

IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2008 000745

FINDING INTO DEATH WITH INQUEST

Form 37 Rule 60(1)

Section 67 of the Coroners Act 2008

Inquest into the Death of: Baby Paula Victoria O'SHEA

Delivered On:	12 August 2014
Delivered At:	Coroners Court of Victoria 65 Kavanagh Street Southbank Victoria 3006
Hearing Dates:	21, 22 March 2013
Findings of:	Coroner Paresa Antoniadis SPANOS
Representation:	Mrs Katherine O'SHEA and Mr Jarrah O'SHEA, the parents, appeared on their own behalf. Mr Paul HALLEY of Counsel, instructed by Ms Lisa RIDD from Minter Ellison Lawyers, appeared on behalf of Alfred Health/Sandringham Hospital.
Police Coronial Support Unit:	Leading Senior Constable Amanda MAYBURY, assisting the Coroner.

I, PARESA ANTONIADIS SPANOS, Coroner,
having investigated the death of Baby Paula Victoria O'SHEA
and having held an inquest in relation to this death at Melbourne on 21 and 22 March 2013:

find that the identity of the deceased was Paula Victoria O'SHEA
born on 20 February 2008
and that the death occurred on 20 February 2008
at Sandringham and District Memorial Hospital, 193 Bluff Road, Sandringham Victoria 3191
from:

I (a) INTRA-UTERINE HYPOXIA

in the following circumstances:

INTRODUCTION¹

1. Baby Paula Victoria O'Shea was the first-born child of Mrs Katherine and Mr Jarrah O'Shea who resided in Hughesdale at the time. This was Mrs O'Shea's first pregnancy. Her antenatal care had been managed by GP Obstetrician Dr Mark Lipzker, and had been uncomplicated.
2. Mrs O'Shea's labour commenced spontaneously at 39 weeks 4 days gestation, effectively at term, on 20 February 2008. When she presented to Sandringham and District Memorial Hospital (Sandringham Hospital) at about 0545 hours, Mrs O'Shea was admitted with a history of regular contractions since 0330 hours at a frequency of 3-4 moderate contractions in ten minutes, and intact membranes.
3. Later in the morning at 0745 hours, Dr Lipzker performed artificial rupture of the membranes, in part to augment labour but also to comply with the hospital's protocol for epidural analgesia, which also mandated continuous monitoring by cardiotocograph (CTG). The CTG trace was difficult to interpret from the outset, as it did not appear to be reliably detecting uterine contractions and this impacted interpretation of the foetal trace. Some time after 1300 hours, the CTG trace became increasingly concerning and Dr Lipzker was contacted and asked to review Mrs O'Shea.

¹ What follows in paragraphs 1 to 7 is a summary of events that are largely uncontroversial. The clinical management and care provided to Mrs O'Shea at Sandringham Hospital on 20 February 2008 will be discussed in more detail below from paragraphs 22 onwards.

4. Dr Lipzker attended at 1425 hours, reviewed Mrs O'Shea and the CTG trace, and called an emergency Caesarean section for failure to progress. Having obtained consent from Mr and Mrs O'Shea, Dr Lipzker set in train all necessary arrangements for the Caesarean section, including arranging an anaesthetist and paediatrician.
5. The Syntocinon infusion was turned off at 1430 hours, while CTG monitoring remained in place until 1445 hours, when Mrs O'Shea was transferred to a trolley to take her to theatre. At 1505 hours, while Mrs O'Shea was in theatre waiting for the Caesarean section to commence, the foetal heart rate (FHR) was auscultated at 180 beats per minute (bpm).²

BABY PAULA'S CONDITION AT BIRTH

6. The timelines thereafter are well-documented in the medical records and statements of witnesses who were in theatre, and are not contentious. In summary, the first incision was made at 1513 hours, the second incision at 1515 hours, and after unexpected difficulty in extracting her due to the degree of impaction of her head, Baby Paula was born at 1521 hours.³
7. Baby Paula was born pale and floppy and handed to the paediatrician who immediately commenced resuscitation. She required suctioning to the mouth and nose and was commenced on 100 per cent oxygen. No spontaneous respiratory effort was seen, and her heart rate was auscultated by the paediatrician at less than 60bpm. Despite intubation, administration of inotropes and cardiac massage, Baby Paula could not be revived. Her Apgar scores were 1 at one minute, 0 at five minutes, 0 at ten minutes and 0 at twenty minutes. Active resuscitation was ceased at 20 minutes of life and Baby Paula was pronounced deceased.⁴

² Statement of RM Mary Dwyer dated 11 May 2011 Exhibit C, transcript page 68 and Exhibit B.

