IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2015 06472

FINDING INTO DEATH WITHOUT INQUEST

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

Findings of:	CAITLIN ENGLISH, CORONER
Deceased:	Hugo Edward Byard Gardiner
Date of birth:	23 March 2012
Date of death:	24 December 2015
Cause of death:	1(a) Streptococcus pyogenes group A pneumonia
Place of death:	Mount Beauty Hospital (Alpine Health Mount Beauty) 2-8 Hollonds street Mount Beauty

Background

1. Hugo Gardiner was born on 23 March 2012. He was three and three quarters years old at the time of his death and is survived by his twin brother Thomas, his older brother Fergus and his parents, Alexandra and Duane.

2. Hugo lived with his family in Mount Beauty, a small town in north-eastern Victoria. He was a bright, healthy and much loved little boy. He had a past history of eczema and viral laryngitis but was otherwise fit and well. He was fully immunised for his age.

The coronial investigation

3. Hugo's death was reported to the Coroner as it fell within the definition of a reportable death in the *Coroners Act* (2008) as his death was unexpected.

4. The role of a coroner is to independently investigate reportable deaths to establish, if possible, identity, medical cause of death and surrounding circumstances. Surrounding circumstances are limited to events which are sufficiently proximate and causally related to the death. The purpose of a coronial investigation is to establish the facts, not to cast blame or determine criminal or civil liability.

5. A coronial brief has been prepared which includes the statements of doctors who treated Hugo and from the hospital where he was treated, as well as his medical records from Alpine Health and from Mount Beauty Medical Centre. The brief also includes the Medical Examiners Report prepared by Dr Lee. I have also had regard to concerns raised by Hugo's parents in a letter dated 6 June 2016.

6. I have based this finding on the evidence contained in the coronial brief. In the coronial jurisdiction facts must be established to the standard of proof which is the balance of probabilities. [1]

Circumstances in which the death occurred

7. Hugo's mother took him to Mount Beauty Medical Centre on 23 December 2015 at 10am with a two day history of fever up to 40.2 degrees. He had experienced vomiting and diarrhoea the previous day. He had been coughing for a week. Hugo was reviewed by Dr

[1] This is 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.

Laura Zagorski who noted that he had an elevated heart rate of 150 beats per minute, an elevated respiratory rate of 44 breaths per minute, a temperature of 39.6 degrees, and normal oxygen saturations of 97 percent on room air. Dr Zagorski noted Hugo was *"uncomfortable, listless, whimpering"* and that he was "*coughing throughout [the] consult*".

8. Further examination did not identify a source of infection. Hugo was found to have a clear chest to auscultation[2], soft non tender abdomen, normal throat examination, and ear examination obscured by wax. He had dry lips but a moist tongue and a normal central capillary refill time[3] of two seconds. Dr Zagorski considered a viral upper respiratory tract infection[4] as the cause for his symptoms, with a differential diagnosis of an evolving lower respiratory tract infection[5]. The plan was for paracetamol and ibuprofen[6], and a short period of observation at the clinic. Hugo did not change clinically during this thirty minute observation period. Dr Zagorski arranged a repeat review appointment in the afternoon to monitor his progress.

9. Hugo was reviewed by Dr Pem at Mount Beauty Medical Centre later in the afternoon. Dr Pem noted that Hugo was taking oral fluids, passing urine, and had one further loose bowel action. Hugo continued to be febrile[7] at 38 degrees, but his heart rate had improved to 138 beats per minute and oxygen saturations were 97 percent on room air. Examination was normal except for one cervical lymph node[8] palpable on the right side of his neck. Dr Pem diagnosed a viral upper respiratory tract infection and advised symptomatic treatment with regular analgesic and antipyretic medication[9], and a repeat review the next day. Dr Pem documented *"Review overnight, I'm on call if worsening, new rashes, not tolerating fluids"*.

10. Overnight Hugo's mother noticed that Hugo was working increasingly hard to breathe, and was coughing. Hugo was cold and clammy. She took him to Mount Beauty Hospital arriving at 1.40am on 24 December 2015. At 1.41am the GP on call, Dr Pem, was notified. According to the urgent care record, Hugo was reviewed by Dr Pem at 1.45am. Hugo had a heart rate of 120 beats per minute, respiratory rate of 26 breaths per minute and low oxygen

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2 Listening to hear sounds and breath sounds with a stethoscope.
3 Time taken for return of colour after pressure is applied to the skin to cause blanching. It can be a reflection of hydration status.
4 An infection involving the upper respiratory tract including the nose, sinuses, pharynx or larynx.
5 An infection involving the lower respiratory tract below the level of the larynx and can include bronchiolitis, bronchitis, viral and bacterial pneumonia.
6 Medications used to treat symptoms of pain and fever.
7 Temperature greater than or equal to 38 degrees Celsius.
8 Lymph nodes found in the neck region that can enlarge in response to inflammation, infection or malignancy.
9 Medications used to treat symptoms of pain and fever.

saturations of 83 percent in room air. His blood pressure was low at 82/40, temperature was low at 35 degrees celsius and his initial GCS[10] was documented as 15.

