IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

COR 2022 006702

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 63(2)

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

Findings of:	Coroner Catherine Fitzgerald
Deceased:	Jean Elizabeth Crocker
Date of birth:	25 November 1931
Date of death:	22 November 2022
Cause of death:	1(a) Right acute on chronic subdural haematoma sustained in a fall in the setting of anticoagulation in an elderly woman with multiple comorbidities (palliated)
Place of death:	Box Hill Hospital, 8 Arnold Street, Box Hill, Victoria, 3128

INTRODUCTION

1. On 22 November 2022, Jean Elizabeth Crocker was 90 years old when she passed away at Box Hill Hospital. At the time of her death, Ms Crocker lived at the Regis Shenley Manor residential aged care facility in Camberwell, Victoria.

2. Ms Crocker had a significant medical history which included ischaemic heart disease, bioprosthetic mitral valve replacement for mitral regurgitation, atrial fibrillation, hypertension, hypercholesterolaemia, iron deficiency anaemia, orthostatic hypotension, chronic obstructive airways disease, chronic back pain, gastroesophageal reflux disease, and osteoarthritis.

3. Ms Crocker was prescribed therapeutic anticoagulation with warfarin for stroke prevention. She was also prescribed thyroxin, atorvastatin, frusemide, sertraline, Norspan patch, mirtazapine, nizatidine, Panadol Osteo and various vitamins.

THE CORONIAL INVESTIGATION

4. Ms Crocker'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.

5. The role of a coroner is to independently investigate reportable deaths to establish, if possible, the identity of the deceased, the medical cause of death, and the circumstances in which the death occurred. The purpose of a coronial investigation is to establish the facts, not to cast blame or determine criminal or civil liability.

6. 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.

7. This finding draws on the totality of the coronial investigation into the death of Jean Elizabeth Crocker. 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]

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

Circumstances in which the death occurred

8. In the early hours of 20 November 2022, Ms Crocker experienced an unwitnessed fall with head strike at Regis Shenley Manor (**RSM**). She was transferred by ambulance to Box Hill Hospital (**BHH**) emergency department (**ED**). The notes from RSM clearly explained that the main reason for her transfer was that Ms Crocker was on warfarin and had sustained a head strike.

9. Upon medical assessment in the ED, Ms Crocker was noted to have significant pain in the mid and lower back, left shoulder and right hip. In the left shoulder and right hip, no bony injury was identified on CT imaging. In the back, CT imaging showed a T6 vertebral body compression fracture. However, based on the radiographic features, it could not be determined whether this compression fracture was acute or chronic. She also had CT imaging of the brain, which was initially reported as showing no acute abnormality. CT imaging of the cervical spine was also reported as showing no acute abnormality.

10. In the ED, Ms Crocker's ECG was noted by the assessing doctor as showing widespread T wave inversion and possible ST segment elevation in leads V2 and V3. At that time, her cardiac biomarkers included troponin-T 241 ng/L and creatine kinase 96 IU/L. At 2:34 pm, on the basis of the abnormal ECG and elevated troponin-T, the assessing doctor discussed the case with the Cardiology registrar, who gave the differential diagnosis of myocardial infarction and takotsubo cardiomyopathy, along with a recommended plan of commencing therapy with aspirin and enoxaparin[2] at therapeutic dose. This plan was instituted by the assessing doctor, who charted aspirin 300 mg, together with enoxaparin 80 mg 12-hourly. The first dose of enoxaparin was administered at 5:39 pm on 20 November 2022, despite the fact Ms Crocker was already taking warfarin, another anticoagulant medication. Ms Crocker was admitted to the ward under the General Medicine team.

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

[2] Enoxaparin is a low molecular weight heparin. It is used to stop blood clots forming within the blood vessels.

11. During the process of admission, Ms Crocker's usual regular medications became known to the General Medicine registrar. All the medications were charted on the hospital medication chart, with the exception of warfarin. The registrar re-confirmed the management with the Cardiology team, and subsequently continued aspirin and enoxaparin on the medication chart.

