IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2024 003769

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 63(2)
*Section 67 of the **Coroners Act 2008***

Findings of:	Sarah Gebert, Coroner
Deceased:	HJW
Date of birth:	1954
Date of death:	26 June 2024
Cause of death:	1(a) Urosepsis 1(b) Anuric acute renal failure and corona radiata infarct 1(c) Emphysematous pyelitis, candidaemia
Place of death:	Box Hill Hospital, 8 Arnold St, Box Hill, Victoria

INTRODUCTION

1. On 26 June 2024, HJW was 69 years old when she died in hospital.

THE CORONIAL INVESTIGATION

2. On 26 June 2024, Dr Henry Sze Hon Tam of Eastern Health completed a Medical Certificate of Cause of Death (**MCCD**) specifying that HJW died of urosepsis, anuric acute renal failure, and corona radiata infarct. Emphysematous pyelitis and candidaemia were listed as antecedent causes.

3. Although HJW died on 26 June 2024, her death was not reported to the Coroners Court of Victoria until 3 July 2024. On that date, HJW's son, TSQ, contacted Coronial Admissions and Enquiries about concerns regarding his mother's medical treatment at Box Hill Hospital proximate to her death. He followed up with a written email the following day.

4. The case was presented to me on 30 July 2024 to determine whether HJW's death was a reportable death pursuant to the *Coroners Act 2008* (**the Act**).

5. Dr Judith Fronczek, Forensic Pathologist from the Victorian Institute of Forensic Medicine (**VIFM**), reviewed the MCCD and considered the listed causes of death were reasonable and the death was due to natural causes, and a post-mortem examination was not necessary.

6. Pursuant to section 14 of the Act, I directed that HJW's death be investigated to determine whether her death was a reportable death as defined under the Act, in light of the concerns raised by family.

7. Reportable deaths generally include deaths that are unexpected, unnatural or violent or result from accident or injury.

8. 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.

9. 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.

10. As part of my investigation, I obtained HJW's Eastern Health records and a statement from Dr Susan Mary Dowling, Emergency Physician at Eastern Health. In addition, I asked the Coroners Prevention Unit (**CPU**)[1] to review the medical circumstances of HJW's death, including whether her death was preventable.

11. Having considered the advice provided by CPU which is outlined later, I determined that HJW's death was reportable within the meaning of the Act.

12. This finding draws on the totality of the coronial investigation into HJW's death. 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.[2]

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

Circumstances in which the death occurred

13. HJW lived independently and had a medical history of Type 2 diabetes, pancreatic cyst, asthma, and obesity. She had previously had her appendix and gallbladder removed and took gliclazide and insulin for her diabetes.

14. At 12.54am on the morning of 9 June 2024, HJW presented by ambulance to Maroondah Hospital Emergency Department following the development of severe right upper abdominal pain and vomiting overnight. This was on a background of a week of intermittent right-sided abdominal pain. She did not report fevers or chills or symptoms of a urine infection.[3] She was appropriately assigned a triage category of 3.[4]

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[1] The CPU was established in 2008 to strengthen the coroner's prevention role and to assist in formulating recommendations following a death. The CPU is comprised of health professionals with training in a range of areas including medicine, nursing, public health and mental health. The CPU may also review the medical care and treatment in cases referred by the coroner as well as assist with research into public health and safety.

[2] 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] Symptoms of a urine infection would be pain or discomfort passing urine (dysuria) and increased frequency of passing small amounts of urine.

[4] A triage category of '3' is assigned to 'potentially life-threatening or severe' conditions in the Australasian Triage Scale (ATS). The maximum waiting time for this triage category is intended to be 30 minutes.

15. Eastern Health records indicate that HJW remained in the care of paramedics until a cubicle became available at 2.05am. She had an intravenous (**IV**) line inserted by paramedics prior to arrival and they administered fentanyl for analgesia whilst waiting.

16. HJW was first attended by an emergency registrar, Dr Gaku Ozawa, at approximately 8.05am. Examination by Dr Ozawa revealed tenderness in the right side of the abdomen and a CT scan of the abdomen was ordered at 8.13am and performed at 10.00am. This demonstrated right-sided emphysematous pyelitis[5] without gas in the substance of the renal tissue (pyelonephritis).

17. Blood tests demonstrated a normal full blood count and a C-reactive protein (**CRP**)[6] of 14.3. HJW's renal function was normal at this time and there was a very mild abnormality in her liver function tests. Urine microscopy demonstrated markedly elevated white cell count in the urine, with red blood cells and bacteria seen. This is consistent with an infection in the urinary tract.

18. Following this assessment HJW remained in Emergency Department and it appears that the intention was to admit her to the ward. She was administered intravenous antibiotics appropriate to her condition at 12.35pm (ceftriaxone) and 2.00pm (gentamicin). Additional antibiotics (meropenem) were given at 10.40pm.

