IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

COR 2022 000658

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 63(2)

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

Findings of:	Coroner Katherine Lorenz
Deceased:	Antonios Myrianthopoulos
Date of birth:	4 July 1945
Date of death:	25 January 2022
Cause of death:	1(a) pulmonary thromboembolism in the setting of deep vein thrombosis
Place of death:	15/183 Furlong Road, St Albans, Victoria, 3021

INTRODUCTION

1. On 25 January 2022, Antonios Myrianthopoulos was 76 years old when he died at home from pulmonary embolism (**PE**). PEs are dislodged blood clots that pass into the lung's blood circulation resulting in a blockage of the blood vessels in the lungs. In Mr Myrianthopoulos' case, and in most cases, this was from blood clots in the deep veins of the legs (deep vein thrombosis, or **DVT**).

2. Mr Myrianthopoulos had a history of DVT and PE was on lifelong anticoagulation to prevent ongoing blood clots. However, at the time of his death, Mr Myrianthopoulos was not taking his anticoagulant medication as per clinical advice following a recent discharge from Sunshine Hospital where he was treated for a bleeding duodenal ulcer.

THE CORONIAL INVESTIGATION

3. Mr Myrianthopoulos' 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. This finding draws on the totality of the coronial investigation into the death of Antonios Myrianthopoulos including evidence contained in the coronial brief. 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.[1]

[1] 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

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

Circumstances in which the death occurred

7. On 12 January 2022, Mr Myrianthopoulos presented to the Sunshine Hospital Emergency Department (**SHED**) feeling unwell and weak. On arrival, a rapid antigen test (**RAT**) for COVID-19 returned a positive result.

8. Mr Myrianthopoulos' past medical history included:

    - unprovoked DVT and PE on lifelong warfarin.[2]
    - chronic leg swelling from post-thrombotic syndrome.
    - chronic leg ulcers.
    - insulin-dependent diabetes.
    - hypertension.
    - previous neck surgery for spinal cord compression caused by spinal canal stenosis.

9. Mr Myrianthopoulos was admitted and subsequently underwent a gastroscopy on 14 January 2022 following haematemesis (vomiting blood) and hypotension (low blood pressure) while on the ward. The gastroscopy showed active arterial bleeding from a duodenal ulcer and was treated with clipping and injection of the bleeding artery. Mr Myrianthopoulos required significant amounts of blood products and administration of clotting factors to reverse the effects of his warfarin therapy.

10. Mr Myrianthopoulos also received treatment for COVID-19 and required oxygen therapy for part of his admission.

11. Subsequent investigation showed gastric infection by the organism *Helicobacter pylori*,[3] which was thought to have caused the duodenal ulcer. According to the gastroenterology team, the antibiotic treatment for this organism can adversely interact with treatments for COVID-

evidence provides a comfortable level of satisfaction as to those matters taking into account the consequences of such findings or comments.

[2] An 'unprovoked' DVT or PE occurs in a patient with no clinical risk factor for venous thromboembolism (**VTE**). Risk factors include surgery, trauma, significant immobility (bedbound, unable to walk unaided or likely to spend a substantial proportion of the day in bed or in a chair), pregnancy, or patients taking hormonal therapy (oral contraceptive or hormone replacement therapy). Warfarin is an oral anticoagulant medication that can be used to treat and prevent VTE.

[3] A bacterium that can live in the acid environment of the stomach. It is associated with the development of gastric and duodenal ulcers and stomach cancers.

19. The treating team documented advice from the gastroenterology team to defer antibiotic treatment until Mr Myrianthopoulos recovered further.

12. While an inpatient, Mr Myrianthopoulos' warfarin therapy was ceased to prevent the risk of further bleeding. From 16 January 2022 until discharge, enoxaparin[4] was prescribed as venous thromboembolism (**VTE**) prophylaxis.

13. On 21 January 2022, Mr Myrianthopoulos' treating team documented that he was well enough for discharge; he had no oxygen requirements, had no evidence of further bleeding, and could continue to recover at home. The team prescribed antibiotics to treat the *Helicobacter pylori* infection and advised Mr Myrianthopoulos to not resume his usual warfarin until the treatment had been completed and after further discussion with his General Practitioner (**GP**).

14. A general medicine registrar documented a plan for discharge the next morning if Mr Myrianthopoulos remained well, had no deterioration in his vital signs, and there were no other nursing concerns. On 22 January 2022, Mr Myrianthopoulos was discharged from Sunshine Hospital into the care of his son, Alex Myrianthopoulos.

15. On 25 January 2022, Mr Myrianthopoulos collapsed in the presence of his son. Paramedics from Ambulance Victoria attended. Unfortunately, Mr Myrianthopoulos was deceased and could not be revived.