³ Statement of RM Kerven who requested to be in attendance to follow through with the delivery Exhibit B, statement of RM Dwyer Exhibit C and transcript pages 69-70, statement of RM Kay Kurth Exhibit D from 1530hrs onwards, statement of Dr Lipzker Exhibit G. All witnesses who were present commented on the extraordinary degree of impaction of Baby Paula's head, notably RM Kerven who assisted Dr Dhupar who was pulling the head up through the incision by exerting pressure on the head from below. See her statement Exhibit B "1518 hours: Dr Nita Dhupar (Obstetric Registrar) is experiencing difficulty extracting the foetal head and I am requested to push up on the foetal head through the vagina. No improvement felt by Dr Dhupar and I am requested to increase the pressure being applied on the foetal head to expedite the delivery of the head, while Dr Dhupar pulls up on the foetal head through the uterine incision". Also transcript page 27 "...I would've expected the baby to have been born alive...completely unexpected...what we found at the Caesarean...I've never experienced before or after, had to apply such pressure on the foetal head to relieve the disimpaction...I've done that before...but it usually is relieved with a gentle degree of pressure...and you still recall it...as an extraordinary amount of pressure that you had to apply? Correct, correct." Reiterated in cross-examination at pages 58 and 64.

⁴ Devised by American Anaesthesiologist Virginia Apgar, the Apgar score is an evaluation of an infant's physical condition, usually performed one minute and again five minutes after birth, based on a rating of five factors that reflect the infant's ability to adjust to extra-uterine life – heart rate, respiratory effort, muscle tone, reflex irritability and colour. Each factor is rated out of two giving a score out of ten. The score was developed for the rapid identification of

THE PURPOSE OF A CORONIAL INVESTIGATION

8. Baby Paula's death was reported to the Coroner on the basis that it was an unexpected death, and/or resulted directly or indirectly from injury, in the sense of birth trauma. The purpose of a coronial investigation of a *reportable death*⁵ is to ascertain, if possible, the identity of the deceased person, the cause of death and the circumstances in which death occurred.⁶ The *cause* of death refers to the *medical* cause of death, incorporating where possible the *mode* or *mechanism* of death. For coronial purposes, the *circumstances* in which death occurred refers to the context or background and surrounding circumstances, but is confined to those circumstances sufficiently proximate and causally relevant to the death, and not merely all circumstances which might form part of a narrative culminating in death.⁷
9. The broader purpose of any coronial investigations is to contribute to the reduction of the number of preventable deaths through the findings of the investigation and the making of recommendations by coroners, generally referred to as the *prevention* role.⁸
10. Coroners are also empowered to report to the Attorney-General in relation to a death; to comment on any matter connected with the death they have investigated, including matters of public health or safety and the administration of justice; and to make recommendations to any Minister or public statutory authority on any matter connected with the death, including public health or safety or the administration of justice.⁹ These are effectively the vehicles by which the prevention role may be advanced.¹⁰

infants requiring immediate intervention of transfer to an intensive care nursery. Mosby's Medical, Nursing and Allied Health Dictionary (Fourth edition) page 111.

⁵ The *Coroners Act 2008*, like its predecessor the *Coroners Act 1985*, requires certain deaths to be reported to the Coroner for investigation. Apart from a jurisdictional nexus with the State of Victoria, the definition of a reportable death in section 4 includes deaths that appear to have been *unexpected, unnatural or violent or to have resulted, directly or indirectly, from accident or injury*.

⁶ Section 67(1) of the *Coroners Act 2008*. All references which follow are to the provisions of this Act, unless otherwise stipulated.

⁷ This is the effect of the authorities – see for example *Harmsworth v The State Coroner* [1989] VR 989; *Clancy v West* (Unreported 17/08/1994, Supreme Court of Victoria, Harper J.)

⁸ The “prevention” role is now explicitly articulated in the Preamble and purposes of the Act, cf: the *Coroners Act 1985* where this role was generally accepted as “implicit”.

⁹ See sections 72(1), 67(3) and 72(2) regarding reports, comments and recommendations respectively.

¹⁰ See also sections 73(1) and 72(5) which requires publication of coronial findings, comments and recommendations and responses respectively; section 72(3) and (4) which oblige the recipient of a coronial recommendation to respond within three months, specifying a statement of action which has or will be taken in relation to the recommendation.

11. It is important to stress that Coroners are not empowered to determine the guilt of any person, or the extent of any civil liability arising from a death.¹¹

INVESTIGATION – SOURCES OF EVIDENCE

12. This finding is based on the totality of the material the product of the coronial investigation of Baby Paula's death. That is the brief of evidence compiled by Leading Senior Constable Amanda Maybury from the Police Coronial Support Unit (PCSU), the statements, reports and testimony of those witnesses who testified at inquest and any documents tendered through them, and the final submissions of Counsel. All of this material, together with the inquest transcript, will remain on the coronial file.¹² In writing this finding, I do not purport to summarise all the material and evidence, but will refer to it only in such detail as is warranted by its forensic significance and in the interests of narrative clarity.

FINDINGS AS TO UNCONTENTIOUS MATTERS

13. In relation to Baby Paula's death, most of the matters I am required to ascertain, if possible, were uncontentious from the outset. Her identity, the date, time and place of her death were never at issue. I find, as a matter of formality, that Paula Victoria O'Shea, born at 1521 hours on 20 February 2008, died at Sandringham Hospital at 1541 hours on the same day.