19. During the time waiting for admission to a ward bed, HJW had observations performed. She also had two assessments of a '4AT' score[7] at 3.42am (when it was '2') and at 4.18pm (when it was '0'). There were also multiple brief assessments of HJW's conscious state by nursing staff in the observations over this time, which were all unremarkable.

20. After the initial assessment by Dr Ozawa, there was a further progress note made at 12.04pm which recorded the plan to admit HJW under general medicine and the choice of antibiotics.

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[5] Emphysematous pyelitis is a rare, severe form of urinary tract infection characterised by the presence of gas within the renal collecting system (renal pelvis and calyces), without involvement of the renal parenchyma or perinephric tissues. It is typically caused by gas-forming organisms such as *Escherichia coli* or *Klebsiella pneumoniae* and is most often seen in patients with underlying diabetes mellitus, immunosuppression or urinary tract obstruction. Diagnosis is confirmed via imaging, usually CT scan. It can progress to emphysematous pyelonephritis, a life-threatening condition.

[6] This is a protein produced by the liver and is measured as a non-specific marker of inflammation or infection. Normal level less than 10. It does not diagnose the type or location of the infection or inflammation. Severely elevated levels or more than 100 are often associated with bacterial infection.

[7] The 4AT is a rapid clinical screening tool used to detect delirium and cognitive impairment in hospitalised patients, particularly older adults. It is widely used in emergency departments, acute medical units, and inpatient settings. 0 is normal and delirium or severe cognitive impairment is unlikely. 1 to 3 indicates possible cognitive impairment. More than 4 indicates possible delirium ± cognitive impairment.

An admission note was written by a 'General Medicine' doctor at 4.45pm, but there was no specific comment regarding abnormal observations.

21. No further medical notes were made regarding HJW's condition or nursing notes indicating additional medical input until the MET (medical emergency team) call at 7.47pm.

22. At 7.47pm a MET call was made when HJW's blood pressure fell to 86/54. This was treated by the administration of intravenous fluids. She was also noted to be drowsy at this time. Blood cultures, a venous blood gas, full blood count, and electrolytes were also taken.

23. These blood tests revealed changes in organ function, the white blood cell count and blood film indicated inflammation and/or sepsis and multisystem organ failure. These included:

    (a) low platelet count, band forms, and 'toxic' changes in the white blood cells;

    (b) CRP now elevated at 110;

    (c) renal function markedly reduced with an eGFR of 20 (normal is approximately 90);

    (d) significant new disturbances in the various liver function tests; and

    (e) lactate level of 6.4 mmol/L (more than 2 is abnormal).

24. Following the MET call HJW was transferred to the resuscitation area, had an arterial line inserted to monitor her blood pressure, and was commenced on medication to support her blood pressure. She became agitated and was intubated and placed on a ventilator to support her respiration.

25. HJW was admitted to the Intensive Care Unit (**ICU**) at Maroondah at 12.10am on 10 June 2024. In ICU she had a stent inserted into the right kidney to enhance drainage from the kidney.

26. In the ICU she continued to deteriorate and experienced multiple complications of her disease and its treatment, including ischemic fingers and toes due to the high doses of medications required to support her blood pressure. She had acute kidney failure, requiring CCRT,[8] and also experienced a brain haemorrhage. Her blood cultures grew candida, which is a type of yeast.

[8] Continuous Renal Replacement Therapy (CRRT), a form of renal dialysis.

27. On 19 June 2024, HJW was transferred to the ICU at Box Hill hospital where she failed to respond to further treatment and passed away on 26 June 2024.

Identity of the deceased

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

Medical cause of death

29. As noted above Dr Fronczek considered the causes of death listed in the MCCD were reasonable. I accept Dr Fronczek's opinion.

FAMILY CONCERNS

30. In TSQ's written submission of 4 July 2024, he noted that his mother was a strong, independent and coherent person before presenting to Maroondah Hospital. She had no major issues other than Type 2 Diabetes.

31. She attended Maroondah Hospital with strong right flank pain and following diagnosis of a kidney infection, HJW was commenced on antibiotics.

32. At about 3.00pm on 9 June 2024, TSQ reported to hospital staff that *"she was not looking good",* and they advised him she was on antibiotics.

33. His sister arrived at about 6.00pm later that day, reporting to nurses that something was wrong with HJW. According to TSQ*, "Two nurses came in to check on her and said she was fine. Then, my sister asked her why my mum was not on an IV, and she was told the doctor would need to order it."* At 7.00pm there was a MET call.

34. TSQ stated:

> *Over the space of 3 hours, my mum went into septic shock, and by 11:30 p.m. she was put into a medically induced coma and moved to the ICU. Initially, I was told the induced coma was only to help her feel more comfortable and to avoid having her remove the electrodes again.*
>
> *When she got to Maroondah Hospital, her blood results showed she had no issues, including her kidneys, which were working fine. Whats* [sic] *worse is that, over the next two weeks, Maroondah Hospital kept on changing their story. They initially told us they were looking for an ICU bed from midday on Sunday, but this was not told to*

us or to our mother on the day she was admitted. Instead, I was told she was to be moved to the infectious disease ward, and that they would need to keep her in for the week to make sure she was fine. A few days later, we were told that the plan was always to move her to Box Hill Hospital, but that they did not have a bed available on that day.