12. At 8:38 am on 21 November 2022, Ms Crocker's condition deteriorated with sudden-onset vomiting, altered consciousness and left hemiparesis.[3] A MET call and Code Stroke were activated shortly thereafter, attended by the treating medical team. An urgent CT brain scan revealed an acute right-sided subdural haemorrhage with significant midline shift. A coagulation profile taken at the time of the Code Stroke showed an INR[4] of 1.9, indicative of the persisting effects of warfarin.

13. Clinicians formed the view that Ms Crocker was experiencing a terminal event and advised her family. The hospital also provided open disclosure to the family regarding the incident and explained that the provision of enoxaparin had possibly contributed to the severity of Ms Crocker's subdural haemorrhage. She was transitioned to comfort care and passed away at 1:05 am on 22 November 2022.

Identity of the deceased

14. On 22 November 2022, Jean Elizabeth Crocker, born 25 November 1931, was visually identified by her granddaughter, Rachel Kyla Lane.

15. I am satisfied that the identity of the deceased is Jean Elizabeth Crocker. Identity is not in dispute and requires no further investigation.

Medical cause of death

16. Forensic Pathologist Dr Chong Zhou from the Victorian Institute of Forensic Medicine conducted an examination on 24 November 2022 and provided a written report of her findings dated 28 November 2022.

17. The post-mortem examination revealed findings consistent with the reported circumstances.

[3] Weakness on one side of the body.
[4] A standardized blood test that measures how long it takes for your blood to clot, commonly used to monitor the effectiveness of anticoagulant medications.

18. The post-mortem CT scan showed significant right acute on chronic subdural haemorrhage associated with mass effect.[5] There were no skull fractures.

19. Dr Zhou noted that Ms Crocker's usual anticoagulation included warfarin and that in hospital she was given therapeutic enoxaparin due to an initial concern about myocardial infarction. The addition of therapeutic enoxaparin in addition to the deceased's usual warfarin was favoured by Dr Zhou to have contributed to the death by way of potentially exacerbating the amount of subdural bleeding.

20. Dr Zhou provided an opinion that the medical cause of death was "*1(a) Right acute on chronic subdural haematoma sustained in a fall in the setting of anticoagulation in an elderly woman with multiple comorbidities (palliated)*".

21. I accept Dr Zhou's opinion.

FURTHER INVESTIGATIONS

22. As part of the coronial investigation, medical records and statements were obtained from Eastern Health (as the operators of BHH) and RSM, as well as Ms Crocker's general practitioner (**GP**). The Serious Adverse Patient Safety Event (**SAPSE**) report by Eastern Health was also obtained.

23. To better understand the causes of the medication error which occurred, I referred this case to the Coroner's Prevention Unit (**CPU**)[6] for an independent review of the medical care and treatment provided to Ms Crocker.

CPU REVIEW

Background information about anticoagulants

24. The CPU explained that both warfarin and enoxaparin are anticoagulants, however the mechanism by which they work is different. Warfarin works by reducing the production of several clotting factors in the liver, whereas enoxaparin inhibits the actions of proteins in part of the coagulation mechanism, leading to reduced clot formation. Anticoagulants work

[5] Bleeding on the right side of the brain below the dura, with new (acute) bleeding occurring on top of older (chronic) bleeding, causing intracranial pressure that shifts the brain structures.

[6] 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.

therapeutically by two main interdependent mechanisms which affect the body's normal system of blood clotting and blood clot removal by:

a) reducing the rate at which new blood clots form (i.e., prolonging the time it takes a blood clot to form); and

b) allowing the body's intrinsic, natural clot dissolving (thrombolytic) mechanisms to work.

25. When the rate of clot formation is slowed down by anticoagulant medication, and the natural clot dissolving mechanisms continue to break down both new and old clots faster than the rate of new clot formation, any clots present will ultimately disappear. This is the desired outcome when using anticoagulants to therapeutically treat deep venous thrombosis and pulmonary embolisms.