11. On examination he had coarse crackles[11] bilaterally on chest auscultation, a tense abdomen and was cold, clammy and mottled. An intravenous (IV) cannula insertion was attempted unsuccessfully and Hugo had a large vomit of dark material before going into cardiorespiratory arrest at 1.55am. Cardiopulmonary resuscitation (CPR)[12] was commenced, an intraosseus (IO) cannula[13] was inserted into the right tibia. To achieve this, the doctor received instructions over the telephone.

12. Additional medical staff arrived to assist. Cardiac rhythm checks revealed asystole[14]. Hugo was treated with multiple doses of adrenaline[15], he was intubated[16] and IV access was obtained. He had a normal saline and dextrose bolus[17] and was administered IV ceftriaxone[18]. The Paediatric Infant Perinatal Retrieval (PIPER)[19] was consulted and a helicopter was being organised to retrieve Hugo.

13. Hugo had no return of circulation after one hour and twenty minutes of CPR. CPR was ceased at 3.15am and Hugo passed away.

Post mortem examination

14. On 25 December 2015, Forensic Pathologist Dr Jacqueline Lee at the Victorian Institute of Forensic Medicine, conducted a post mortem examination and autopsy. Dr Lee completed a medical examiner's report, dated 21 April 2016 in which she formulated the cause of death

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10 Glasgow Coma Scale: An objective scale of neurological assessment, ranging from three (deep unconsciousness) to fifteen (no impairment). A score of less than 8 being universally accepted as the level of coma in which a person is likely to be unable to protect their airway from saliva and other secretions and is at risk of obstructing their airway. There is also agreement that at a level of GCS less than 8 a patient should be intubated to protect the airway and ensure adequate oxygenation.

11 Crackles are caused by the "popping open" of small airways and alveoli collapsed by fluid, exudate, or lack of aeration during expiration. Crackles can be heard in patients with pneumonia, atelectasis, pulmonary fibrosis, acute bronchitis and bronchiectasis.

12 A combination of techniques including chest compressions and breaths that delivers oxygen and artificial circulation to a person whose heart has stopped

13 Intraosseus cannulation involves placement of a needle and cannula through the bone into the bone marrow for the provision of emergency medication when IV access is unable to be obtained.

14 A state of no cardiac electrical activity, hence no contractions of the myocardium and no cardiac output or blood flow.

15 Drug to treat cardiac arrest and other cardiac dysrhythmias resulting in diminished or absent cardiac output. Its actions are to increase peripheral resistance via α1receptor-dependent vasoconstriction and to increase cardiac output via its binding to β1 receptors.

16 Insertion of a tube through the mouth or the nose and into a patient's trachea to help them breath.

17 Intravenous fluids containing sodium chloride and glucose.

18 Intravenous antibiotic.

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

as streptococcus pyogenes group A pneumonia. I accept Dr Lee's opinion as to the medical cause of death.

15. Hugo was found to have bronchopneumonia[20], bilateral pleural effusions[21], crypt abscesses of the palatine tonsils[22], and pallor of the myocardium[23]. He had streptococcus pyogenes[24] isolated from his right and left lungs and pleural cavities[25]. Human metapneumovirus[26] was isolated. Dr Lee commented that this virus is commonly identified in children less than five years of age with a course that is usually mild and self-limiting. Dr Lee commented that viral infection may enhance and worsen bacterial suprainfection, the exact mechanism of which is not well understood.

16. Streptococcus pyogenes group A has virulence[27] factors which may enhance survival of the bacterium by making it less susceptible to the immune response of the infected individual. Dr Lee commented that the combination of viral infection and an aggressive virulent bacterium were factors in the rapidly fatal course of infection for Hugo. Death was the result of Streptococcus pyogenes group A infection that spread from the lungs to the blood.

Family concerns

17. Hugo's parents expressed concerns about the care provided at Mount Beauty Medical Centre and Alpine Health Mounty Beauty ('Mount Beauty Hospital'). Their concerns included:

- The lack of provision of written advice and information about signs and symptoms to watch out for, and when to re-present for medical care. An alternative such as presentation to Albury Base Hospital was not discussed with the family as an option for further review;
- The medical staff reviewing Hugo appeared complacent. There was a lack of further observation in hospital, the medical staff reviewing Hugo were inexperienced, and there was a lack of consultation with paediatric experts at Albury Base Hospital;
- The Urgent Care Department staff were inexperienced with particular concern relating to staff requiring phone instructions when inserting the intraosseus cannula;
- After Hugo's death, Alpine Health responded poorly with no contact made or offer of provision of support or counselling.

