IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2017 6017

FINDING INTO DEATH WITHOUT INQUEST

(Amended pursuant to 76(a) of the Coroners Act 2008[1])

Form 38 Rule 63(2)

Section 67 of the ***Coroners Act 2008***

Findings of:	Sarah Gebert, Coroner
Deceased:	HI
Date of birth:	[redacted]
Date of death:	28 November 2017
Cause of death:	1a. Acute myocardial infraction. 1b. Giant-Cell-Arteritis and atherosclerosis of the coronary arteries
Place of death:	Monash Medical Centre, 246 Clayton Road, Clayton, Victoria
Relevant matters:	

[1] The age of the Deceased noted in paragraph 1 was amended from 48 to 49.

INTRODUCTION

1. HI, born on [redacted] was 49 years old at the time of her death. She lived with her husband, [redacted], in Glen Waverley and is survived by her three children.

2. On 28 November 2017, Mrs HI was brought into the Emergency Department (**ED**) of the Monash Medical Centre (**MMC**) and died the same day despite the provision of urgent medical assistance.

THE CORONIAL INVESTIGATION

3. Mrs HI's death was reported to the coroner as it fell within the definition of a reportable death in the *Coroners Act 2008* (**the Act**). Reportable deaths include deaths that are unexpected, unnatural or violent or result from accident or injury.

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. Under the Act, coroners also have the important functions of helping to prevent deaths and promoting public health and safety and the administration of justice through the making of comments or recommendations in appropriate cases about any matter connected to the death under investigation.

6. In the course of the coronial investigation, copies of Mrs HI's medical records were obtained from Monash Health and Mount Waverley Medical Services.

7. The case was also referred to the Coroners Prevention Unit (**CPU**) who were asked to review of the medical care received by Mrs HI.[1]

8. In addition, an expert General Practitioner (**GP**) was engaged by the Court to, amongst other things, comment on the assessment and management of Mrs HI's chest pain on 26 November 2017, referencing any relevant RACGP[2] or RACGP-endorsed guidelines, and comment on the assessment and management of Mrs HI on 27 November 2017.

[1] The CPU assists the Coroner with research in matters related to public health and safety and in relation to the formulation of prevention recommendations. The CPU also reviews medical care and treatment in cases referred by the Coroner. The CPU is comprised of health professionals with training in a range of areas including medicine, nursing, public health and mental health.

[2] The Royal Australian College of General Practitioners

9. Dr Cameron Loy, Chair of the RACGP Victoria, provided an expert report dated 5 June 2019 and a supplementary report dated 30 October 2019.

10. The Court wrote to the parties (which included the family, Dr Abeykoon Gunaratne and Dr Surangi Gunaratne) by letter dated 3 June 2021 setting out the findings and conclusions proposed to be made regarding the care provided.

11. I note that in a letter to the Court dated 17 June 2021 from Sedanheera & Gordon Lawyers on behalf of the family, it was indicated that the family disputed, amongst other things, that the care provided was reasonable as well as a number of other factual matters. They did however indicate that they did not seek an inquest, only that the matters be noted. No further evidentiary material was provided to the Court as part of that communication.

12. This finding draws on the totality of the coronial investigation into Mrs HI's death, including evidence contained in the statements from Dr Abeykoon Gunaratne and Dr Surangi Gunaratne, the expert engaged by the Court and information provided by the CPU. Whilst I have reviewed all the material, I will only refer to that which is directly relevant to my findings or necessary for narrative clarity. In the coronial jurisdiction, facts must be established on the balance of probabilities.[3]

Background

13. Mrs HI had a past medical history of iron deficiency for which she was on iron tablets. She had no traditional risk factors for ischaemic heart disease.[4]

14. On 26 November 2017, Mrs HI presented to the Mount Waverley Medical Services General Practice clinic after having some left-sided chest pain earlier that day which was described as 'discomfort', 'constant', 'non-pleuritic' and with 'no radiation'. The treating GP Dr Abeykoon Gunaratne noted the lack of cardiac risk factors for cardiac ischaemia or pulmonary embolus. The diagnosis was 'atypical chest pain unlikely to be ischaemic'.[5] Dr Abeykoon Gunaratne believed Mrs HI did not have current chest symptoms or risk factors for heart disease.