THE MEDICAL CAUSE OF DEATH

14. Ascertaining the medical cause of death was problematic, particularly as to antecedent causes. On 25 February 2008, an autopsy was performed by (then) Forensic Pathology Registrar Dr Melissa Baker from the Victorian Institute of Forensic Medicine (VIFM), who also reviewed the circumstances as reported by the police to the Coroner, the medical records and medical deposition from Sandringham Hospital and the results of a number of ancillary investigations. Dr Baker provided a detailed written report of her findings,¹³ including the results of a number

¹¹ Section 69(1). A Coroner must not include in a finding or comment any statement that a person is, or may be, guilty of an offence. However, if a Coroner believes an indictable offence may have been committed in connection with a death, they must refer the matter to the Director of Public Prosecutions. Sections 49(1) and 69(2).

¹² From the commencement of the *Coroners Act 2008* (the Act), that is 1 November 2009, access to documents held by the Coroners Court of Victoria is governed by section 115 of the Act.

¹³ Dr Baker's autopsy report, includes her formal qualifications and experience, and appears at pages 1-14 of Exhibit I, the balance of the inquest brief. The attachments to the autopsy report outline all ancillary investigations either undertaken by Dr Baker or at her behest and appear at pages 15 to 54 of Exhibit I.

of ancillary investigations, in particular specialist histopathology of the placenta and specialist neuropathological examination of the brain.

15. Dr Baker found Baby Paula to be appropriately developed for gestational age with no evidence of congenital malformations. Her main anatomical findings were right parietal skull vault fracture with moulding of the scalp, associated widespread subarachnoid haemorrhage and a thin layer of acute subdural haemorrhage, and microscopic haemorrhages in the occipital white matter bilaterally, as well as some subpial haemorrhages in the brainstem. Histological examination of lung sections revealed numerous foetal squames within the airway, indicative of intra-uterine foetal stress, such as when the blood oxygen supply is compromised causing the foetus to take forceful gasps.¹⁴
16. As regards the fracture, Dr Baker commented that while skull vault fractures are most commonly associated with the use of forceps during delivery, which was not the case here, they have been reported following spontaneous vaginal delivery.
17. Dr Baker attributed Baby Paula's death to *intra-uterine hypoxia*, a condition occurring with the uterus resulting in reduced oxygen supply. In terms of antecedent causes, Dr Baker identified a number of possibilities including placental abruption, cord compression, a tight cord around the neck, transplacental anaesthetic or narcotic administration, intra-uterine pneumonia, severe meconium aspiration, congenital pulmonary or cardiac anomalies and birth trauma. Dr Baker also noted that in many cases, the underlying cause is not identified.¹⁵
18. Reading Dr Baker's report in the context of the evidence overall, in relation to the hypoxia to which Baby Paula succumbed, some of these possibilities can be excluded. However, cord compression, a tight cord around the neck, the effects of anaesthetic/analgesia and birth trauma, or any combination of these, are possible antecedent causes that remain open.¹⁶

¹⁴ Dr Virginia Billson examined the placenta and provided a report of her findings that appears at pages 20-21 of Exhibit I.

¹⁵ Page 12/14 of Dr Baker's autopsy report (page 12 of Exhibit I).

¹⁶ Dr Virginia Billson performed histopathology of the placenta and provided a report which is annexed to Dr Baker's autopsy report (pages 20-21 of Exhibit I). Dr Billson's concluding diagnosis was "Mature third trimester placenta with mild chronic villitis of uncertain aetiology, a focus of avascular villi, chorangiosis and large subchorial and intervillous thrombi. Dr Billson indicated that the findings suggested feto-maternal transfusion and queried whether a Kleihauer test had been done. This was echoed in Dr Baker's comments (page 13 of Exhibit I). At inquest it was established that a Kleihauer test had not been done, so the possibility of feto-maternal transfusion could neither be verified nor excluded.

19. Neuropathologist Dr Penny McKelvie provided a report¹⁷ that was annexed to Dr Baker's autopsy report, and testified at inquest. As noted by Dr Baker, Dr McKelvie found subarachnoid haemorrhage and a thin layer of acute subdural haemorrhage, microscopic haemorrhage in the occipital white matter bilaterally with some subpial haemorrhages in the brainstem, and no chromatolysis of neurons.
20. At inquest, Dr McKelvie expanded on her findings, testifying that apart from some microscopic haemorrhage and an area of focal haemorrhage within the brain, likely related to the trauma of delivery and impaction of the head low in the pelvis, the brain was normal with no previous episodes of hypoxia or injury. In this context, 'previous' means occurring 24 hours or more before birth. Dr McKelvie's expert assessment was that the absence of chromatolysis in the neurons (nerve cells) indicated that the hypoxic insult occurred *within* 24 hours of birth, and could not be timed with any greater precision, by reference to pathological findings alone. Nor could Dr McKelvie further elucidate the antecedent causes of the intra-uterine hypoxia to which Baby Paula succumbed.¹⁸

FOCUS OF THE CORONIAL INVESTIGATION AND INQUEST

21. For completeness, I note that there were no issues with Mrs O'Shea's antenatal course or the care provided to her prior to labour, and no issues with the clinical management and care provided to Baby Paula in the time between her delivery at 1521 hours and the cessation of resuscitation efforts at 1541 hours when she was pronounced deceased.
22. The primary focus of the coronial investigation of Baby Paula's death, including the inquest, was on the adequacy of the clinical management and care provided to Mrs O'Shea during labour and delivery. Specifically, whether the CTG traces were accurately interpreted by the midwife caring for Ms O'Shea during labour, whether communication with Dr Mark Lipzker was adequate, whether his decision to proceed to Caesarean section should have been made earlier and, if so, whether Baby Paula would have survived.
23. These are largely inter-related issues and require some detailed analysis of the evidence, particularly as to the clinical management of Mrs O'Shea's labour from about 1300 hrs until 1425 hrs, when the decision to deliver by Caesarean section was made by Dr Lipzker.