I really feel like Maroondah Hospital failed my mother on 8/9th of June which lead [sic] *to her death on the 26th of June.*

CORONERS PREVENTION UNIT REVIEW

Family concerns regarding delayed treatment

35. The CPU provided the following commentary in response to TSQ's concerns regarding delayed treatment during the first few hours following HJW's presentation to hospital:

(a) *For first 11 hours in hospital, HJW had no treatment except for pain relief:* The CPU indicated that both analgesia and anti-emetic medication was administered during this time. These are symptomatic treatments and do not treat an underlying illness. The first medications administered to treat the underlying illness were antibiotics given at 12.35pm and 2.00pm. This was between 11 and 13 hours after arrival and two and a half to six hours after the performance of a CT scan demonstrating significant pathology. Despite HJW being a diabetic, vomiting with reduced oral intake, and having a potentially serious infection diagnosed at about 10.00am, IV fluids were not commenced until the MET call at 7.42pm.

(b) *Received CT scan 11 hours after arrival:* The CT was performed at 10.00am, which was nine hours after arrival and two hours after being seen by the doctor. It is not clear as to what time the treating doctor became aware of the result of the CT scan.

(c) *Blood pressure was already low in the morning and at 10.00am her blood pressure was in the 90s, but nothing was done about it:* The CPU indicated that a low blood pressure (systolic in the 90s) was first recorded at 11.20am. There was no medical review at this time and nursing staff encouraged HJW to drink fluids. Similarly, at 2.08pm, there was no review or other intervention for a blood pressure of 98. The CPU also noted that at 8.26am a rapid pulse rate of 108 and a blood pressure of 100/51 also elicited no review or other response.

(d) *At 6.00pm family attended and found HJW with no monitoring, no IV fluids, no oxygen. Nurses attended but said she was OK:* Observations taken at 6.12pm demonstrated a pulse of 104 and blood pressure of 110/54. There is also a 'check box' comment that HJW did not look unwell and had no new change in behaviour/thinking. The CPU acknowledges that family are often the best judges of cognitive deterioration and that the assessments employed by staff are relatively 'blunt tools' that may not detect more subtle changes in cognition or mental state. The CPU considered that an elevated pulse rate and family concern was an opportunity for medical review.

Statement from Dr Susan Dowling

36. With regard to HJW's prolonged waiting time, Dr Dowling stated:

> *Unfortunately, despite Eastern Health's target of treating Category 3 patients within 30 minutes, and the care provided as above, HJW was unable to be reviewed by medical staff on the night shift due to workload. There is no evidence of deterioration during this time.*

37. Eastern Health was asked about the recording of two blood pressures in the 90s (at 11.20am and 2.02pm) that did not elicit a medical review. Dr Dowling noted that there was nothing in the records to suggest that the emergency registrar was aware of these readings, however nurses had noted that HJW told them that her blood pressure was usually 110 and so they encouraged her to drink fluids.

38. In response to the Court's comment regarding Mean Arterial Pressure (**MAP**), Dr Dowling indicated that *"MAPs are not routinely recorded",* and the two blood pressures in the 90s were the only readings recorded as low before the MET. This is discussed further below.

Eastern Health internal review

39. Dr Dowling indicated that HJW's death was reviewed as part of the Department of Medicine's mortality audit and that the outcome of the review was that no further action was required, that the death was 'expected', and all appropriate treatment was provided. At the time Dr Dowling wrote her statement, it had not been reviewed in the Emergency Department Mortality Audit due to the length of time between discharge from the emergency department and death (17 days).

40. However, the CPU considered that the review of HJW's death as part of the Department of Medicine's mortality audit and the conclusion that *"all appropriate treatment was provided and that her death was expected"* was only valid with regard to her course and treatment after she deteriorated in the Emergency Department, which was 19 hours after arrival. By this time, she had developed sepsis, and her prognosis was already poor.

41. The CPU considered that the review had failed to consider the *unrecognised* deterioration in HJW's observations and the opportunities to address them during the time she was waiting to be admitted.

42. The CPU advised that HJW's condition at the time she arrived at the emergency department was good. Her observations and blood tests were all relatively normal and there was a plan to admit her to the short-stay unit. These were not features associated with a patient who is expected to die and there was no indication that death was an expected outcome at this time.

43. The CPU considered that due to the nature of HJW's illness, the length of time she spent in emergency department, and the rapidity of her deterioration, any prevention opportunities were confined to the emergency department.