26. However, at the site of an injury or bleeding, this is unlikely to be the desired effect and may result in the recurrence or exaggeration of bleeding. This effect would be hastened and exacerbated by supratherapeutic doses of anticoagulants.

Whether the death was preventable

27. As part of my referral to the CPU, I requested advice about whether Ms Crocker's death was preventable and, if so, the circumstances in which it may have been prevented.

28. The CPU noted that the initial CT brain scan on the day of Ms Crocker's admission had been misinterpreted/misreported as being unremarkable, and Ms Crocker was therefore treated as having no intracranial haemorrhage. There was, in fact, a minute traumatic subdural haemorrhage that was not identified by the reporting radiologists at the time. This haemorrhage was only identified in retrospect, following Ms Crocker's deterioration.

29. The CPU opined that it was highly likely that the non-reversal of pre-existing anticoagulation (the out-of-hospital warfarin) and the introduction of excessive anticoagulation (enoxaparin) and aspirin at BHH allowed the initially minute traumatic subdural haemorrhage to progress to a large haemorrhage. They further noted that although it was possible this could have happened without the additional anticoagulant (enoxaparin), the addition of this anticoagulant in therapeutic doses made this result much more likely when Ms Crocker was 'doubly anticoagulated'. Even without a history of trauma or an occult intracranial haemorrhage, excessive anticoagulation increases the likelihood of spontaneous bleeding.

30. The CPU explained that in a patient in Ms Crocker's circumstances, with a traumatic brain bleed, anticoagulation is contraindicated as there is a significant risk of the small bleed developing into severe intracranial bleeding. Appropriate management of such a patient would have involved ceasing warfarin and quick reversal of its anticoagulant effects by the administration of Vitamin K[7] and/or clotting factors.

31. The CPU noted that given Ms Crocker's presentation, which included a medical history of coronary artery disease, recent presentation to BHH with 'crushing' chest pain on 29 October 2022, abnormal ECG findings and elevated (and increasing) troponin-T at the time of admission on 20 November 2022, it was reasonable for clinicians to have reached a differential preliminary diagnosis of either a myocardial infarction or 'takotsubo' cardiomyopathy in response to injury or shock.

32. The CPU opined that if the cardiac event was thought to be very high-risk, then reversal of aspirin could have been commenced with close monitoring for any signs of bleeding, however, there would also need to have been an assessment of the risks and benefits of treating the heart condition with anticoagulants or anti-platelet agents in the presence of potentially even minor intracranial bleeding, given the recent fall with head strike. The CPU suggested that this type of decision would have been made at a consultant level and would have involved Ms Crocker's family.

33. The CPU explained that in normal circumstances, the early treatment of a non-ST-elevation myocardial infarction (**NSTEMI**) involves the use of anti-platelet agents such as aspirin and clopidogrel in combination with an anticoagulant such as enoxaparin. The CPU opined that the proposed management of Ms Crocker's presumed NSTEMI in the setting of a fall with head strike and a 'normal' CT brain scan would have been appropriate, had she not already been anticoagulated with warfarin and in the absence of a subdural haemorrhage. The CPU also noted that it is possible that aspirin and enoxaparin alone, without warfarin, may have resulted in the intracranial bleeding from the undetected small brain haemorrhage.

34. The CPU considered that the anticoagulation error should not have occurred and was due to both human and system errors. The CPU concluded that Ms Crocker's death may have been preventable in the following circumstances:

[7] Vitamin K reverses, relatively quickly, the anticoagulant effects of warfarin and was administered to Mrs Crocker on the morning of 21/11/2023 when the subdural haemorrhage and anticoagulation were discovered. Vitamin K does <u>not</u> reverse the anticoagulant effects of enoxaparin.

a) If the small subdural haemorrhage was identified at the time of the initial CT scan and appropriate management put in place.

b) If it was identified and acknowledged that Ms Crocker was taking warfarin and this was quickly reversed once the subdural haemorrhage was identified.

c) If Ms Crocker was not provided with further therapeutic anticoagulation to treat the suspected NSTEMI until it was safe to do so.

d) If Ms Crocker received careful assessment and monitoring of the subdural haemorrhage until this could be safely discontinued.