¹⁷ Associate Professor P. A. McKelvie's five page report dated 17 March 2008 was Exhibit A. Dr Baker's comments about hypoxic and other changes in the brain are based on Dr McKelvie's report (page 13 of Exhibit I). See also paragraph 22 above.

¹⁸ Transcript pages 5-7.

HANDOVER FROM NIGHT SHIFT TO MORNING SHIFT MIDWIFE

24. RM Kerven took over Mrs O'Shea's care at 0730 hours following a handover from the night shift midwife. She was aware that the foetal heart rate (FHR) had been 124 bpm on auscultation, that Mrs O'Shea had commenced using nitrous oxide and was 3cm dilated with intact membranes. RM Kerven was also aware that at 0630 hours, Mrs O'Shea had asked for some analgesia and that, when Dr Lipzker failed to respond to messages left on his mobile and home phones, the night cover GP provided a phone order for pethidine and maxolon.

FIRST EXAMINATION BY DR LIPZKER

25. When Dr Lipzker subsequently contacted the ward at 0700 hours, he was informed about Mrs O'Shea's condition and told midwifery staff that he was coming in to perform a vaginal examination and possibly an artificial rupture of the membranes (ARM).¹⁹

26. Dr Lipzker first examined Mrs O'Shea at 0745 hours. He found the cervix 4cms dilated, fully effaced with membranes intact. He performed ARM whereupon clear liquor drained, and organised an epidural for analgesia at Mrs O'Shea's request.²⁰ According to Dr Lipzker, the ARM was performed both to augment labour and to accord with the hospital protocol for epidural analgesia.²¹

27. Immediately following Dr Lipzker, also at about 0745 hours, RM Kerven performed her initial assessment of Mrs O'Shea, finding her to be contracting at a rate of 3-4 moderate/strong contractions in ten minutes, each lasting about 50 seconds. In accordance with protocol, once the epidural infusion commenced at 0850 hours, continuous monitoring by CTG was also commenced.²²

PROBLEMS WITH THE CTG TRACES

28. RM Kerven's interpretation of the CTG trace at 1000hrs was that the FHR was normal, FHR variability was normal, with no decelerations and some accelerations being present. However, the trace was difficult to interpret overall, and remained so throughout Mrs O'Shea's labour, as

¹⁹ Exhibit B, statement of RM Kerven dated 20 May 2011 (at page 57 of the inquest brief Exhibit I).

²⁰ Four centimetres is as documented in the medical records at page 95 of the inquest brief (Exhibit I), although in his statement dated 13 December 2011, Exhibit G, Dr Lipzker refers to 3-4cms. While the discrepancy is noted, it is immaterial. See also RM Kerven's evidence about the general practice of monitoring with CTG whenever epidural analgesia is used in labour at transcript page 20.

²¹ Transcript pages 20, 121-122. There was no suggestion that ARM was not appropriate in the circumstances.

²² Cardiotocography, also known as electronic foetal monitoring, is a technical means of recording the foetal heartbeat and the uterine contractions during pregnancy, typically the third trimester and during labour/delivery.

uterine contractions were not being reliably recorded, so that the vital correlations between the foetal heart rate and uterine contractions could only be approximated, by palpation of contractions and auscultation of accelerations in the FHR. Using this method, RM Kerven's assessment was that the CTG trace appeared to be reactive, attempting to return to a baseline FHR of 145-150bpm.

AUGMENTATION OF LABOUR – IV SYNTOCINON

29. At 1030 hours, contractions were decreasing in frequency and intensity. RM Kerven contacted Dr Lipzker who gave a phone order for IV Syntocinon 30ml/hr, and indicated he would return to reassess Mrs O'Shea in two hours. The IV Syntocinon infusion was commenced at 1040 hours at 30ml/hr as ordered, but then reduced by RM Kerven to 15ml/hr at 1105 hours in response to noted hyper-stimulation of the uterus.²³ RM Kerven's interpretation of the CTG trace at 1115-1120 hours was of a normal FHR with reduced variability, some accelerations and some variable decelerations that were difficult to characterise as 'early' or 'late' due to ongoing poor detection of uterine contractions.²⁴
30. At 1220 hours, RM Kerven documented that Mrs O'Shea was having 3-4 moderate-strong contractions in ten minutes, each lasting 45-50 seconds, the IV Syntocinon was running at 15ml/hr and the epidural was providing good analgesic effect. As the CTG trace was still not picking up contractions, RM Kerven was palpating them. She felt that variable decelerations were still persistent, but the trace was otherwise reassuring with normal baseline FHR and normal variability.²⁵
31. For about 20 minutes from 1240 hours, while RM Kerven took a meal break, Mrs O'Shea's care was handed over to Registered Midwife Kay Kurth. In her capacity as Midwife in Charge of the Unit, RM Kurth was already aware of RM Kerven's concerns about the CTG trace.