44. The CPU also considered that HJW's case should have been referred to Safer Care Victoria under *Category 11, Subcategory 3: Prolonged delay in recognition and/or response to a deteriorating patient resulting in serious harm or death.*

Contributing factors

45. Whilst HJW appears to have deteriorated suddenly and quickly, the CPU considered that there was an opportunity to consider her potential for deterioration and intervene earlier.

46. The CPU recognised the difficult circumstances that existed in the emergency department at the time of HJW's arrival. The prolonged time to offload HJW from the ambulance stretcher to a bed was indicative of ambulance ramping and the prolonged time to see a doctor was likely reflective of medical staff numbers and workload at the time. This would be a common scenario across Melbourne emergency departments.

47. At the time of HJW's arrival her observations were normal, and she had received analgesia from paramedics, and there was no clear indication that her pain was due to infection. She reported no symptoms of fever or chills or symptoms of a urinary tract infection to suggest this.

48. Blood tests initiated by nursing staff and taken at approximately 1.00am were also normal except for some minor and non-specific abnormality of liver function tests. The CRP, a marker of infection and inflammation, was minimally elevated at 14 and would not be taken as an indicator of a serious infection or sepsis at this level.

49. Whilst it was unfortunate that HJW was not able to be seen by a doctor earlier, the CPU advised there was no clear indication to escalate her care prior to being seen by a doctor at 8.00am, and she was yet to be diagnosed with a condition that put her at a risk of sepsis.

Response to abnormal observations and missed opportunities to consider deterioration earlier

50. HJW received observations approximately every hour whilst she waited. Between 1.00am and 8.00am, her observations remained generally stable, although her diastolic blood pressure began to decline.

51. However, over the course of the morning and then afternoon of 9 June 2024 there were four occasions at which observations were outside the parameters that one would consider normal, but which elicited no response or medical review:

    (a) 8.26am: pulse rate 108 and blood pressure of 100/51. No comment or review at this time;

    (b) 11.20am: a low systolic blood pressure of 97. There was no medical review at this time and nursing staff encouraged HJW to drink fluids after learning that her blood pressure was normally 110;

    (c) 2.08pm: a low systolic blood pressure of 98. No review or other comments in records; and

    (d) 6.12pm HJW's observations demonstrated a pulse of 104 and blood pressure of 110/54.

52. Whilst none of these observations reached a level that triggered a MET call, the CPU considered that they represented an alert to potential deterioration, particularly when they became multiple and as such represented opportunities to review HJW.

53. Dr Dowling noted, *"The systolic BP's of 97 at 1120, and 98 at 1402, were the only readings recorded as low on EMR's [electronic medical record] trigger system before the MET with a cut off of 100".*

54. Dr Dowling noted the response of nursing staff to the low blood pressure at 11.20am was:

> *... there is a documented discussion with the nursing staff at 1122, when her blood pressure dipped to 97/44, that her usual systolic BP is 110, and she was encouraged to drink oral fluids to assist in raising her blood pressure.*

55. The CPU considered that asking an unwell patient about their normal blood pressure is not a reliable strategy to help detect deterioration in observations, particularly when the observations for the six to seven hours prior to this had all demonstrated blood pressures significantly above what HJW indicated her 'normal' blood pressure to be. A blood pressure of 97/44 represented a noteworthy change from the 120 to 157 range of systolic blood pressures recorded in the previous several hours.

56. Asking about a patient's usual blood pressure can provide context, but it should never be used as the primary method to assess for deterioration. The CPU advised that objective measurements and trend analysis are far more reliable. Importantly, in conditions like sepsis, relative drops in blood pressure, even within the normal range, may indicate serious illness and warrant prompt escalation. Responding only when observations meet MET call criteria means that opportunities for early assessment, diagnosis, and intervention may be missed.

57. In addition, the CPU advised that encouraging a patient to drink oral fluids to increase a low blood pressure is not a recognised strategy for treating low blood pressure in a patient with an acute illness/infection. Hypotension in the unwell patient with an infection should trigger medical assessment with early escalation of care if needed. Oral fluids are only suitable in mild dehydration or stable patients who are alert and fully oriented, have no vomiting or impaired gastrointestinal absorption.

The significance of changes in diastolic, pulse pressure[9] *and MAP*[10]

58. The medical records indicate HJW's diastolic blood pressure was consistently abnormally low (outside the normal range of 60-90mmHg) from 8.26am until the time of the MET call at 7.42pm.

