FINDING INTO DEATH WITHOUT INQUEST

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

Findings of: Caitlin English, Acting State Coroner

Deceased: Carmel Killackey

Date of birth: 13 May 1939

Date of death: 20 April 2017

Cause of death: I(a) Pulmonary thromboembolism
I(b) Deep vein thrombosis of the left leg

Place of death: Box Hill Hospital
Box Hill, Victoria
INTRODUCTION

1. Carmel Killackey was a 77-year-old woman who lived in Ringwood East with her husband William at the time of her death.

2. Mrs Killackey attended the Stawell Regional Health Urgent Care Centre (SRH UCC) on 19 April 2017 describing recent shortness of breath and chest pain. After her symptoms appeared to settle following treatment with a combined antacid and local anaesthetic, she was discharged.

3. The following day Mrs Killackey collapsed in her home. She was brought to Box Hill Hospital but died soon after arrival at the Emergency Department (ED).

THE PURPOSE OF A CORONIAL INVESTIGATION

4. Mrs Killackey’s death was reported to the Coroner as it appeared to be unexpected and so fell within the definition of a reportable death in the Coroners Act 2008.

5. 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.

6. As part of the investigation into Mrs Killackey’s death, I referred the matter to the Coroners Prevention Unit (CPU)\(^1\), Health and Medical Investigation Team to review Mrs Killackey’s care on 19 April 2017.

7. I have based this finding on the evidence contained in medical records and the statements provided by Dr Frank Habermann, Dr Jayne Monkman and Dr Richard Lowen of Stawell Regional Health (SRH), as well as a medical examination report from Dr Gregory Young, the

---

\(^1\) The Coroners Prevention Unit (CPU) was established in 2008 to strengthen the prevention role of the coroner. The unit 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.
forensic pathologist who examined Mrs Killackey. In the coronial jurisdiction facts must be established to the standard of proof of the balance of probabilities.²

IDENTITY


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

BACKGROUND

10. Mrs Killackey had a medical history including hypertension, Factor V Leiden thrombophilia and multiples instances of pulmonary embolism. At the time of her death she was prescribed the anticoagulant medication warfarin.³

11. Mrs Killackey’s warfarin dosage was monitored on a fortnightly basis and a test dated 5 April 2017 found an International Normalised Ratio (INR) of 2.2, within the target range of 2-3. A test on 13 April 2017 found an INR of 1.8 and consequently her warfarin dosage was changed from 4mg daily (with 5mg on Sundays) to 4.5mg daily.⁴

Presentation to Stawell Regional Health Urgent Care Centre on 19 April 2017

12. On 19 April 2017 Mrs Killackey attended the SRH UCC at 12.05pm. Three other patients were currently receiving treatment in the UCC under the supervision of one experienced registered nurse (RN). A second-year graduate RN (who was inexperienced in working in the UCC) was called to the UCC to assist.⁵

13. Mrs Killackey was seen by Dr Habermann at 12.34pm. Dr Habermann was concurrently treating two other patients in the UCC.⁶

² 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.
³ Melbourne Therapy Centre Warranwood Medical Records.
⁴ Letter from Dr Jayne Monkman dated 14 September 2017.
⁵ Email from Dr Frank Habermann dated 8 October 2017; Statement of Dr Richard Lowen received 13 March 2018.
⁶ Statement of Dr Richard Lowen received 13 March 2018.
14. Mrs Killackey had been in Halls Gap for several days. According to Dr Habermann, ‘her main complaint had been increasing shortness of breath on exertion. There had been an episode of chest pain in the morning, which had resolved.

Her observations were unremarkable apart from an elevated respiratory rate of 24. She was afebrile, had a normal oxygen saturation of >95%, a normal pulse rate of 70 bpm and was cardiovascularly stable with a blood pressure of 150/110. Her pain score was recorded low at 2/10.

