3 or 4 cm dilation at about 3.00pm, Bradley would have been born at Kilmore Hospital before an ambulance would have been there".[6]

**A decision to transfer**

12. I further endorse the following:

"Ultimately, Bradley required urgent transfer to a NICU, not because of his prematurity, nor even the precipitate nature of his delivery but because of the hypoxic ischaemic insult that he had suffered. As was said by Dr Watkins, unfortunately even in a tertiary hospital the outcome would have likely been the same.

Transfer for reasons of premature labour are not necessarily required to hospitals with NICU facilities such as Bradley ultimately required. Often, if the baby is not known to be very sick, then transfer to a hospital with a special care nursery may well have occurred if a bed was available. Had Michelle been assessed as in preterm labour earlier in the day and a decision made to transfer, then in light of the reassuring CTG and the findings on ultrasound, the transfer would not have taken

[6] Paragraphs 18-23 submission

into account the condition of Bradley on delivery. While transfer for delivery was preferable, priority to transfer or arrangements to transfer could not have been identified until approximately 3.00pm".[7]

**Utilisation of NETS/PERS for Consultation**

13. The experts acknowledge the role of NETS/PERS has evolved since 2007. Whilst NETS always provided consultative process, I am satisfied that education of medical practitioners is necessary to understand that NETS provides consultative process, and is not merely a means of establishing transfer to a tertiary hospital.

14. I note:

> "The hospital policy and the PERS information now makes it clear that midwives are able to utilise the advice services of PERS directly. Additionally the hospital now has in place a safe practice framework with a structured process of evaluation of risk level and a flow chart for escalation of decision making in situations of clinical concern". [8]

Education about the role of PERS

15. I accept the evidence of Dr Watkins (endorsed by Dr Raegan):

> "PERS in 2007-08. It is not just a transport service. It is also an advice service. It gives you the opportunity to talk a consultant obstetrician in a tertiary centre, a consultant paediatrician in a tertiary centre, and these people have some knowledge, usually quite extensive knowledge of local circumstances and are used to advising in that situation, so the consultative role of NETS, PETS, PERS is also quite important". [9]

16. Whilst not disputing his colleagues, according to Dr Demeduik:

> "There was still a fair bit of confusion – well not confusion, but the knowledge that it's a consultative service. Like the suggestion is now that they've got a separate branch that will do consultations. It has always been bound in with the need to

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[7] Paragraphs 24 & 25 submission

[8] Paragraph 27 submission

[9] Transcript page 188

transfer a baby so I mean it is – the transport issue is really the critical thing in the way I as a practitioner would have seen it in those days". [10]

17. Dr Demeduik subsequently doubted whether PERS or NETS would have taken this case on board and transferred Bradley at 11.30 in the morning". [11]

**Resuscitation**

18. Although concerns were directed at particular aspects of the resuscitation process there is no criticism levelled at clinical management. Dr Watkins explained even if Bradley had been born in a tertiary centre "everything opens and shuts and hot and cold running everything" [12] the result would have not altered.

19. I endorse the evidence of Dr Demeduik:

> "This case is one of those tragic cases where things just happened and things go badly. There was precipitate labour. I mean none of us in medicine have got a crystal ball and it is really hard to figure out when it is going to go from observing a person in threatened labour to this sudden precipitate labour, and also having in retrospect some knowledge that some insults occurred way before birth that caused these decelerations on the graph at a very late stage when it was too late to do anything about it. And look, I mean in practical terms how could we prevent this? You'd have to deliver the person by Caesarean section at 30 weeks or something, and no one had any evidence – basis on which to do that, so I can't see anything from a medical point of view that in this case we could have done anything a lot different". [13]

<u>Bradley had sustained an insult before the last hour of labour</u>

20. I accept the evidence of Dr Watkins on behalf of his colleagues:

> "From the paediatric point of view evidence that pointed to the fact that much or all of the insult that Bradley had sustained had occurred before the last hour or so of labour, in that he had established neurological abnormality at birth, and yes there was evidence of ongoing stress with acidosis at birth and things like that in the last