²³ As described in RM Kerven's statement Exhibit B (page 58 of Exhibit I) "...contractions were noted to be 5 in 10 minutes, with less than 2 minutes break between them. Therefore IV Syntocinon infusion was decreased to 15mls/hr."

²⁴ Exhibit B, statement of RM Kerven (at page 58 of the inquest brief Exhibit I, see also page 97 where her observations are documented.) I note that at about this time, RM Kerven advised the Obstetric Registrar Dr Nita Dhupar of her concerns regarding the CTG trace and she advised palpating the contractions to assist in identifying the type of deceleration. Transcript pages 16-18.

²⁵ Exhibit B, statement of RM Kerven (at page 59 of the inquest brief Exhibit I, see also page 97 where her observations are documented. Transcript page 9 and following. At paragraph 46 below Dr Sedgeley describes this part of the trace as "marginal" in terms of concern about the foetus and the need to re-assess progress of labour/delivery mode.

SECOND ASSESSMENT BY DR LIPZKER

32. RM Kurth was present when Dr Lipzker performed a second vaginal examination at 1240 hours. His documented findings were two-three reasonable contractions in ten minutes, abdo 1/5 above, cervix thin six centimetres dilated well applied, vertex caput +++, moulding +, query position, still above spines.
33. Dr Lipzker's interpretation of the CTG trace was that there had been some variable decelerations between 1130 and 1230 hours. However, in view of the progress in Mrs O'Shea's labour, his plan was to continue observing the labour and reassess progress in two hours to decide mode of delivery.²⁶ Although progress was slower than average, he felt it was too early to make the call for Caesarean section, as there was no indication that labour was obstructed.²⁷

THE CTG TRACE DETERIORATES

34. The clinical response to the CTG traces from about 1304 hours, and certainly from 1320 hours, was a main focus of this investigation. For all the difficulties in interpreting the CTG from the outset, it was during this period that the CTG appeared increasingly abnormal to RM Kerven, with a number of concerning features.
35. At about 1320 hours, RM Kerven documented her assessment of the CTG trace between 1110 and 1320 hours. While she found the baseline FHR at normal (145-150bpm), the CTG had persistent variable decelerations down to 50bpm, lasting 30-60 seconds and with long periods of reactivity, attempting to return to baseline.²⁸ She notified Dr Lipzker of persistent variable decelerations, and he advised that he could come in to assess Mrs O'Shea at 1430 hours, that is two hours after his previous assessment, as planned. At the time, RM Kerven did not query the adequacy of this response and testified that she felt empowered to escalate Mrs O'Shea's care through the Midwife in Charge, if necessary.²⁹
36. While Dr Lipzker could not recall the precise content of this conversation with RM Kerven, he accepted that he was notified about persistent variable decelerations, and that absent other

²⁶ Exhibit G, statement of Dr Mark Lipzker dated 13 December 2011 (pages 66-1 to 66-3 of Exhibit I), transcript pages 121 and following especially pages 132 and 133 where he interprets his handwritten clinical notes.

²⁷ Exhibit G, transcript page 123-124. Later, when it was ascertained that Baby Paula was in a difficult position (right occipital posterior), Dr Lipzker felt that this explained the slow progress in labour. Transcript pages 124, 133-134.

²⁸ Exhibit B, transcript from page 11 and her entry in the progress notes at page 98 of the inquest brief, Exhibit I. I note that IV syntocinon (initially commenced at 30mls and then decreased to 15mls due to perceived hyper-stimulation of the uterus) was increased from 15mls to 30mls at 1320 hours, in an effort to augment labour, apparently without reference to Dr Lipzker. Transcript pages 19, 47, 50.

²⁹ Transcript pages 25-26, 56-57.

concerning features, such as tachycardia or reduced variability, these were not concerning at that stage. Having decided at 1330 hours to allow two hours to assess the progress of Mrs O'Shea's labour, he did not feel that one hour was sufficient time to warrant re-assessment.³⁰

37. Apart from retrospective notes made after the event, RM Kerven made two further contemporaneous notes about the CTG trace. The first at 1400 hours was of a slight rise in baseline up to 155-160bpm with good variability, occasional acceleration and persistent variable decelerations. The second at 1410 hours was of a rise in the baseline FHR to 165-170bpm with good variability.³¹
38. At the same time, RM Kerven contacted Dr Lipzker, notified him of a rising baseline and he indicated that he would come back to review Mrs O'Shea.³² It was this telephone call that led to Dr Lipzker's third assessment of Mrs O'Shea, and the decision to proceed to Caesarean section.