15. Mrs Killackey informed Dr Habermann that she had been investigated for the same symptoms by a cardiologist in November of the year prior without any pathological findings. Dr Habermann stated that she also informed him that the reason for her anticoagulation was a Factor V Leiden mutation and that her INR was within her target range.

16. Dr Habermann reports that ‘an examination of her chest and heart yielded no abnormal findings. I examined her epigastrium in the absence of relevant findings so far, but found only a mild tenderness. At this stage there was no obvious diagnosis from my perspective.

17. Dr Habermann considered that Mrs Killackey’s previous chest pain might have had a gastrointestinal cause and gave her a diagnostic trial of a combined antacid and local anaesthetic (a combination known as a ‘Pink Lady’).

18. According to Dr Habermann, nursing staff reported later that Mrs Killackey had responded to this trial and he therefore presumed that her previous chest pain had an upper gastrointestinal cause. As her symptoms seemed to have improved she was discharged at 12.53pm. No further observations were taken before her discharge.

**Electrocardiogram (ECG)**

19. Dr Habermann informed the Court that ‘I believe an ECG was recorded as part of the normal assessment protocol, but is not available to me’. Stawell UCC records show no evidence of an ECG being conducted.

---

8 Email from Dr Frank Habermann dated 8 October 2017.
9 Email from Dr Frank Habermann dated 8 October 2017.
10 Email from Dr Frank Habermann dated 8 October 2017.
11 Email from Dr Frank Habermann dated 8 October 2017.
12 Email from Dr Frank Habermann dated 8 October 2017.
13 Email from Dr Frank Habermann dated 8 October 2017.
Dr Richard Lowen, Director of Medical Services at Stawell Regional Health (SRH), later addressed this issue for the Court. Dr Lowen confirmed that ‘no trace of this ECG has been found either in the patient’s SHR medical records, in her medical record at Stawell Medical Centre or upon interrogation of the SRH ECG machine utilized in SRH UCC that day. It is therefore unlikely that Mrs Killackey had an ECG conducted by SRH nursing staff.’

Dr Lowen also noted that ‘On the same day, Dr Habermann was treating another patient in the UCC with chest pain concurrently, who received an ECG on that day’.

Considering the evidence provided by Dr Habermann, Dr Lowen and the medical records, and taking into account the consequences of such a finding, I am satisfied that no ECG was performed on Mrs Killackey on 19 April 2017.

CIRCUMSTANCES IN WHICH THE DEATH OCCURRED

Mrs Killackey’s shortness of breath continued after her discharge and into the next day, 20 April 2017.

On 20 April 2017 Mrs Killackey returned from Halls Gap to her home in Ringwood North. Soon after arriving home, she suffered acute shortness of breath and dizziness. She lay down and contacted emergency services at 4.57pm.

Ambulance arrived at 5.07pm and transported Mrs Killackey to Box Hill Hospital. Her condition deteriorated en route, and she required increasing doses of peripheral IV adrenaline.

Mrs Killackey arrived at the Box Hill Hospital ED at 5.59pm. Shortly after her arrival she suddenly entered cardiac arrest. ED staff undertook advanced cardiac life support measures and attempted to resuscitate her.

These attempts were unsuccessful and after family arrived the decision was made to cease cardiopulmonary resuscitation. Mrs Killackey was pronounced dead at 6.52pm.

---

14 Statement of Dr Richard Lowen received 13 March 2018.
15 Statement of Dr Richard Lowen received 13 March 2018.
19 Emergency Department Discharge Summary dated 21 April 2017, Eastern Health Medical Records.
20 E-medical Deposition of Dr Jia Li Ng dated 20 April 2017.
21 E-medical Deposition of Dr Jia Li Ng dated 20 April 2017. E-medical Deposition of Dr Jia Li Ng dated 20 April 2017.
28. On 26 April 2017, Dr Gregory Young, a Forensic Pathologist practising at the Victorian Institute of Forensic Medicine, conducted an examination upon Mrs Killacky’s body and provided a written report, dated 19 May 2017. In that report, Dr Young concluded that a reasonable cause of death was ‘I(a) Pulmonary thromboembolism; I(b) Deep vein thrombosis of the left leg.’