59. The CPU advised that falling diastolic blood pressure accompanied by a widening pulse pressure is a clinically significant finding in the context of potential early sepsis. This

[9] Pulse Pressure is the numerical difference between systolic and diastolic pressures. Normal is 30 to 40mmHg.
[10] Mean Arterial Pressure (MAP) is Diastolic BP+1/3 (Systolic BP−Diastolic BP).

haemodynamic pattern may indicate a loss of vascular 'tone' due to systemic inflammatory vasodilation, which is a hallmark of the early distributive phase of septic shock.[11]

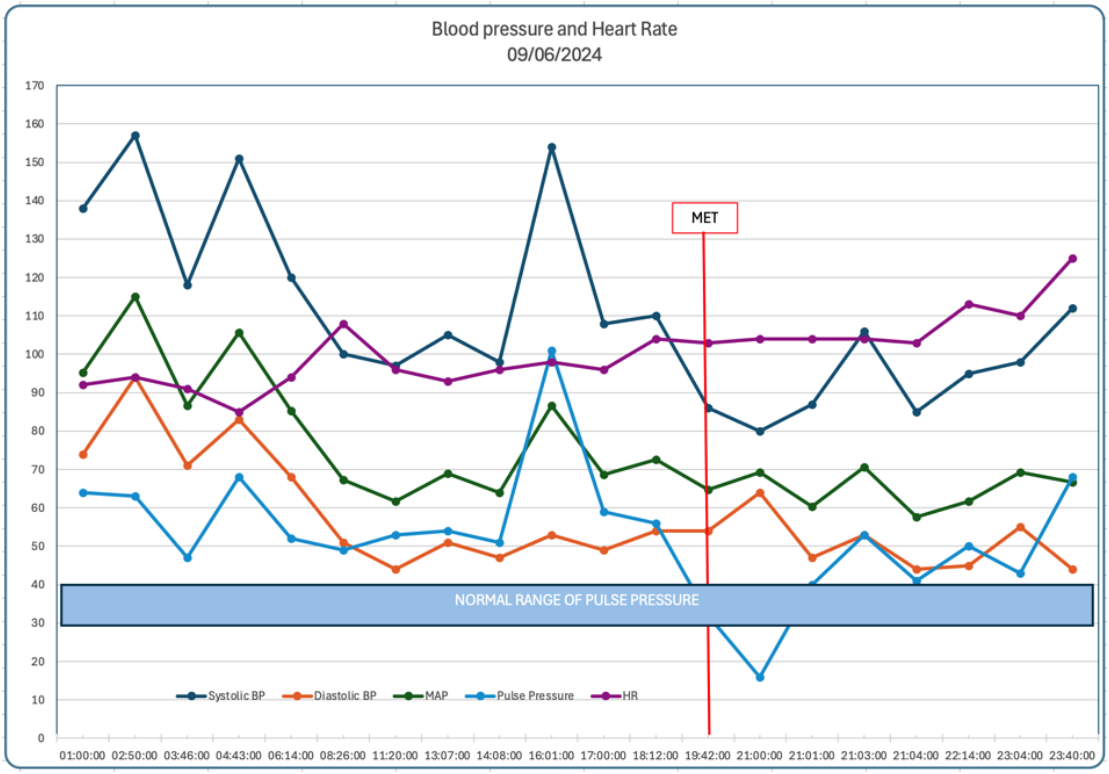
60. MAP and pulse pressure are related but represent different physiological concepts. MAP reflects the average arterial pressure over a full cardiac cycle and is a key determinant of organ perfusion, especially in critically ill patients. A MAP of more than 65 is generally considered necessary to ensure adequate perfusion of vital organs in adults.

61. Pulse Pressure (systolic minus diastolic) reflects the stroke volume and arterial compliance.[12] The normal value is 30 to 40mmHg. A widening (increasing) pulse pressure alongside a falling diastolic pressure may indicate loss of vascular tone, as in early distributive shock, even if systolic pressure remains deceptively normal.

62. The CPU explained that in early sepsis, the body attempts to maintain perfusion through a hyperdynamic state – high cardiac output with low systemic vascular resistance. This state is reflected in a high systolic blood pressure and low diastolic blood pressure – hence a wide pulse pressure. Clinically, this manifests as hypotension (often first seen as a falling diastolic pressure and widening pulse pressure), warm extremities, and bounding pulses – hence sometimes called 'warm shock.' Dr Dowling's description of HJW as having *"warm dry skin and was well perfused with brisk capillary refill"* may represent this.

63. The CPU plotted HJW's observations along with her pulse pressure and MAP. The following graphs demonstrate a consistently widened pulse pressure which was extremely widened (100) at 4.01pm. The MAP trends downward early but remains normal.

[11] The early distributive phase of septic shock refers to the initial stage of septic shock in which the primary problem is widespread vasodilation caused by the body's systemic inflammatory response to infection.
[12] Arterial compliance is a measure of how easily the arteries expand and contract in response to changes in blood pressure. It reflects the elasticity or stretchability of the arterial walls.



64. The CPU advised that widened pulse pressure can serve as a warning for progression to septic shock even if systolic blood pressure appears 'normal.' Failure to appreciate these early warning signs may delay escalation of care and timely initiation of sepsis management protocols, increasing the risk of deterioration, multi-organ failure, or death.

65. The CPU considered that clinicians should be educated to recognise that falling diastolic blood pressure and widening pulse pressure may precede hypotension and may signal early distributive shock in sepsis. However, Dr Dowling's response to the question regarding MAP indicates that this is not routinely considered.