15. No Electrocardiogram (**ECG**) or cardiac biomarker blood tests (troponin) were ordered but

[3] 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.

[4] Hypertension, diabetes mellitus, smoking, family history of cardiovascular disease, BMI>30, atherosclerotic disease such as peripheral vascular or cerebrovascular disease, stimulant drug abuse

[5] In a statement by Dr Abeykoon Gunaratne

an exercise-stress-echocardiogram[6] was ordered to investigate 'intermittent left-sided chest pain'. The expected timeframe for these to occur was within the realm of days to weeks.

16. Mrs HI was discharged with a prescription for Maxolon[7], Mobic[8] and Panadeine.

MATTERS IN RELATION TO WHICH A FINDING MUST, IF POSSIBLE, BE MADE

Circumstances in which the death occurred

17. On 28 November 2017, Mrs HI presented with her husband to the same clinic where they were seen by a second doctor Dr Surangi Gunaratne. Mrs HI was in a wheelchair, was noted to have markedly reduced blood pressure 70/40 mm Hg compared to her normal blood pressure of 120/80 mm Hg.

18. Mrs HI complained of all-over body-aches, feeling faint, had experienced minimal oral intake and had some loose stools. Dr Surangi Gunaratne noted that Mrs HI had pale fingers.[9] Dr Surangi Gunaratne referred Mrs HI to Monash Health ED for further evaluation.

19. In a statement to the Court, Dr Surangi Gunaratne said that she offered to call an ambulance but both Mrs HI and her husband declined. They preferred instead for Mr HI to drive her the approximate 10 minutes to Monash Health.

20. Mrs HI presented to Monash Health ED at 8.30p.m. where on arrival, she was immediately assessed by the triage nurse as extremely unwell and was taken in to the triage assessment area for an ECG[10] and a consultant was called who attended within minutes to find Mrs HI unresponsive and with no blood pressure. Cardiopulmonary resuscitation (**CPR**) was commenced.

21. Despite intensive and appropriate resuscitative attempts by the ED and Intensive Care Unit (**ICU**) teams[11] over the next hour, no reversible causes for cardiac arrest were found and resuscitation efforts were ceased at 9.30 p.m.

Identity of the deceased

22. On 28 November 2017, [redacted] visually identified his wife, HI, born [redacted].

[6] A non-invasive test for cardiac ischaemia that involves an ECG and ultrasound assessment of heart motion before and after exercise.
[7] Metoclopramide; an antiemetic
[8] Meloxicam; an analgesic like non-steroidal-anti-inflammatory agents such as ibuprofen.
[9] Indicating poor peripheral circulation and an early sign of shock.
[10] The ECG was not diagnostic of an acute myocardial infarction but was abnormal.
[11] Continuous mechanical CPR, intubation and ventilation, fluids, adrenaline boluses and infusions as per national guidelines, consideration of extracorporeal membrane oxygenation (**ECMO**).

23. Identity is not in dispute and requires no further investigation.

Medical cause of death

24. Specialist Forensic Pathologist Dr Sarah Parsons from the Victorian Institute of Forensic Medicine (**VIFM**) conducted a post mortem examination on 1 December 2017 and provided a written report of her findings on 1 February 2018.

25. Dr Parsons noted that giant cell arteritis of the coronary artery is rare but can cause ischaemia as in this case.

26. Dr Parsons provided an opinion that the medical cause of death was *1a. Acute myocardial infraction, 1b. Giant-Cell-Arteritis and atherosclerosis of the coronary arteries.*

27. I accept Dr Parsons' opinion.

CPU REVIEW

28. The CPU conducted a review of Mrs HI's medical records and statements were obtained from her treating GPs.

29. The Court was also advised that after Mrs HI's death, the Mount Waverley Medical Services General Practice clinic purchased a 12 lead ECG machine and trained staff in its use. Dr Surangi Gunaratne also completed an Advance Life Support Course.

Giant-Cell-Arteritis

30. Giant-Cell-Arteritis (**GCA**) is an inflammatory disease of large and medium sized blood vessels of unknown aetiology that occurs in approximately 1 in 500 people. Onset occurs typically after the age of 50 years of age with peak incidence being in those over the age of 70 years of age. While any artery can be affected, the most common artery that is affected is the temporal artery such that temporal arteritis[12] and GCA are synonymous.