29. Pulmonary thromboemboli are dislodged blood clots that pass into the lung’s blood circulation, resulting in a blockage of the blood vessels in the lungs known as a pulmonary embolism (PE).

30. Most cases are due to blood clots arising in the deep veins of the legs (deep vein thrombosis). Dr Young noted ‘extensive evidence of pulmonary thromboembolism ... throughout all lobes’ of the lungs as well as ‘extensive evidence of deep vein thrombosis in the left lower leg’.

31. Toxicological analysis of ante mortem blood samples taken at 6.27pm on 20 April 2017 identified the presence of hydrochlorothiazide, which is a diuretic and antihypertensive agent. No warfarin was detected.

32. I accept Dr Young’s opinion as to cause of death.

REVIEW OF CARE

33. As Mrs Killacky had attended SRH the day before her death without any diagnosis of PE, I directed that the CPU review the quality of care she received at SRH. Its initial review included consideration of medical records as well as statements from Dr Habermann and from Mrs Killacky’s general practitioner Dr Jayne Monkman.

34. The CPU’s initial review raised several issues concerning Mrs Killacky’s care, and further information was sought from SRH regarding these issues.

35. Dr Richard Lowen, Director of Medical Services at SRH, provided this information as well as the results of an SRH internal clinical review and an external case review undertaken by Ballarat Health Services (BHS).

Assessment and management on 19 April 2017

36. The CPU concluded Mrs Killacky’s assessment at the SRH UCC was inadequate on 19 April 2017.
37. The CPU identified that the clinician did not positively diagnose a cause for her symptoms and failed to exclude potentially serious diagnoses, despite her having major risk factors for PE.

38. Dr Lowen was asked to respond further.

**Consideration of PE**

39. The CPU noted that, as PE can be a difficult diagnosis, there are a number of well-recognised clinical decision algorithms to determine a patient’s risk for PE. However, in order to apply these decision tools, the diagnosis of PE must be considered in the first place.

40. Mrs Killackey had a number of major risk factors which increase a person’s risk for PE, including clotting disorders such as Factor V Leiden thrombophilia, history of previous DVT or PE and advancing age over 60.

41. In correspondence to the Court dated 19 February 2019 Dr Habermann stated ‘I did consider PE as a cause of Mrs Killackey’s symptoms, however I considered a diagnosis of PE was unlikely.’ Dr Habermann noted on upon admission to ‘Stawell Urgent Care (SRH UCC) on 19 April, her main concern was her increasing shortness of breath on exertion. She had an episode of chest pain in the morning, which had resolved’. Dr Habermann further noted that ‘although Mrs Killackey reported shortness of breath, she did not have other abnormal clinical findings indicative of PE....’

42. Dr Habermann stated that ‘notably, Mrs Killackey did not have other symptoms at the time, such as pleuritic pain, cough or haemoptysis, which are indicative of PE. I therefore considered that a diagnosis of PE was unlikely.’

43. Dr Habermann was also reassured that Mrs Killackey ‘had been investigated for the same symptoms by a cardiologist in November 2016, but without pathological findings.’ Dr Habermann noted ‘with the benefit of hindsight I accept that her condition may have changed between the time that she saw the cardiologist and the time that she presented at Stawell Urgent Care Centre.’

---

22 Letter from Dr Frank Habermann dated 19 February 2019.
23 Letter from Dr Frank Habermann dated 19 February 2019.
24 Letter from Dr Frank Habermann dated 19 February 2019.
26 Letter from Dr Frank Habermann dated 19 February 2019.
The CPU consider that reasonable and prudent emergency care should involve the diagnosis of PE to be considered in any patient who has a symptom or sign of PE and a known risk factor for PE, although, if a reasonable alternative diagnosis explains the patient's presentation, then further testing may not be required. However, if this is case, this explanation should be clearly documented in the medical records.