35. I accept the CPU advice, and I am satisfied that both the anticoagulation error and the misinterpretation/misreporting of the small subdural haemorrhage contributed to Ms Crocker's death.

Information which was available regarding Ms Crocker's warfarin prescription

36. The CPU noted that ample information across multiple sources was available to clinicians regarding Ms Crocker's out-of-hospital warfarin prescription. Noting that Ms Crocker was first administered enoxaparin at 5:39 pm on 20 November 2022, the CPU drew attention to the following information available to clinical staff:

a) The transfer letter from RSM noted that Ms Crocker was on warfarin and the reason for her transfer to hospital was due to her experiencing a fall with head strike and being on warfarin.

b) The Ambulance Victoria patient care records noted that Ms Crocker was prescribed warfarin.

c) The treating ED registrar was aware that Ms Crocker was taking warfarin when she ordered a CT brain and cervical spine at 10:16 am on 20 November 2022 as the clinical notes included "*fall with headstrike on warfarin*".

d) An ED nursing note made at 10:46 am on 20 November 2022 recorded warfarin as a medication.

e) "*Warfarin 3mg daily*" was entered into the 'Prescription and documented Home Meds' section of Ms Crocker's electronic medical record (**EMR**) by a pharmacist at 4:02 pm on 20 November 2022.

f) A pharmacy reconciliation at 4:16 pm on 20 November 2022 documented warfarin as a medication.

g) The admission notes made by the General Medicine (**GM**) registrar at 5:40 pm recorded warfarin as a 'home medication'.

h) The same admission notes made by the GM registrar also incorporate clinical notes from the first CT report, including "*Fall with headstrike. On Warfarin*". The CT report from which this appears to be extracted is timestamped as 12:12 pm on 20 November 2022.

i) Ms Crocker's family reportedly informed the treating ED doctor that Ms Crocker was prescribed warfarin.

37. Eastern Health has acknowledged that,

> *With the benefit of thoroughly reviewing the case in retrospect, it was evident during our organisation's root cause analysis process that there were multiple sources of information that demonstrated that the patient was regularly taking warfarin as a home medication, and that multiple clinicians were aware of this.*

CPU review of factors contributing to the additional anticoagulation

38. The CPU identified several issues that may have contributed to the prescribing error associated with Ms Crocker's death, namely:

a) Human error and failure to adhere to basic prescribing safety.

b) System errors, including:

i. Inadequate instructions in the hospital's *Post Falls Response and Management Guideline*, which staff were expected to know and follow with regard to ordering a coagulation profile.

ii. Inadequate medication review by treating/prescribing doctors on multiple occasions.

iii. Inadequate communication between the pharmacist undertaking medication reconciliation and the admitting medical staff.

iv. An electronic prescribing system that does not raise an alert when two medications of the same class are recorded on the same patient regardless of whether hospital staff had prescribed a 'home' medication.

39. The CPU explained that the administration of another form of therapeutic anticoagulation to a patient already therapeutically anticoagulated is highly unusual and is likely to be contraindicated in most circumstances. This is not specialist-level knowledge, and there were multiple opportunities for multiple staff to have considered this issue, thereby avoiding the prescribing error. However, I note that in a statement provided on behalf of Eastern Health, a contrary view was provided that "nearly every instance of co-prescribing of [warfarin and enoxaparin] would be appropriate."