DIFFICULTIES INTERPRETING THE CTG TRACE

39. As already mentioned, RM Kerven had difficulty interpreting the CTG traces of Mrs O'Shea's labour. The main obstacle to correct interpretation was the apparent inability of the CTG to detect uterine contractions. This had two consequences. In the first place, decelerations in the FHR are characterised by reference to their temporal relationship with uterine contractions, in order to inform clinical decision-making. Secondly, determination of the FHR itself requires an average assessment over the time between contractions; a resting FHR as it were. A FHR outside the 'normal range' of 110-160 mandates a timely clinical response.³³
40. RM Kerven was not alone in finding these CTG traces difficult to interpret. RM Kurth also attested to difficulty in interpreting these CTG traces.³⁴ It is reasonable to infer that Dr Nita Dhupar, the Obstetric Registrar to whom RM Kerven communicated her concerns, also shared this view.³⁵
41. While RM Kerven palpated the uterine contractions and manually depicted them on the CTG traces in real time, the evidence supports a finding that this provided an approximation at best,

³⁰ Exhibit G and transcript page 123.

³¹ Page 98 of the inquest brief, Exhibit I.

³² Exhibit B, Exhibit G.

³³ As to interpretation of CTGs and abnormal or concerning features, see RM Kerven's evidence at transcript pages 11 and following, and Dr Campbell's evidence at transcript pages 158 and following, especially at pages 176, 179, 189-190.

³⁴ Transcript pages 77, 81.

³⁵ Exhibit B and transcript pages 16-17.

and did not allow accurate diagnosis of late decelerations.³⁶ What was required was a clear indication of the relationship of the nadir of the deceleration and the time when the contraction ended absolutely.³⁷

42. As regards remedial action, RM Kerven's evidence was that she re-positioned the tocodynamometer³⁸ without improving the trace, and that she had no other alternatives.³⁹ She also testified that she was aware of an inter-uterine device that could be used to track or record uterine contractions, but such a device was not available at Sandringham Hospital at the time.⁴⁰

THE DECISION TO DELIVER BY CAESAREAN SECTION

43. Dr Lipzker returned to the labour ward and performed a third vaginal examination at 1425 hours.⁴¹ On abdominal palpation, the head was well descended and unable to be palpated in the abdomen.⁴² On vaginal examination the cervix was still only six centimetres dilated, vertex above the spines, caput +++, and this confirmed his earlier suspicion that the baby was presenting in the right occipital posterior position, which was both consistent with the relatively slow progress in labour and a difficult position for vaginal delivery.⁴³

44. On reviewing the CTG trace, he noted foetal tachycardia and saw that there had been some prolonged decelerations.⁴⁴ The overall clinical picture, including the CTG trace, indicated a

³⁶ Transcript page 13 and following for RM Kerven's evidence about recognising the 'type' of deceleration.

³⁷ Transcript pages 159-160 "...there's a difference between what the tocodynamometer picks up, that will pick up the very beginnings of a contraction often before a person palpating the abdomen can feel, and similarly it will recognise when the contractions stop even when the person can no longer feel the tightening of the uterus. So while it was a good idea ... better than doing absolutely nothing, but it's not accurate as to the exact start and finish of a contraction ... So that's really the aim of the exercise is to get a clear indication of the deceleration or what's been referred to as the nadir of the deceleration?---Yep. In association with the contraction in particular the end of the contraction?---Yes."

³⁸ That part of the cardiotocograph 'hardware' placed externally on the mother abdomen to capture uterine activity.

³⁹ Transcript page 40 - "... I remember trying different position placements ... of the toco on the uterus to try and get better um, adequate recording ... it can be a common um, problem with CTG monitoring, is actually getting adequate uterine um, and toco recording of contractions. So it wasn't an uncommon thing that I hadn't seen before. So I was used to sort of troubleshooting um, that." RM Kerven went on to explain that she could possibly have tried another CTG machine but you often encounter the same problem and, in any event, she knew that it wasn't a malfunction because you could test for that.

⁴⁰ Transcript page 41.

⁴¹ The time documented in the medical records (page 98 of Exhibit I) is at variance with the time in Dr Lipzker's statement Exhibit G, namely 1415hrs. At inquest, Dr Lipzker made it tolerably clear that the third VE that led to the decision to deliver by Caesarean section was at 1425. Transcript pages 136, 148-149.

⁴² Noted as 0/5ths above - see page 98 of Exhibit I and transcript page 136.

⁴³ Transcript 136 and following where Dr Lipzker testifies about the ramifications of the ROP position. Also page 154 where he testifies that this position is associated with "slower labours".