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20 Inflammatory condition involving the lungs that can be caused by infection with viruses or bacteria.
21 Fluid accumulation in the pleural space surrounding the lungs.
22 Inflammatory changes in the tonsils on the left and right sides at the back of the throat.
23 Heart muscle.
24 A type of bacteria.
25 The fluid filled space between the two pulmonary pleurae (visceral and parietal) of each lung.
26 A virus associated with symptoms of cough, rhinitis, fever and wheezing in children.
27 The pathogenicity of an organism; the relative ability of a microorganism to cause disease.

- Medical staff had a lack of knowledge about Group A Streptococcus and there is a need for further research to better understand the cause, symptoms and treatment.

Coroners Prevention Unit[28]

18. In view of the concerns raised, I consulted with the Health and Medical Investigations Team ('HMIT')[29] of the CPU regarding this case.

Further investigations

19. As a result of the CPU review, inquiries were made of both the GP practice where Hugo presented twice during the day of 23 December 2015, Mount Beauty Medical Centre and the local hospital where Hugo presented during the night, Mount Beauty Hospital.

Mount Beauty Medical Centre

20. Dr Zagorski provided two statements in detailing aspects of Hugo's care and answering specific questions.

Thirty minute observation period

21. Dr Zagorski was asked about her plan for Hugo following the thirty minute period of observation at his morning appointment on 23 December 2015. She stated she expected there might be some improvement in his condition or that it would remain unchanged in which case, this would (and did) allow a window for further parental observation and a planned follow up review in the afternoon. If on the other hand, Hugo had deteriorated in that period of time, she planned to contact Albury Base Hospital Emergency Department and discuss transfer of Hugo to hospital for further care.

22. At the conclusion of the observation period, Hugo's condition was unchanged. Dr Zagorski considered telephoning the Albury Base Hospital Emergency Department but determined it was not necessary in the absence of clear indication for further investigations or intravenous hydration.

Relationship between Mount Beauty Medical Centre and Albury Base Hospital Paediatric Service

[28] The Coroners Prevention Unit (CPU) is a specialist service for coroners created to strengthen their prevention role and provide professional assistance on issues pertaining to public health and safety.
[29] The HMIT is part of the CPU, which assists in the investigation and development of recommendations surrounding deaths specifically occurring during the provision of healthcare. HMIT also assists in identifying factors that may help improve patient safety and risk management.

23. Correspondence from the court sent to Dr Zagorski indicated that I was considering making the following comment in a written finding:

> *That the Mount Beauty Medical Clinic practitioners endeavour to develop a close working relationship with Albury Base Hospital Paediatric Service, in order to enable straightforward processes to minimise barriers for obtaining specialist opinion, advice or transfer of paediatric patients. That this case is utilised in staff education to demonstrate the importance of such a relationship.*

24. In response to this, Dr Zagorski clarified the existing relationship. Mount Beauty Medical Centre refers all paediatric patients requiring specialist opinion to the Albury Wodonga Paediatric Group, always receiving good, timely feedback and advice. The same practitioners make up the Albury Base Hospital Paediatric Service. Albury Wodonga Paediatric Group has an on-call Consultant Paediatrician who is accessible to GPs for telephone advice during business hours.

25. The standard practice where a GP forms a view that a child requires admission to Albury Base Hospital, is that the GP will contact the Paediatric Registrar through the hospital switchboard. Once the Paediatric Registrar has confirmed the child for transfer to hospital, the GP will also contact the Albury Base Hospital Emergency Department to advise of the patient's impending arrival so that the Paediatrics Registrar is aware of the transfer and will review the patient upon arrival.

26. Dr Zagorski described her experience of the Mount Beauty Medical Centre's existing relationships with the Albury Wodonga Paediatric Group and the Albury Base Hospital Paediatric Service as close and supportive.

<u>Mount Beauty Medical Centre Practice Policy document created</u>

27. Of her own motion, Dr Zagorski has developed a document to ensure ongoing straight forward processes for obtaining paediatric specialist opinion and/or arranging transfer to hospital.

28. As an appendix to her second statement, Dr Zagorski included the *Mt Beauty Practice Protocol for seeking paediatric advice when caring for an unwell child.* The protocol formalises the Mount Beauty Medical Centre's consultation and referral practices into a step by step guide. She sought input and ultimately approval for the protocol from the Director of Paediatrics, Albury Wodonga Paediatric Group.

29. HMIT reviewed the *Mt Beauty Practice Protocol for seeking paediatric advice when caring for an unwell child.* The review noted that the use of visual face time technology could be of assistance. When the GP makes the call to the Paediatric Registrar, face time would enable the Paediatric Registrar, who is more experienced in the visual presentation of unwell children, to see the child and form their own opinions as to the severity of the child's condition.