MET call criteria

66. Eastern Health provided their MET Call policy as follows:

MET CALL CRITERIA - ADULTS	
Airway:	Difficulty breathing
Breathing:	RR < 8 or > 30 per min SpO_2 < 90% despite O_2 6L via Hudson Mask
Circulation:	HR < 50 or > 130 per min Systolic BP < 90 mmHg Chest pain – new or unrelenting chest pain
Disability:	Acute change in conscious level Seizure
Other	Staff member is worried about patient condition

67. MET calls are triggered by significant physiological derangement (for example blood pressure less than 90 mmHg, respiratory rate greater than 30, heart rate greater than 130, altered Glasgow Coma Score). Failure to recognise the less severe deterioration earlier and not responding until observations reach 'MET Call' levels means that the patient may have already progressed to severe sepsis or septic shock, with established end-organ dysfunction. Sepsis is a syndrome of progressive organ dysfunction and in order to have the best chance of a successful outcome, interventions must precede physiological collapse.

68. The CPU considered that a more effective approach incorporates sepsis-specific screening and clinician-initiated escalation based on concern, not just numerical thresholds.

69. Whilst HJW did not meet the criteria for a MET call prior to her obvious deterioration at 7.42pm, changes in her observations prior to this ought to have provoked a medical review and consideration of potential deterioration, particularly in light of their significant change from the relatively normal to high blood pressure baseline established at the time of her arrival.[13]

Overall assessment of health care diagnosis / treatment / follow up

70. The CPU considered that HJW's overall care, once she had been seen by a doctor, was deficient in the following areas.

[13] Blood pressure 138/74 at 12.54am and 157/94 at 2.50am.

71. HJW was an older lady with diabetes who presented with vomiting and abdominal pain that was diagnosed as emphysematous pyelitis. Whilst antibiotics were commenced within a couple of hours of this diagnosis being made, no other treatment was provided. In the setting of a vomiting diabetic patient with a significant infection caused by gas-forming organisms in the urinary tract, this ought to have included intravenous fluids. However, none were provided for approximately 19 hours.

72. Whilst HJW was provided with antibiotics to treat her kidney infection, there appears to have been no consideration given to her potential to develop sepsis, even though this would have been a predictably significant risk in a diabetic patient with the pathology present in HJW. There has been no response to 'sub-MET call' changes in HJW's haemodynamic status that could have served as red flags requiring review by a senior clinician. These flags included falls in systolic blood pressure, diastolic blood pressure, widened pulse pressure, and increased heart rate.

73. No medical review occurred at times of abnormal observations. One would anticipate that such a review in this clinical setting would have included the performance of a lactate[14] level.

74. The response of nursing staff to HJW's low blood pressure at one point was to encourage her to drink fluids. In the setting of a diabetic patient who had been vomiting and who was known to have a significant infection, this was not a clinically appropriate action.

75. The CPU acknowledged that the early diagnosis or suspicion of sepsis can be clinically challenging but, in this case, the CPU considered that early physiological changes consistent with the early stages of sepsis developed but were not recognised or escalated in a patient with a known significant infection and underlying medical conditions that increased her risk of sepsis.

76. Records show a progressive fall in diastolic blood pressure with widening pulse pressure, and there were family concerns regarding her mental state – changes that are consistent with early distributive shock. Despite this there was no escalation to a medical response or sepsis-specific review.

[14] Lactate of lactic acid level is a sensitive marker of cellular hypoperfusion and is frequently elevated in sepsis due to impaired oxygen delivery and metabolic dysfunction. Measurement of serum lactate supports early recognition of critical illness and may occur even if blood pressure is normal, particularly in early distributive (septic) shock, and is strongly associated with patient outcomes. It is therefore a time-critical investigation in suspected sepsis and is integral to risk stratification, therapeutic decision-making, and monitoring the adequacy of resuscitation.

77. The CPU noted that Australian sepsis guidelines, including the Australian Commission on Safety and Quality in Health Care (**ACSQHC**) Sepsis Clinical Care Standard (2022),[15] do not specifically mention pulse pressure or diastolic blood pressure as isolated parameters for identifying sepsis. Similarly, no widely used or validated sepsis screening tools include diastolic blood pressure or pulse pressure as criteria. Nevertheless, with regard to sepsis the significance of changes in these parameters would be expected to be common and basic pathophysiological knowledge amongst emergency clinicians.

78. Whilst it was not possible to say with certainty if HJW's death was preventable, it is a commonly held view that survival in sepsis relies upon early recognition and proactive management, which did not appear to have occurred in this case.