31. GCA involvement of the coronary arteries is very uncommon with only case reports in the literature. Its diagnosis is always after a cardiac event and its treatment is a combination of usual cardiac therapy and high dose steroids. The NCIS (National Coronial Information System)[13] coronial database does not contain any previous deaths that have resulted from GCA affecting the coronary arteries.

[12] Clinical syndrome is comprised of unilateral temporal headache and tenderness over the temporal artery which if left untreated results in unilateral blindness. It occurs almost exclusively in those older than 50 years of age. Definitive diagnosis is via biopsy and treatment is with a protracted course of immunosuppressive steroids.

[13] The NCIS is the national database of mortality data on deaths reported to a coroner in Australia and New Zealand.

32. The CPU noted that Mrs HI's first presentation was one of chest pain. Dr Abeykoon Gunaratne considered the likelihood of acute coronary syndrome low because of a lack of the usual risk factors for ischaemic heart disease. The perceived risk though was not zero as Dr Abeykoon Gunaratne referred Mrs HI for an exercise-stress-echocardiogram.

33. The CPU noted that current Australian guidelines, *National Heart Foundation of Australia & Cardiac Society of Australia and New Zealand: Australian Clinical Guidelines for the management of Acute Coronary Syndromes 2016* (**NHF Guidelines**),[14] recommend that;

Patients who present to primary care physicians with chest pain (within 24 hours) and suspected acute coronary syndrome should be referred as soon as possible to the ED or a facility capable of definitive risk stratification.

34. This definitive risk stratification includes;

An ECG being performed within 10 minutes and being assessed for any signs of myocardial ischaemia for emergent intervention such as angioplasty or medications such as thrombolysis or antianginal medications; and

Those that do not require emergent intervention undergo an evidence based suspected Acute Coronary Syndrome assessment protocol comprising of serial ECGs and troponin blood tests.

35. The CPU noted that non-invasive investigations such as exercise-stress-echocardiograms are to be utilised after the patient has undergone definitive risk stratification and that the results are negative and that the patient does not have ongoing chest pain.

36. The CPU considered that Mrs HI's first presentation raised suspicion of cardiac cause but this was not investigated in accordance with the NHF Guidelines. However, it was noted that the RACGP has not endorsed these guidelines and does not have any guidelines of its own regarding the management of chest pain.

37. Dr Cameron Loy, Chair of the RACGP Victoria, provided an expert report dated 5 June 2019 and a supplementary report dated 30 October 2019, and said:

Upon reading the clinical notes and statement from Dr Abeygoon (sic) *Gunaratne* [it] *could be easy to find specific and isolated points that, with the benefit of hindsight, may have led to a different decision. However, I would consider that to be unreasonable and incorrect.*

[14] Chew DP, et al Heart Lung Circ 2016; 25: 895-951.

With the exception of doing an onsite ECG, that would have likely not revealed any abnormality, the decision making is reasonable and would be consistent with the practice behaviour of Dr Gunaratne's peers at the time.

38. And further, Dr Loy noted:

a. the RACGP does not have any guidelines regarding the management of chest pain, nor has the college endorsed any guidelines.

b. In a patient presenting with chest pain, the goal is identifying whether the presentation is more likely to be ischaemic chest pain.

c. Quoting a recent article in the Australian Journal of General Practice[15]: '*ACS*[16] *is common and life-threatening, and must be considered in all patients with chest pain who present to general practice. A focused history and examination will define high-risk patients; however, this will not exclude a diagnosis of ACS. An ECG*[17] *is the key immediate investigation primary care physicians must obtain. Close liaison with the nearest emergency department will ensure further risk stratification and that optimum management can be started as early as possible*.'

d. Dr Abeykoon Gunaratne recorded notes indicating he made enquiries to ascertain the likelihood of ACS and concluded that the presentation was "atypical chest pain unlikely to be ischaemic".

e. An onsite ECG would have been a reasonable and likely expected in-clinic investigation.

f. Mrs HI did not have traditional risk factors for ischaemic heart disease.

g. It is not reasonable or possible to make any statement that an ambulance (had one been called by Dr Surangi Gunaratne on 28 November 2017) would have been more rapid or that any therapy in transit would have changed the outcome.

h. Myocardial infarction leading to death is an exceptional complication of Giant-Cell-Arteritis that guidelines would be challenged to encapsulate.

i. The changes implemented by the clinic (including purchase of an onsite ECG machine) are commendable.