Identity of the deceased

16. On 25 January 2022, Antonios Myrianthopoulos, born 4 July 1945, was visually identified by his son, Alex Myrianthopoulos, who provided a statement to police to this effect.

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

Medical cause of death

18. Forensic Pathologist Dr Gregory Young from the Victorian Institute of Forensic Medicine conducted an autopsy on 10 February 2022 and provided a written report of the findings.

[4] Enoxaparin is a low molecular weight heparin. It is used to stop blood clots forming within the blood vessels. It has a different mechanism in preventing blood clots to warfarin and is generally more favoured in a surgical context.

19. The autopsy showed pulmonary thromboemboli in the pulmonary trunk and throughout both lungs. DVT was seen in the right lower leg. There was no evidence of recent gastrointestinal haemorrhage, active ulceration, or surgical complications in the gastrointestinal tract.

20. Dr Young provided an opinion that the medical cause of death was *1(a) pulmonary thromboembolism in the setting of deep vein thrombosis*.

21. I accept Dr Young's opinion.

FAMILY CONCERNS

22. Mr Myrianthopoulos' son, Alex, wrote to the Court on 7 February 2022 and outlined concerns of care. In summary, these were that Mr Myrianthopoulos did not seem well when Alex picked him up, that Alex had not been contacted about the discharge, that Alex did not receive timely updates from the hospital, that Alex's concerns about Mr Myrianthopoulos not being able to take care of himself at home alone were not appreciated, and that there was no discharge paperwork.

FURTHER INVESTIGATIONS

23. I asked the Coroner's Prevention Unit (**CPU**)[5] to review the case together with the clinical records, a statement from Western Health, and family concerns. The CPU identified potential concerns regarding the management of Mr Myrianthopoulos' anticoagulation and suggested further materials be obtained from Western Health and Mr Myrianthopoulos' GP. After review of these subsequent statements, the CPU identified three main issues that may have affected the outcome in this case. These were:

    - Management of Mr Myrianthopoulos' anticoagulation at the time of discharge.
    - Communication with Mr Myrianthopoulos' GP.
    - Discharge advice to Mr Myrianthopoulos.

Management of Anticoagulation

[5] The CPU was established in 2008 to strengthen the coroners' prevention role and assist in formulating recommendations following a death. The CPU is comprised of health professionals and personnel with experience in a range of areas including medicine, nursing, mental health, public health, family violence and other generalist non-clinical matters. The unit may review the medical care and treatment in cases referred by the coroner, as well as assist with research related to public health and safety.

24. The CPU noted that Mr Myrianthopoulos was known to have been on lifelong anticoagulation for the prevention of DVT and PE. This was recorded in the Western Health medical record.

25. In 2013, Mr Myrianthopoulos underwent spinal surgery at Western Health. This required careful perioperative management of his anticoagulation balancing both the risk of post-operative bleeding and post-operative DVT or PE.

26. The CPU suggested that this appears to have been done carefully and thoroughly with arrangements for GP involvement with 'bridging' enoxaparin[6] whilst safely transitioning back to warfarin therapy. The CPU would have anticipated that similar care was required with the re-introduction of anti-coagulation following treatment of a high-risk bleeding condition such as a bleeding duodenal ulcer.

27. However, in this instance, as indicated in a statement from Western Health:

"The matter of anticoagulation was considered, and it was decided to continue withholding warfarin until he was able to see his GP and discuss future anticoagulation, including options other than warfarin."

28. The statement continued to comment that:

"The decision about whether to recommence therapeutic anticoagulation and if so, with which medication, was deferred until he had recovered from his acutely bleeding ulcer and was able to discuss the risks and benefits of anticoagulation with his usual primary care provider, who would have the best holistic understanding of Mr Myrianthopoulos' health and the potential impact of therapeutic choices on his wellbeing, balancing the risks of thromboembolic disease against the risk of further bleeding".

29. The CPU considered the approach of Western Health to Mr Myrianthopoulos' anticoagulation on this occasion was inappropriate, particularly in the context of a complex condition and the requirement for lifelong anticoagulation. The specialist teams managing him during his admission were best placed to advise him and assist him with recommencing anticoagulation rather than his GP.

[6] 'Bridging' refers to ongoing administration of enoxaparin, often post-discharge, until the effects of warfarin reach therapeutic levels again.

30. Importantly, the CPU considered that deeper consideration of anticoagulation on this occasion may have prevented the occurrence of a pulmonary embolism.

Communication with General Practitioners

31. The CPU noted that there was no communication with Mr Myrianthopoulos' GP at the time of discharge. This was the result of an incorrect recording of Mr Myrianthopoulos' GP's details at admission and the lack of a timely discharge summary being completed. The CPU provided an opinion that the name of a patient's GP or GP clinic should be checked and updated at each attendance to a health service.