Dr Habermann accepted that his notes did not record Mrs Killackey's history of PE or that he had considered PE as a differential diagnosis at the time.27

Dr Habermann also stated he was called to the UCC from the General Practice Clinic to review three patients (including Mrs Killackey) one of whom required urgent care for chest pain.28

Risk stratification

The clinical decision-making tools commonly used to determine risk of PE are the revised Geneva Score (RGS) and the Modified Wells Score. These tools can help determine if there is a need for further investigations.

The Revised Geneva Score (RGS) can be calculated from a patient’s symptoms. A RGS of 0-3 indicates a patient has a low probability of PE, a RGS of 4-10 indicates intermediate probability and a RGS of 11 or more indicates high probability.

Another scoring system, the Modified Wells Score, gives a patient a low probability of PE if it is calculated at less than 2.0, a moderate probability for scores between 2.0 and 6.0 and a high probability for scores above 6.0.

Despite Dr Habermann considering the possibility of PE, none of these tools were used during Mrs Killackey’s attendance.

Investigations conducted at SRH UCC

After the initial observations were taken of Mrs Killackey at the UCC it does not appear further investigations were performed.

---

27 Letter from Dr Frank Habermann dated 19 February 2019.
28 Letter from Dr Frank Habermann dated 19 February 2019.
52. The CPU advise that as a minimum an older person presenting with chest pain and shortness of breath should have an ECG and a chest x-ray and consideration given to performing blood tests such as a full blood examination and troponin.

53. The CPU also consider that, if a diagnosis of PE is considered in a patient due to symptoms or known risk factors of PE and a reasonable alternative diagnosis does not explain the patient's presentation, further tests could include a CT pulmonary angiogram (CTPA), a Ventilation / Perfusion (V/Q) scan, echocardiography or an ultrasound of the legs.

54. Dr Lowen stated that SRH premises include 'a Pathology service capable of performing a broad range of tests on site and by recall after hours by the on-call pathology technician. Basic bedside pathology testing of Haemoglobin, renal function, Troponin etc. is also available in the UCC. INR tests for coagulation status determinations can be performed in Pathology at any time.... D-dimer tests can also be performed by Pathology.'

55. Dr Lowen also advised that there is onsite a 'CT scanner that can perform a CTPA scan.'

56. On the issue of ECGs, Dr Lowen informed the Court that 'ECGs are considered basic elements of the diagnostic work up when patients experiencing chest pain present to the UCC. Ideally an ECG should have been conducted on Mrs Killackey by the SRH RN when she presented to the UCC and if not, should have been ordered by Dr Habermann.'

57. Regarding the practicalities of testing, Dr Lowen added that 'As mentioned, D-dimer tests can be performed at SRH, and if positive in the context of being requested to rule out Venous Thromboembolism (VTE), would have necessitated follow up CT-PA imaging. In my opinion, CT-PA is neither so cost intensive or problematic to negate their use at SRH in cases such as Mrs Killackey's. Using CTPA in the context of a positive d-dimer test where the diagnosis of PE is under consideration, is a valid use of the test.'

**Investigation of anticoagulation**

58. Dr Habermann stated 'the main reason I did not consider PE as a cause of Mrs Killackey's symptoms was because she explained that she had a history or Factor V Leiden thrombophilia and that she was taking Warfarin and her INR was within target range. PE is unlikely to occur.

---

29 Statement of Dr Richard Lowen received 13 March 2018.  
30 Statement of Dr Richard Lowen received 13 March 2018.  
31 Statement of Dr Richard Lowen received 13 March 2018.  
32 Statement of Dr Richard Lowen received 13 March 2018.
in a patient who is effectively anticoagulated. This was based on Mrs Killackey’s statements to him, and Dr Habermann did not have access to Mrs Killackey’s medical records. In fact, her INR had been below the target range at its last test. Additionally, toxicological analysis indicates that there was no warfarin in her system at the time of her death.

59. In his letter dated 19 February 2019, Dr Habermann stated ‘I accept that I should not have accepted Mrs Killackey’s assurances that her INR level was within target range, and that I should have conducted an INR test.