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[15] Thomsett, Cullen. The assessment and management of chest pain in primary care: A focus on acute coronary syndrome. The Australian Journal of General Practice. Volume 47, Issue 5, May 2018.

[16] Acute Coronary Syndrome; a clinical term comprised of both acute myocardial infarction and unstable angina as clinically they are indistinguishable.

[17] Electrocardiogram. A bedside test that produces a graph of the electrical activity of the heart which can detect either acute coronary syndrome or cardiac rhythm abnormalities.

39. The CPU considered that whilst it would not be possible to encapsulate the diagnosis of giant-cell-arteritis in any guidelines, this case highlights that there is a lack of clarity around guidelines relating to the assessment and management of potential ischaemic chest pain. The above issues were considered as potential prevention opportunities for recommendations to the RACGP regarding endorsing the NHF guidelines or producing their own.

40. The CPU made comment that it could be difficult to ascertain with certainty whether Mrs HI's death was preventable had she attended hospital following her consultation with Dr Abeygoon Guranatne on 26 November 2017, as it may be speculative to predict the investigations and treatment that would have been performed.

41. In addition, even if an ambulance had arrived within ten to fifteen minutes before arrest on 27 November 2017, the paramedics would have had to recognise Mrs HI was in cardiogenic shock as opposed to other causes of shock,[18] as initial treatment for undifferentiated shock is intravenous fluids which precipitates arrest in cardiogenic shock.

COMMENTS

Pursuant to section 67(3) of the Act, I make the following comments connected with the death.

42. The CPU considered that the case highlighted a systemic issue, noting the absence of an RACGP (endorsed) clinical practice guideline regarding an approach to management of patients with potential ischaemic chest pain.

43. I note that the NHF Guidelines have been endorsed by various bodies including, The Australasian College for Emergency Medicine (**ACEM**), The Australian Cardiovascular Health and Rehabilitation Association (**ACRA**), The Royal College of Pathologists of Australasia (**RCPA**), The Internal Medicine Society of Australia and New Zealand (**IMSANZ**), The Australasian Cardiovascular Nursing College (**ACNC**), The Council of Remote Area Nurses of Australia (**CRANA**), The Australian and New Zealand Society of Cardiac and Thoracic Surgeons (**ANZSCTS**) and The Australian Commission on Safety and Quality in Health Care (**ACSQHC**).

44. The recommendation noted below was foreshadowed with the RACGP and a response was received. Given the above matters however, it is important that the recommendation and response be formally communicated and received.

[18] Monash Medical Centre Emergency Department had a working diagnosis of pulmonary embolus as the ECG was not indicative of acute coronary syndrome.

RECOMMENDATION

45. Pursuant to section 72(2) of the Act, I make the following recommendation:

Royal Australian College of General Practitioners (RACGP)

The RACGP consider either endorsing the NHF Guidelines (and future revisions) or produce their own.

FINDINGS

46. Pursuant to section 67(1) of the Act, I make the following findings:

(a) the identity of the Deceased was HI, born [redacted]

(b) the death occurred on 28 November 2017 at the Monash Medical Centre, 246 Clayton Road, Clayton, Victoria, from *1a. Acute myocardial infraction, 1b. Giant-Cell-Arteritis and atherosclerosis of the coronary arteries*, and

(c) the death occurred in the circumstances described above.

47. I convey my sincere condolences to Mrs HI's family for their loss.

48. Pursuant to section 73(1B) of the Act, I order that this finding (in a redacted format) be published on the Coroners Court of Victoria website in accordance with the rules.

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

Mr [redacted], Senior Next of Kin

Monash Health

Senadheera & Gordons Lawyers

Dr Abeykoon Gunaratne

MDA National on behalf of Dr Surangi Gunaratne

Royal Australian College of General Practitioners (RACGP)

Safer Care Victoria

Signature:

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SARAH GEBERT

CORONER

Date: 20 January 2022

NOTE: Under section 83 of the ***Coroners Act 2008*** ('the Act'), a person with sufficient interest in an investigation may appeal to the Trial Division of the Supreme Court against the findings of a coroner in respect of a death after an investigation. An appeal must be made within 6 months after the day on which the determination is made, unless the Supreme Court grants leave to appeal out of time under section 86 of the Act.