32. The discharge summary was completed on 2 March 2022 by a doctor not involved in the patient's care. It also contained conflicting advice about recommencement of anticoagulation and was addressed to the wrong clinic. The discharge plan documented to withhold warfarin until treatment for *H. pylori* was completed (seven days) and for the GP to discuss ongoing anticoagulation with a recommendation to change from warfarin to a direct oral anticoagulant (**DOAC**).[7] However, the medications on discharge documented that warfarin was to be withheld for 3 months and then for review by the GP.

Discharge Advice

33. The CPU noted the family concerns that there were no notes or letters sent home at the time of discharge nor were they consulted prior to discharge. This meant that neither the patient nor the family would have received any written advice regarding recommencement of anticoagulant medication or follow-up. Further, if they had presented to the GP for follow-up information, the GP would have also been unaware of the advice.

34. The CPU also noted that the family were concerned about Mr Myrianthopoulos not seeming well, lived alone, and may not be able to look after himself. The CPU explained that it was understandable that Mr Myrianthopoulos did not look well considering that he was recovering from a major illness and COVID-19 infection. However, while still unwell, Mr Myrianthopoulos had recovered enough that he no longer required a hospital admission.

35. The CPU commented that it is usual practice to notify family prior to discharge and to listen and address any concerns that they may have. It appears that this did not happen in this case.

[7] These are another type of anticoagulant medications. The main advantage over warfarin is that they do not require ongoing blood level monitoring.

CPU Conclusions

36. The CPU suggested the following proposed recommendations to be put to Western Health:

    a. Review or develop a policy that discourages the deferral of complex anticoagulation decisions solely to General Practitioners, so that the ongoing management of complex patients requiring anticoagulation involves the treating team, haematology where required, the GP, and services such as Hospital in the Home to ensure appropriate and safe transition back to anticoagulation.

    b. Review administrative practices to ensure that essential information such as current GP is asked about and, if necessary, updated at every presentation.

    c. Review policies and practice around the provision of timely discharge summaries and advice to GPs to ensure that essential information regarding ongoing management requirements is communicated in a clinically appropriate timeframe. While not all patients will require a 'day of discharge' communication with a GP, important issues such as the re-introduction of anticoagulation require a system to ensure this.

    d. Ensure that written advice is provided to patients and their carers regarding important medication, care, and follow-up plans.

Response from Western Health

37. At my request, Western Health were afforded an opportunity to respond to the CPU's concerns and proposed recommendations.

38. Western Health acknowledged that the decision to recommence anticoagulation in this case was a complex decision and should have been referred to gastroenterology and/or haematology for advice. It was not appropriate to assign responsibility for this decision to the GP.

39. Western Health also acknowledged that the GP's details should have been verified. The relevant Western Health policy states that this key information, as well as details of an emergency contact and general identification information, should be verified within 48 hours of admission to ensure any communication required during admission will be with the appropriate person. Further, a key issue was a lack of direct communication with the GP for a patient requiring complex clinical decision-making within a high-risk scenario.

40. The Western Health discharge policy states that patients and carers should be provided with a copy of relevant discharge instructions. Western Health acknowledged that this did not occur in this case. Since this case, the General Internal Medicine Unit has instituted a post-discharge process to ensure that teams follow up patients who are discharged with pending results, ongoing active clinical issues, and critical planned outpatient appointments. This would prevent patients falling into the gap between discharge from the acute setting and subsequent follow up.

41. Finally, on the proposed recommendations, Western Health indicated that they have commenced these reviews, or equivalent, as suggested by the CPU. However, Western Health did not believe that a policy discouraging deferral of complex anticoagulation decisions would make a meaningful change to improve patient care.

42. Instead, this would be better achieved through reinforcing the existing VTE prevention procedure which states that where there is doubt about pharmacological prophylaxis, then a medical officer or the Haematology Unit should be consulted.

43. Further, Western Health is seeking to develop a business case for an anticoagulant stewardship program. This evidence from this case may be considered in support of this business case.

VTE prophylaxis

44. As noted by the CPU, the treating team prescribed pharmacological VTE prophylaxis to Mr Myrianthopoulos after the gastroscopy from 16 January 2022 until discharge. There does not appear to be any consideration of further VTE prophylaxis on discharge in the medical records nor in the subsequent statements from Western Health.