Had I conducted the test, it would have shown that she was not adequately anticoagulated. Then, I would have followed a different treatment pathway, and I would have considered that PE was more likely and would have conducted further investigations to rule out PE.’

60. Dr Habermann reflected that it was his responsibility, as a medical practitioner to check the accuracy of the information provided by the patient and that he has used the case as an opportunity to refresh his learnings on the effective diagnosis and treatment of PE.

61. The CPU advise that, in this case, an INR test should have been performed to ensure Mrs Killackey’s warfarin level was therapeutic. This test, if it had been performed, would likely have found a low and subtherapeutic level which would prompt further testing for PE.

Observations

62. Mrs Killackey’s vital signs were observed on her admission to the UCC, but after she appeared to have a positive response to the ‘Pink Lady’ medication she was discharged without another set of observations being taken.

63. Dr Lowen notes that the UCC uses colour-coded ‘track and trigger’ charts to record observations and that Mrs Killackey’s respiratory rate was recorded in the ‘white’ section of the chart which did not mandate clinical escalation. These charts are in place to elicit clinician and system responses when clinical observations deviate into coloured areas that may be the first indicator of clinical deterioration.

Letter from Dr Frank Habermann dated 19 February 2019.
Letter from Dr Frank Habermann dated 19 February 2019.
Letter from Dr Frank Habermann dated 19 February 2019.
64. Dr Lowen stated that 'SRH regrets that the [respiratory rate] observation was not repeated for confirmation, and if at the upper end of the category, escalated to the attention of the Senior RN on duty and to the treating doctor’s attention.'

*Treatment options*

65. The CPU advise that, as Mrs Killackey had no warfarin in her blood at the time of her death, the correct treatment if PE had been correctly diagnosed would have been to anti-coagulate her with heparin, an anticoagulant which works in a different way to warfarin and has a quicker onset of action. According to the CPU, if this had been done the events of the following day may potentially have been avoided.

66. Dr Habermann accepted if a PE had been diagnosed the correct treatment would be to anti-coagulate with heparin.

*Reviews and recommendations*

67. After Dr Lowen was notified of Mrs Killackey’s death, he began conducting a review of her treatment as follows:

‘I sought access to her clinical records and applied SRH’s basic Mortality and Morbidity (M&M) review tool to the case. This basic review elucidated that the nature of Mrs Killackey’s chest pain was not adequately elicited at presentation and that no chest pain algorithms were applied to her care in a systematized way by way of ECG tracing, Troponin testing or exclusion of VTE.’

68. Dr Lowen also met with Dr Habermann in June 2017 to discuss the case.

69. Dr Lowen informed the Court of changes which have been made at SRH since the review into Mrs Killackey’s death:

‘Since the review was undertaken, SRH’s Director of Clinical Services and Risk and Policy Officer has improved the Clinical Review and Investigation systems at Stawell Regional Health by developing a policy that clearly defines roles and responsibilities, guides the clinical review and investigation process and provides clear reporting lines through hospital clinical committees, the Executive and Board of Management.’

---

36 Statement of Dr Richard Lowen received 13 March 2018.
37 Letter from Dr Frank Habermann dated 19 February 2019.
38 Statement of Dr Richard Lowen received 13 March 2018.
The Vital Signs Observation and Monitoring Procedure and the Electrocardiogram Procedure protocols were also updated. Whilst SRH had a chest pain management flowchart and check list in place at the time of Mrs Killacky’s presentation, both indicating the requirement for an ECG, further education was provided to staff in June 2017 on the chest pain management flowchart that had been developed by the Grampians regional working group.39

70. SRH also requested that BHS assist in reviewing Mrs Killacky’s case. A BHS Review Panel met on 28 February 2018.

71. The review’s final assessment of Mrs Killacky’s care was that ‘The discharge and subsequent death of the patient appears to have been a lapse in clinical judgement, possibly combined with an unreliable medication history, rather than a failure of system, policy or procedure’.40

72. Considering the issues identified with Mrs Killacky’s care, the BHS review made the following recommendations:

(i) ‘That all patients not requiring admission to a facility or transfer from Urgent Care Centres to an alternative facility have a final set of observations completed prior to discharge.