40. The CPU also noted that there were numerous clinical handovers which failed to highlight Ms Crocker's anticoagulation with warfarin, despite multiple staff recording it in their notes. There were therefore numerous clinical discussions and/or handover opportunities where anticoagulation should have been discussed, including:

a) Between the ED doctor and the cardiology doctor.

b) Between the daytime ED doctor and the daytime supervising ED consultant.

c) Between the daytime ED doctor and the evening supervising ED consultant at shift changeover.

d) Between the ED doctor and the admitting medical team.

e) Between the daytime medical team and the evening/night medical team.

How Ms Crocker's warfarin prescription should have been recorded

41. The CPU explained that the ED registrar would have been responsible for the initial accurate recording of Ms Crocker's medications and relevant history. This information would have been derived from a range of sources including the referral letter and the medication chart from RSM, the Ambulance Victoria patient care records, from Ms Crocker herself, and from any family members or carers present with her. The ED registrar *did* note that Ms Crocker was on warfarin on her CT scan request, however this was not mentioned in the body of her notes on Ms Crocker.

42. The CPU noted that the ED registrar was aware that Ms Crocker was on warfarin and discussed her case with the ED consultant, however the consultant's involvement and

assessment of Ms Crocker took place at a point before cardiology advice was sought. After the cardiology advice was received, including the plan to commence enoxaparin, there was no follow-up discussion between the ED registrar and the consultant. The CPU noted there was also a face-to-face handover between the ED registrar and the evening ED consultant on 20 November 2022, and this handover also did not appear to pass on the necessary information regarding Ms Crocker's anticoagulation with warfarin and the plan to add enoxaparin.

43. The CPU explained that the ED assessment is merely the beginning of the process and should not be regarded as the only assessment upon which treatment decisions should be made. By its nature, the ED often focuses on immediate problems and issues, then once a patient is admitted to a ward under a specialist team, that treating team would assume responsibility of ensuring the patient's history, investigations, medications, and other issues are appropriately documented.

44. The CPU opined that based on the medical record, the GM registrar ought to have been aware of Ms Crocker's medications when he completed her admission at about 5:40 pm on 20 November 2022. By that time, the list of medications was completed, which included a complete list of 'home medications' that included warfarin. The GM registrar also made a note that Ms Crocker was to receive her "reg meds" (regular medications) as part of the treatment plan.

45. The CPU explained that in a hospital setting where there are multiple teams and decision-makers involved in the care of one patient, junior doctors are often tasked with ensuring there are no contraindications for the medications that are charted. However, the senior decision-makers would also be expected to be fully informed of the patient's other medications and history when making clinical decisions. In this case, the CPU opined that it appeared that the decision-maker, being the Cardiology registrar, was not fully informed of Ms Crocker's warfarin prescription by the referring staff.

Adequacy of the CT scan interpretation and review

46. The CPU noted that a small subdural haemorrhage was not identified by the reporting radiologists at the time of reporting the initial scan, and was only identified in retrospect, following Ms Crocker's deterioration. The CPU did not have copies of the images but opined that because the initial haemorrhage was very small or subtle, there was no reasonable expectation that a non-radiologist would be able to detect it. The ED registrar noted the CT brain scan was normal "*as per dictated report*" prior to the administration of enoxaparin and

in these circumstances the CPU considered it was reasonable for her to have treated the patient as having no intracranial bleeding.

47. I am satisfied that the failure to report the small subdural haemorrhage shown in the initial CT brain scan occurred as a result of human error regarding either the interpretation of the CT brain scan or the reporting itself. As such, I have not identified any prevention opportunities which may avert such an error occurring in the future, and I note that information has been provided by Eastern Health that this has been raised and addressed with the relevant radiologist.

Proposed recommendations

48. The CPU noted that although warfarin was not prescribed within Eastern Health, it was recorded on the system as a current medication for Ms Crocker, however no alert was raised by the Electronic Medical Record (**EMR**) software. The CPU advised that this might reflect a significant shortcoming in the electronic prescribing system which has failed to assist their clinical staff to avoid a prescribing error.

49. The CPU opined that if the EMR had capacity to raise an alert on the basis of at-home/current medications prescribed outside the hospital setting, this may have prompted clinical staff to reconsider the appropriateness of prescribing the enoxaparin.