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[10] Transcript page 190

[11] Transcript page 190

[12] Paragraph 28 submission

[13] Transcript page 194

hours of labour, but this is an insult which could have occurred quite early in the evolution of this story, of this scenario and so it is open to very real doubt as to whether any actions in the last hour or two would have made a defining difference to Bradley". [14]

**Lessons**

Fibronectin Test

21. I have not found that Dr Griffiths relied solely on the test. However I endorse Dr Raegan's reminder to clinicians that the test is but one clinical indicator:

> "It is the whole clinical scenario within investigations that have been preformed, the ultrasound and the foetal fibronectin test". [15]

Concerns about lack of CTG access in the hospital

22. Dr Raegan expressed concern that some hospitals have only one CTG in the ward. He explained however:

> "I have concerns that a woman of 34 weeks who has had CTG for 25 minutes has demonstrated some abnormalities and then is then given pethidine. The CTG is then removed for the last hour prior to Bradley's birth. I have concerns with that, and if there is a woman who requires it more than Mrs Piper that is an issue that Kilmore Hospital have to deal with and somehow have funds to have more than one CTG in the hospital". [16]

Record Keeping

23. The experts concurred with concerns raised by Dr Raegan, that record keeping was inadequate:

> "We have got very little evidence of what was occurring other than one noted at 12 o'clock, one noted 13.30 and another noted 13.40. There is no other – I don't know what Mrs Piper was doing at that stage. There were no clinical notes explaining what occurred after the ultrasound at 11.30 and went back to the delivery suite. The notes recommence at 14.40 hours".

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[14] Transcript page 191

[15] Transcript page 186

[16] Transcript page 192

24. The above review identifies a deficiency in clinical note keeping. Accurate, contemporaneous file entries and record keeping is vital. The hospital must ensure that record keeping is always adequately maintained.

**Cause of death**

25. On 30 January 2007, Dr Sarah Parsons Forensic Pathologist at the Victorian Institute of Forensic Medicine (VIFM) performed an autopsy on the body of Bradley Keith Piper.

26. Dr Parsons found the cause of death to be perinatal asphyxia.

27. Dr Parsons commented:

> "Bradley Keith PIPER was born at thirty four weeks gestation via a spontaneous vaginal delivery on the 22 January 2007. No heart beat or respirations were noted at birth with Apgars of 0 at one minute and 3 at five minutes. CPR was commenced and the first gasp was at twenty minutes. There was spontaneous respiration however the baby required intubation at approximately two hours of age due to respiratory distress. The baby was transferred from the Kilmore District Hospital to the Monash Medical Centre by the Neonatal Emergency Transfer Service. On arrival at the Monash Medical Centre the baby had no spontaneous movement to stimulation and the pupils were very sluggish. He subsequently had small improvement with some withdrawal to stimulation. An EEG performed at the Monash Medical Centre showed a flat and isolated electric trace. An MRI showed severe hypoxic ischaemic injury. It was decided due to the poor neuronal state and severe brain damage shown on the EEG and MRI that intensive treatment would be withdrawn and the baby passed away on the 25th of January 2007.
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> There was an uneventful prenatal history. The mother was a thirty one year old G3P1. Antenatal screens at 19 weeks showed borderline ventriculomegaly which was also shown at 21 weeks. Chromosome analysis showed 46 XY. The delivery was a spontaneous precipitant labour. There was no anaesthetic and no foetal distress. Liquor was clear and the CTG was unremarkable. It was a cephalic presentation". [17]

[17] Comments section Dr Parsons Report.

**Finding**

I find the cause of death of Bradley Keith Piper to be perinatal asphyxia.

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

Mr Henk Piper, Next of Kin

Dr Griffiths

Kilmore Hospital

Tania Cristiano, Leading Senior Constable

Investigating Member

Signature:

JOHN OLLE
CORONER
Date: 2 July 2013