(ii) That all patients presenting with chest pain must have an ECG. In this particular case, troponins should also have been considered.

(iii) Consider including a section in the medication history which specifically asks about current warfarin dosing and last INR date and results.

(iv) Consider including an additional column in the medication history section of the notes which requires the indication for the medication to be listed. This will prompt review of both the medical and medication histories.

(v) Consider providing opportunities for both nursing and medical staff working in Urgent Care Centres to rotate through larger Emergency Departments on a semi-regular basis in order to refresh their skills.”41

39 Statement of Dr Richard Lowen received 13 March 2018
40 External Case Review by Ballarat Health Services dated 28 February 2018.
41 External Case Review by Ballarat Health Services dated 28 February 2018.
73. Dr Lowen advised that SRH accepts that these recommendations are valid and will take steps to incorporate them into its policies and procedures.

74. Dr Lowen noted that the fifth recommendation, if widely implemented, would help assist individual rural RNs and general practitioners to maintain familiarity with emergency presentations. However, he also noted that neither the Royal Australian College of General Practitioners (RACGP) nor the Australian College of Rural and Remote Medicine (ACRRM) stipulates Continuing Professional Development (CPD) requirements specifically for Emergency Medicine.

75. To this end, Dr Lowen suggested that a recommendation could be made to the RACGP and ACRRM to develop a CPD program for general practitioners in Emergency Medicine. Dr Lowen also suggested a recommendation to create a Joint Consultative Committee in Urgent Care and Emergency Medicine to oversee CPD in those areas.

Conclusions

76. The CPU commended the thorough and considered reviews undertaken by SRH and BHS and concurred with the findings and recommendations of the BHS external review.

77. I accept the CPU’s conclusions regarding the care provided to Mrs Killackey on 19 April 2017 during her presentation to the SRH UUC.

78. As Dr Lowen advised, skills development and maintenance in Emergency Medicine for rural medical practitioners both at SRH and elsewhere in Victoria could serve to reduce harm to the community and prevent deaths like Mrs Killackey. For this reason, I accept his suggestions and make the below recommendations.

RECOMMENDATIONS PURSUANT TO SECTION 72(2) OF THE ACT

79. I recommend that the Royal Australian College of General Practitioners and the Australian College of Rural and Remote Medicine develop a continued professional development scheme for General Practitioners in Emergency Medicine.

80. I recommend that the Royal Australian College of General Practitioners, the Australian College of Rural and Remote Medicine and the Australasian College for Emergency Medicine form a tripartite Joint Consultative Committee on Urgent Care and Emergency Medicine to oversee the development of Emergency Medicine skills in rural General Practitioners.
81. I recommend that Stawell Regional Health continue staff education at its Urgent Care Centre and implement regular audits to ensure policies and procedures are followed.

FINDINGS AND CONCLUSION

82. Having investigated the death, without holding an inquest, I find pursuant to section 67(1) of the Coroners Act 2008 that Carmel Killackey, born 13 May 1939, died on 20 April 2017 at Box Hill, Victoria, from I(a) Pulmonary thromboembolism; I(b) Deep vein thrombosis of the left leg in the circumstances described above.

83. Pursuant to section 73(1A) of the Coroners Act 2008, I direct that this finding be published on the internet.

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

Mr William Killackey, senior next of kin.

Royal Australian College of General Practitioners.

Australian College of Rural and Remote Medicine.

Australasian College for Emergency Medicine.

Avant Law, on behalf of Dr F Habermann

Stawell Regional Health.

Ballarat Health Services.

Eastern Health.

Safer Care Victoria.

Signature:

CAITLIN ENGLISH
ACTING STATE CORONER
Date: 5 August 2019