⁴⁴ Exhibit G (page 66-2 of Exhibit I) and his note in the medical record "CTG baseline 170 variable decelerations" (page 98 of Exhibit I).

failure to progress in labour, and led him to the decision to proceed to deliver by emergency Caesarean section.⁴⁵

45. At inquest, Dr Lipzker testified that while he recognised that Baby Paula was showing signs of distress, he expected her to survive and was surprised that she had descended as far as she had and was so impacted.⁴⁶ While he no longer practiced obstetrics, Dr Lipzker accepted Dr Sedgeley's criticisms of clinical management, and testified that if he had seen the CTG trace at about 1320 hours rather than having it interpreted for him *he would have hoped to have interpreted it as Dr Sedgeley did and either monitored the trace for another 20 to 30 minutes or made the decision to go to theatre.*⁴⁷

EXPERT EVIDENCE

46. Two obstetricians reviewed the CTG traces in the context of providing expert assessments of the clinical management of Mrs O'Shea's labour and delivery. Dr Michael Sedgeley provided an independent expert assessment at my request⁴⁸ and Dr John Campbell provided a medico-legal opinion on behalf of Alfred Health.⁴⁹ Both described the CTG traces as difficult to interpret.⁵⁰

47. Dr Sedgeley's interpretation of the CTG trace focused on two time periods. He saw some *marginal* reduced variability at 1220 hours but considered that it was difficult to interpret and reasonable to press on carefully.⁵¹ At 1320 hours, the CTG trace was not normal. Rather the FHR was abnormally raised to between 170-180bpm with *late not variable* decelerations and short-term variability reduced overall.⁵² He considered that the rising baseline FHR is evident from 1300 and that over the next 20 minutes, the CTG indicates that the foetus is distressed. He

⁴⁵ Exhibit G (page 66-2 of Exhibit I) and his note in the medical record "A: Failure to progress P: LUSCS." Dr Campbell testified that the clinical picture at this time was correctly interpreted by Dr Lipzker, at transcript page 169 "*...you need to have evidence of progress so for progress to have occurred the cervix would have had to dilated further, the head would have had to descend further into the pelvis...was above the spine still when the spine is the station landmark we use. So it hadn't really progressed from the "VE" at 1240 at all, so that would be a clear sign that this labour is not progressing despite the uterus contracting fairly well as evidenced by the midwives assessment of contractions. Then you've got a non-reassuring CTG, so if you put that scenario to most obstetricians we'd say that's a sign to stop.*"

⁴⁶ Transcript pages 135-136, 151.

⁴⁷ Transcript pages 130-131. This is a compilation of his evidence on this issue, not verbatim.

⁴⁸ Dr Sedgeley's statements dated (~) 4 May 2010 and 3 January 2011 are Exhibits E and F respectively. See also transcript page 94.

⁴⁹ Dr Alexander John Campbell's statement dated 13 March 2013 is Exhibit H.

⁵⁰ Exhibit F and transcript page 96 for Dr Sedgeley's evidence. Exhibit H and transcript pages 179, 192 for Dr Campbell's evidence.

⁵¹ Exhibit F and transcript pages 93-94.

⁵² Exhibit F and transcript page 94 and following.

expressed the view that syntocinon should have been ceased at this time, as it was likely to strengthen uterine contractions and add to foetal distress.⁵³

48. According to Dr Sedgeley, there was a strong case for performing a caesarean section at 1320 hours without further delay. An acceptable conservative alternative was to allow labour to progress for about 20 minutes to see if the CTG returned to normal, and to perform a Caesarean if abnormality persisted.

49. Although he was critical of the clinical management of Mrs O'Shea's labour, both in his statement and at inquest, Dr Sedgeley expressed the opinion that Baby Paula's death could not have been anticipated. Indeed, he went further in stating that "...the severity of the outcome is still impossible to predict accurately and was unexpected. There is no evidence of a terminal situation such as absent variability with late decelerations in the CTG tracings. There is nothing here to predict the imminent death of the baby."⁵⁴

50. Dr Campbell agreed broadly with Dr Sedgeley's assessment of the CTG trace and overall clinical management. Dr Campbell agreed with the documented interpretation of the CTG until about 1304 hours when, in his view, the trace shows a reduced variability and a rising baseline FHR. From 1320, his interpretation is that the trace shows further deterioration with late decelerations in relation to contractions, followed by more prolonged decelerations, followed in turn by a return to a baseline FHR at around 180bpm, well above normal.⁵⁵

51. Dr Campbell noted that while RM Kerven interpreted the trace differently, she recognised that it was less reassuring or more concerning and appropriately contacted Dr Lipzker at 1330 hours, and again at 1410 hours when she recognised a rise in the baseline.

52. He made the point at inquest, that interpretation of CTG traces is not a precise science, that a degree of "interpretation" is involved and that, except in the case of classically normal or classically concerning CTG traces where consistent interpretation would be expected, competent clinicians may interpret some CTG traces differently. He described these CTG traces overall, and sections of them variably as *confusing*.⁵⁶ He testified that *it's a fine point between a variable and a late [deceleration]*,⁵⁷ and that *in this trace there isn't anything that everyone*

⁵³ Exhibit F and transcript pages 96-98, 103-104.

⁵⁴ Exhibit F and transcript pages 98, 100-4, 116 and following.

⁵⁵ Exhibit H and transcript pages 168, 178, 197.

⁵⁶ Transcript pages 162 and 176.