SENTINEL EVENT REVIEW

79. In September 2025, Eastern Health were advised of the CPU's advice as outlined above and my intention to make the following recommendations in regard to the management of patients with infections:

(a) if not already in use, Eastern Health to ensure that their electronic medical records system used in clinical areas (Cerner FirstNet) displays[16] observations in a graphical track and trigger[17] format and not in a tabular form;

(b) in patients being treated for suspected or confirmed infections, all episodes of deterioration in observations that enter coloured warning areas of the track and trigger observation chart require a medical review;

(c) remove the clinical discretion of nursing staff recording observations on patients being treated for infection to not inform medical staff of observations that enter coloured zones;

(d) consider formulating a guideline to promote the early performance of a serum lactate level on any patient being admitted/treated for an infection who presents with or

[15] Australian Commission on Safety and Quality in Health Care, Sepsis Clinical Care Standard, June 2022, available at: https://www.safetyandquality.gov.au/sites/default/files/2022-06/sepsis_clinical_care_standard_2022.pdf.
[16] The CPU is aware that this capability is varies with the particular installation of Cerner FirstNet.
[17] In the National Safety and Quality Health Service Standard 8: Recognising and Responding to Acute Deterioration, there is an expectation (Action 8/04) that health services will *"graphically document and track changes in agreed observations to detect acute deterioration over time, as appropriate for the patient"*.

develops abnormal or significant adverse changes in observations, despite being outside MET criteria;

(e) educate emergency department clinicians to recognise that falling diastolic blood pressure and widening pulse pressure may precede hypotension and may signal early distributive shock in sepsis;

(f) review definition of an 'expected death' to include the time spent in and the care received in the emergency department prior to the MET call on the evening of 9 June 2024; and

(g) following this review, refer HJW's death as a *Sentinel Event Category 11, Subcategory 3, prolonged delay in recognising and responding to clinical deterioration* case.

80. On 20 October 2025, Eastern Health informed me that it intended to classify HJW's death matter as a Sentinel Event (Category 11, Subcategory 3 – prolonged delay in recognising and responding to clinical deterioration) and initiate the sentinel event review process.

81. However, Eastern Health also noted that it did not entirely agree with the CPU's advice in relation to diastolic blood pressure and widening pulse pressure as indicators of early distributive shock in sepsis:

> *While we acknowledge that widened pulse pressure has been associated with increased mortality in some critically ill patients, its interpretation in the acute setting of sepsis is complex and nuanced. Pulse pressure is influenced by multiple physiological factors – including stroke volume, cardiac output and vascular tone – and has not demonstrated consistent clinical utility across diverse sepsis populations. Accordingly, we believe this Proposed Recommendation warrants further clinical consideration before we can determine whether to implement it.*

82. On 24 April 2026, Eastern Health informed me that it had undertaken a formal Sentinel Event (**SAPSE**) review and provided me with a copy.

SAPSE review

83. The SAPSE review made the following findings:

(a) the atypical patient presentation with predominant abdominal pain, who was afebrile, did not initially display overt signs of infection;

(b) early physiological changes such as hypotension and subtle changes in mental status were an opportunity to trigger earlier escalation, even when diagnostic uncertainty remained despite the patient not meeting sepsis or MET criteria; and

(c) existing Clinical Guidelines did not direct prompt initiation of intravenous fluid treatment for the clinical scenario. Timely initiation of intravenous fluids is an expected component of management of a diabetic patient with infection and inadequate oral intake.

84. The following recommendations were made:

(a) improve Emergency Department and General Medicine clinician awareness of the potential presence and associated risks of occult serious infections in patients presenting to the Emergency Department. There was an intention to present this case to both Emergency Department and General Medicine multidisciplinary Mortality and Morbidity (M&M) meetings. The presentation and discussion will focus on shared learning regarding atypical presentations of occult infection, patient risk factors for occult and/or severe sepsis, and strategies to reduce diagnostic and management delays in future presentations involving serious occult sepsis;

(b) early physiological changes, including hypotension and subtle alterations in mental status, represented missed opportunities for earlier local escalation, despite the patient not meeting formal sepsis or MET criteria. The findings and learnings from this case were to be presented to the Safer Care Victoria Sepsis Collaboration – Health Service Working Group;

(c) strengthen system processes to ensure timely intravenous fluid resuscitation for Emergency Department patients with inadequate oral intake and suspected or confirmed serious infection and/or septic shock. The Sepsis Recognition and Management Guideline was updated in December 2025 to incorporate the statewide Six Actions for Sepsis Management, including explicit requirements for timely intravenous fluid resuscitation. Eastern Health, through the SCV Sepsis Collaboration Project, will continue targeted education and training on the revised guideline for Emergency Department and General Medicine clinical staff to support consistent understanding and embedding of these expectations into clinical practice; and

(d) strengthen clinical practice, communication, and escalation processes within the Emergency Department and across teams, including improved recognition and

response to consumer and family concerns. A system-level review will be undertaken to identify barriers and opportunities related to consumer-expressed concern and escalation of care and examine existing processes for recognising and responding to consumer concern, the effectiveness of current escalation pathways, and relevant system enablers and barriers.