Lessons for GPs from Hugo's death

30. A de-identified case study is presently in development using Hugo's presentation to highlight the difficulties in clinical assessment of sick children. The case study will be presented to current doctors of the Mount Beauty Medical Clinic practice and included in an orientation pack for new doctors. It will highlight the importance of inter—service relationships to facilitate the opportunities for consultation and or referral at various points in the clinical journey

31. Affixed to her original statement, Dr Zagorski provided a copy of a parent information hand out about the unwell child which is a document she developed in response to feedback provided to her by Hugo's family.

Alpine Health (Mount Beauty Hospital)

32. Ms Caron Oakley, Health Service Manager at Mount Beauty Hospital, provided a statement in response to questions posed by the CPU in relation to the care available on the night that Hugo presented.

33. On 24 December 2015 there were two staff members on duty in the acute ward of Mt Beauty Hospital: an Associate Nurse Unit Manager (ANUM) with Advanced Life Support (ALS) accreditation, and a Medication Endorsed Enrolled Nurse.

34. On 24 December 2015 there were two staff members on duty in the Residential Aged Care unit who were available to assist: an ANUM and Enrolled Nurse.

35. Staff called to assist were:

(a) The Visiting Medical Officer (VMO) on call Dr Pem arrived at 1.50am.
(b) VMOs Dr Jeff Robinson and Dr Mark Zagorski arrived at 2am.
(c) On call nurse arrived at 4.22am (ANUM with ALS accreditation).
(d) Nurse Unit Manager arrived at 6.30am.
(e) Acting Health Service Manager was contacted at 7.30am and arrived at 8am.

36. ALS is an annual mandatory competency for all Registered Nursing staff working in ANUM/Grade five positions. Emergency procedures such as emergency intubation and intraosseus needle insertion are covered in the ALS competency education offered at least four times a year at Alpine Health.

37. A Root Cause Analysis (RCA) was completed by the Health Service Manager and discussed at the Board of Management Quality of Care Committee.

38. A copy of the RCA was provided to the CPU. The RCA identified two issues:

    (a) The time taken to communicate with Ambulance Victoria.
    (b) The fact that Hugo was seen in a low acuity area of Urgent Care.

39. The recommendations for improvements arising from the RCA were:

    (a) All children presenting to Urgent Care must be reviewed in the Resuscitation room.
    (b) Alpine Health is to run regular paediatric emergency care scenarios for all staff.
    (c) Alpine Health to approach Ambulance Victoria with the suggestion that small rural hospitals be given a code to use when urgent ambulance assistance is required. At present hospital staff answer the same list of questions asked of all community members when "000" is called. This process is time consuming and frustrating for staff in an emergency situation.

40. Multiple debriefing sessions were held for staff involved and an education seminar based around a case study on Hugo's presentation to the hospital was conducted by Paediatrician Dr David Christie.

41. Ms Oakley stated that Mount Beauty Hospital staff contacted Hugo's family after his death. Ms Oakley herself spoke to Mrs Alexandra Gardiner on two occasions, once in person and once on the phone. Nurse Unit Manager has also had phone conversations with Mrs Gardiner. The hospital is willing to meet with the family but at the time of writing, Ms Oakley indicated that this was yet to occur.

Finding

I find that Hugo Edward Byard Gardiner died from 1(a) Streptococcus pyogenes group A pneumonia on 24 December 2015 at Mounty Beauty Hospital, Urgent Care Department.

Recommendations

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

1. That the *Mt Beauty Practice Protocol for seeking paediatric advice when caring for an unwell child* be amended to include the use of visual 'face time' calling when the GP contacts the Paediatric Registrar to discuss the presentation of an unwell child.

I also make the following recommendation to the Royal Australian College of General Practitioners:

2. That member practitioners operating in rural and regional areas ensure that their practices include formalised protocols for consultation and referral practices including formalised relationships with nearest specialist paediatric service and the inclusion of the protocol of a preference for visual face time calling when discussing the presentation of an unwell child.

My sincere condolences to Hugo's family.

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

Mrs Alexandra Gardiner, Senior Next of Kin

Dr Laura Zagorski & Dr Anoop Pem, Mount Beauty Medical Centre

Dr Jeffrey Robinson, Mount Beauty Medical Centre & Director of Medical Services, Alpine Health

Ms Caron Oakley, Health Services Manager, Alpine Health Mt Beauty

Dr David Christie, Paediatrician, Albury Base Hospital

The Royal Australian College of General Practitioners

Victorian Paediatric Clinical Network

Rural Doctors Association of Victoria

Signature:

CAITLIN ENGLISH
CORONER
Date: 12 December 2016