45. In the time since the CPU provided their advice, Safer Care Victoria (**SCV**) released suggested state-wide guidelines for VTE prophylaxis. This guideline was produced in response to previous coronial recommendations involving VTE in adult patients in hospital settings.[8]

46. These guidelines also comment on situations where VTE prophylaxis should extend post-discharge. It states:

> *"VTE prophylaxis should be considered when therapeutic anticoagulation is interrupted prior to surgery or when usual anticoagulation medication cannot be*

[8] COR 2018 005766; COR 2019 001598.

recommenced immediately post-surgery. In these cases, VTE prophylaxis should be continued until therapeutic anti-coagulation has can be safely resumed."[9]

47. Had this guideline or similar been followed, Mr Myrianthopoulos would have been prescribed ongoing enoxaparin as VTE prophylaxis post-discharge. This would likely have prevented the formation of DVT, the subsequent PEs, and the subsequent death.

48. In subsequent correspondence, Western Health were provided an additional opportunity to comment on this issue and to provide their VTE prevention policy documents both current and in force at the time of Mr Myrianthopoulos' discharge.

49. Western Health acknowledged that VTE prophylaxis should have been continued post-discharge until full anticoagulation could be safely recommenced. However, a plan for recommencement of anticoagulation was documented in keeping with local guidelines. In addition, advice from a senior haematologist suggested that it was very unfortunate for a patient to develop a VTE complication so soon after discharge, especially as they were well enough to be discharged.

50. Further, the latest Western Health VTE prevention guideline states that "*patient related risk factors may indicate a requirement for VTE prophylaxis post discharge*". This aligns with part of the recently published guidelines from Safer Care Victoria, although does not specifically mention the instance when full anticoagulation is interrupted. Western Health plans to revise the current VTE prevention guideline to incorporate advice for this clinical situation.

51. Western Health also provided some of the issues that the proposed model for the previously mentioned anticoagulation stewardship program would cover. These include:

    - Conducting regular audits of VTE prophylaxis prescribing
    - Review of VTE prophylaxis-related incidents
    - Follow up of high risk patients post-discharge via telehealth
    - Daily review of VTE prophylaxis dashboards
    - Education for ward pharmacists, nurses and junior doctors to enable appropriate advice for patients discharged on VTE prophylaxis medication.

[9] Safer Care Victoria, *Victorian Guideline for the Prevention of Venous Thromboembolism (**VTE**) in Adult Hospitalised Patients*, 26 October 2023, 7.3.1, 46. Available at < https://www.safercare.vic.gov.au/sites/default/files/2023-10/Guideline%20for%20the%20Prevention%20of%20Venous%20Thromboembolism.pdf>

- Provide advice to inpatient medical units regarding VTE prophylaxis in complex patients.

52. Western Health clarified that the team would not routinely be involved in decision-making about VTE prophylaxis at the time of patient discharge; this remains a clinical decision for the treating inpatient unit. However, they will be able to highlight the need for medical teams to provide a clear discharge plan for ongoing anticoagulation management, should it be required.

FINDINGS AND CONCLUSION

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

    a) the identity of the deceased was Antonios Myrianthopoulos, born 4 July 1945;
    b) the death occurred on 25 January 2022 at 15/183 Furlong Road, St Albans, Victoria, 3021, from pulmonary thromboembolism in the setting of deep vein thrombosis; and
    c) the death occurred in the circumstances described above.

54. Having carefully considered the evidence, and on the balance of probabilities, I find that the death was preventable.

55. In making this finding, I consider that clinicians ought to have turned their mind to whether pharmacological VTE prophylaxis was required to continue post discharge and until oral anticoagulation could be resumed or discussed further.

56. Had this occurred, it is very likely that ongoing enoxaparin would have been prescribed post discharge in the context of a patient on pharmacological VTE prophylaxis while therapeutic anticoagulation was interrupted. In turn, this would very likely have prevented development of DVT and subsequent PEs which caused Mr Myrianthopoulos' death.

57. I acknowledge that these considerations were not explicitly outlined in local guidelines at the time. I also acknowledge Western Health's plan to incorporate advice for this very clinical scenario into their VTE prevention guideline.

RECOMMENDATIONS

Pursuant to section 72(2) of the Act, I make the following recommendations:

i) I recommend that Western Health:

a. Develop an anticoagulant stewardship program.

b. Complete their review of administration practices at the time of registration of patients by clerical staff to ensure that they comply with the relevant procedures and policies.

c. Review their policies and practice around the provision of timely discharge summaries and advice to general practitioners to ensure that essential information regarding ongoing management requirements is communicated in a clinically appropriate timeframe.

d. Take steps to ensure that written advice is provided to patients and their carers regarding important medication, care, and follow-up plans.

e. Review their VTE prevention guidelines against the suggested state-wide guideline from Safer Care Victoria and the facts of this case.

I convey my sincere condolences to Antonios' family for their loss.

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

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

Alex Myrianthopoulos, Senior Next of Kin

Dr Abi Arul, Chief Medical Officer, Western Health.

Safer Care Victoria.

Signature:

Coroner Katherine Lorenz

Date : 20 March 2024

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.