⁵⁷ Transcript page 178.

would necessarily agree on...it's a very difficult trace.⁵⁸ Even when the CTG trace appeared to have improved in recording uterine contractions, he considered that *it was a difficult trace because it wasn't a classic trace at all, there were some late decelerations and at times just a tachycardia, I thought there was a lot of reduced variability overall but there are times beyond 1320 where the variability looks normal, so it's a confusing trace, a difficult one to interpret accurately.*⁵⁹

53. The decision to increase syntocinon from 15ml to 30ml at 1320 hours was not supported by Dr Campbell. He expressed the view that it should have been ceased at this time, in order to reduce stress on a foetus that was already showing signs of stress. At inquest, he testified that while he took a conservative approach, others among his colleagues might have allowed the syntocinon to continue at a reduced rate.⁶⁰
54. Dr Campbell's opinion was that best practice following notification of the CTG changes at 1330 hours would have been to cease syntocinon and attend to assess the stage of labour, which would likely have led to an earlier decision to proceed to Caesarean section.⁶¹ It is tolerably clear that he premised this opinion on Dr Lipzker being notified, not of persistent variable decelerations, as he was, but of late, prolonged decelerations and/or foetal tachycardia.
55. However, Dr Campbell did not consider that the outcome would have been different if the decision to proceed to Caesarean section had been made at this time, effectively one hour earlier. He agreed with all the witnesses who testified on this issue, in saying that the difficulty in delivering Baby Paula's head could not have been reasonably anticipated.⁶² In his view, the degree of impaction arose from the particular relationship between the size and position of the foetal head in relation to the dimensions of the mother's pelvis. This was only discoverable during the procedure and there was significant delay and difficulty in delivery of the baby, despite appropriate manoeuvres, that in his view contributed to the adverse outcome.

⁵⁸ Transcript page 179.

⁵⁹ Transcript pages 189-190. When questioned about the baseline FHR between 1230 and 1245 hours, Dr Campbell said that contractions could only be estimated but it did look overall elevated at between 160-170bpm. See transcript page 192.

⁶⁰ Transcript pages 180-181.

⁶¹ Exhibit H.

⁶² Exhibit H and transcript pages 169-170, 185-187.

CONCLUSIONS

56. The standard of proof for coronial findings of fact is the civil standard of proof, on the balance of probabilities, with the *Briginshaw* gloss or explication.⁶³ The effect of the authorities is that Coroners should not make adverse findings against or comments about individuals, unless the evidence provides a comfortable level of satisfaction that their departure from the prevailing standards of their profession, as assessed strictly without the benefit of hindsight, has caused or contributed to the death under investigation.
57. Applying that standard of proof to the available evidence, I find that the weight of the evidence does not support a finding that there was any want of clinical management or care on the part of Dr Lipzker or the staff of Sandringham Hospital, that caused or contributed to the death of Baby Paula.
58. I find that the CTG traces did have concerning features from shortly after 1300 hours, but that these were difficult for RM Kerven or anyone else to detect. Had she been able to appreciate the concerning features of the CTG trace at the time, I am satisfied that RM Kerven would have sought urgent medical review by Dr Lipzker and/or escalated Mrs O'Shea's care via RM Kurth if necessary, to ensure timely decision-making about the mode of delivery.
59. I further find that Dr Lipzker's clinical assessment of Mrs O'Shea at 1425 hours and the decision to deliver by Caesarean section was timely and appropriate, once he was appraised of the concerning features of the CTG trace, and was able to review Mrs O'Shea's progress in labour and the whole clinical picture.
60. Albeit not without its difficulties, correct interpretation of the CTG trace by RM Kerven and timely notification to Dr Lipzker of more concerning features such as tachycardia and late deceleration, had the potential for earlier intervention by Caesarean section. While an improved outcome in such hypothetical circumstances cannot be entirely excluded, the weight of the evidence does not support a finding that it was probable that Baby Paula would have survived. Tragically, Baby Paula's delivery was difficult even with Caesarean section, due to the degree of extreme impaction of her head, that neither the midwives, nor the medical staff involved in

⁶³ *Briginshaw v Briginshaw* (1938) 60 C.L.R. 336 esp at 362-363. "The seriousness of an allegation made, the inherent unlikelihood of an occurrence of a given description, or the gravity of the consequences flowing from a particular finding, are considerations which must affect the answer to the question whether the issues had been proved to the reasonable satisfaction of the tribunal. In such matters "reasonable satisfaction" should not be produced by inexact proofs, indefinite testimony, or indirect inferences..."

Mrs O'Shea's labour or delivery could have anticipated, prospectively and without the benefit of hindsight.

61. Apart from this feature of her birth, the other possible causes of the hypoxia to which Baby Paula succumbed are cord compression, a tight cord around the neck, the effects of anaesthetic/analgesia and birth trauma. The evidence does not enable me to be more precise and to identify the precise probable cause or causes, save to say for clarity that the evidence does support a finding that the intra-uterine hypoxia probably occurred within 24 hours of birth, specifically during labour and delivery.

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

Mr and Mrs O'Shea

Alfred Health/Sandringham Hospital

Registered Midwife Paula Kerven

Dr Mark Lipzker

Dr Michael Sedgeley

Dr Alexander John Campbell

Leading Senior Constable Amanda Maybury.

Signature:



PARESA ANTONIADIS SPANOS

Coroner

Date: 12 August 2014