50. I accept the CPU advice that appropriate system safeguards and alerts are needed to prevent a similar error occurring in the future, particularly as anticoagulants are a class of drug commonly prescribed to patients. In my view, the need for a change in process is demonstrated by the fact that the information regarding Ms Crocker's use of warfarin was available from the outset, but was overlooked on numerous occasions by several clinicians when it could reasonably be expected to have been noted by the medical staff with responsibility for Ms Crocker's medical management

51. The CPU proposed that the following recommendations could be directed to Eastern Health as prevention measures:

    a) To review their *Post Falls Response and Management Guideline* to include specific instructions regarding the performance of a clotting profile for patients presenting with a fall with head strike.

    b) To implement a routine alert in all relevant areas (EMR, handover, prescribing) that a patient is therapeutically anticoagulated.

c) To review their handover process to include an 'Identify, Situation, Background, Assessment and Recommendation' (**ISBAR**) style format that always includes patient alerts, including anticoagulation.

d) To implement a requirement that the pharmacist performing a medication reconciliation communicate the pertinent findings of the reconciliation directly to the responsible doctor.

e) To introduce an alert in their EMR system that is triggered when two different anticoagulant medications are entered into the medication management system, regardless of whether the medications are prescribed during the hospital admission or recorded as 'home medications'.

52. I am satisfied that such changes have the potential to prevent a prescribing error of this type being made in the future. The facts of this case demonstrate the need for a robust prescribing system which adequately alerts potential prescribing issues to the various staff involved in medical management and prescribing to patients who are therapeutically anticoagulated.

FINDINGS AND CONCLUSION

53. Pursuant to section 67(1) of the *Coroners Act 2008* I make the following findings:

a) the identity of the deceased was Jean Elizabeth Crocker, born 25 November 1931;

b) the death occurred on 22 November 2022 at Box Hill Hospital, 8 Arnold Street, Box Hill, Victoria, 3128, from right acute on chronic subdural haematoma sustained in a fall in the setting of anticoagulation in an elderly woman with multiple comorbidities (palliated); and

54. The death occurred in the circumstances described above. I am satisfied that Ms Crocker's death was preventable.

55. I have considered the opinion as to cause of death in the forensic pathologist's report and the CPU opinions regarding the medical management, as well as all the available evidence and the responses received from Eastern Health. Whilst the small subdural haemorrhage was not identified at the time of the initial CT scan, the predominant factor in Ms Crocker's death was the inappropriate administration of enoxaparin. This error should not have occurred, and the systems in place at BHH did not adequately mitigate the risk of such a prescribing error occurring.

RECOMMENDATIONS

56. Pursuant to section 72(2) of the Act, I recommend that Eastern Health:

    (i) Review their *Post Falls Response and Management Guideline* to include specific instructions regarding the performance of a clotting profile for patients presenting with a fall with head strike.

    (ii) Implement a routine alert in all relevant areas (EMR, handover, prescribing) that a patient is therapeutically anticoagulated.

    (iii) Review their handover process to include an 'Identify, Situation, Background, Assessment and Recommendation' (**ISBAR**) style format that always includes patient alerts, including anticoagulation.

    (iv) Implement a requirement that the pharmacist performing a medication reconciliation communicate the pertinent findings of the reconciliation directly to the responsible doctor.

    (v) Introduce an alert in their Electronic Medical Records system that is triggered when two different anticoagulant medications are entered into the medication management system, regardless of whether the medications are 'prescribed' during the admission or recorded as 'home medications'.

I convey my condolences to Ms Crocker's family for their loss.

Pursuant to section 73(1A) 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:

Anne Lane-Cottle, Senior Next of Kin

Eastern Health

Regis Aged Care

Safer Care Victoria

Constable Lara Zukowski, Victoria Police, Notifying Member

Signature:

Coroner Catherine Fitzgerald

Date: 28 October 2025

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.