Response to proposed coronial recommendations

85. In relation to my proposed recommendations as outlined at paragraph 79 above, Eastern Health advised the following:

(a) observations in a graphical track and trigger format was not required as the functionality described is already in place. The Oracle Health (formerly Cerner) EMR used across Eastern Health provides graphical track-and-trigger displays for patient observations. Observation results are presented graphically with colour-coding to highlight values meeting MET criteria or medical review thresholds. When thresholds are reached, automated on-screen prompts alert clinical staff. Clinical education and onboarding emphasise the use of these graphical views as the preferred method for reviewing observations. While this functionality and escalation framework was established at the time of HJW's presentation, the SAPSE review identified opportunities to strengthen the consistency of escalation and application of track-and-trigger principles in practice;

(b) medical review for episodes of deterioration in observations that enter coloured warning areas of the track and trigger observation chart is already in place and a recommendation was not needed. Under Eastern Health's Medical Emergency Team Guideline and Urgent Medical Review for Clinical Deterioration Guideline, any episode of clinical deterioration meeting MET criteria or medical review thresholds must be escalated for medical review. These requirements apply to all patients, including those with suspected or confirmed infection. The SAPSE review identified that, despite these policies being in place, earlier escalation did not occur consistently in this case. Eastern Health has addressed this through reinforcement of escalation expectations, education, and broader sepsis improvement initiatives;

(c) removal of clinical discretion of nursing staff was already in place. Eastern Health's escalation policies do not permit discretion to withhold escalation when observations meet MET or medical review criteria. These obligations apply to all patients and all

diagnoses. Consistent with the SAPSE review findings, Eastern Health recognised that opportunities exist to strengthen adherence to escalation processes in practice. These issues have been addressed through system reinforcement and education;

(d) a guideline to promote the early performance of a serum lactate level was not required as the intent of the recommendation is already met. Eastern Health's Sepsis Recognition and Management Guideline, EMR Sepsis Care Pathway and Adult Sepsis PowerPlan include recommendations for timely serum lactate measurement following sepsis recognition. At the time of HJW's presentation, lactate measurement was limited by reliance on laboratory testing. This has since been addressed through commissioning of a blood gas analyser in the Maroondah Emergency Department in November 2024, enabling point-of-care lactate testing. The SAPSE review reinforced the importance of timely sepsis assessment and escalation, and these learnings have informed guideline updates, education, and pathway use. As such, no further guideline development is required to meet the intent of the proposed recommendation;

(e) Eastern Health did not accept my proposed recommendation to educate emergency department clinicians to recognise that falling diastolic blood pressure and widening pulse pressure may precede hypotension and may signal early distributive shock in sepsis. Eastern Health accepted the SAPSE review finding that early and subtle physiological changes represented missed opportunities for earlier escalation in this case and recognises the importance of clinician education in the early recognition of clinical deterioration and sepsis risk. As noted by the CPU, current Australian sepsis guidelines, including the ACSQHC Sepsis Clinical Care Standard (2022), do not identify pulse pressure or diastolic blood pressure as *standalone markers* of sepsis or deterioration. It was noted that these parameters are not included in validated sepsis screening tools used in emergency department practice across Victoria. Eastern Health noted that pulse pressure is influenced by multiple physiological variables and is not a reliable isolated indicator of early distributive shock outside critical care settings. Introducing education focused specifically on pulse pressure and diastolic blood pressure as sepsis markers would be difficult to standardise, measure and sustain, and risks detracting from guideline-based approaches to sepsis recognition. Eastern Health supports continued education on early recognition of deterioration and sepsis in line with national standards but does not support the introduction of this specific educational requirement;

(f) Eastern Health accepted the recommendation to review the definition of 'expected death' to include the time HJW spent in and the care received in the emergency department. The determination of whether HJW's death was expected was reviewed as part of the SAPSE review process, which considered the entirety of her clinical course, including her presentation to the emergency department, the care provided prior to the MET call on 9 June 2024 and subsequent deterioration. Applying the Victorian prospective expectation test, the review concluded that HJW's death was not expected at the time of presentation, during early deterioration, or throughout most of her ICU admission, with an expected death determination arising only following the documented decision to transition to end-of-life care on 25 June 2024. The review reinforced the importance of applying the prospective expectation test prospectively and distinguishing it from considerations of preventability; and

(g) Eastern Health accepted the recommendation to refer HJW's death as a Sentinel Event Category 11, Subcategory 3, prolonged delay in recognising and responding to clinical deterioration case.

86. Eastern Health also advised it is also actively participating in the Safer Care Victoria Adult Sepsis Collaborative and has implemented targeted education and improvement initiatives supported by executive sponsorship.

FINDINGS AND CONCLUSION

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

(a) this death was a reportable death;

(b) the identity of the deceased was HJW, born 1954;

(c) the death occurred on 26 June 2024 at Box Hill Hospital, 8 Arnold St, Box Hill, Victoria, from urosepsis secondary to anuric acute renal failure and corona radiata infarct. Contributing factors were emphysematous pyelitis and candidaemia; and

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

88. The available evidence and advice from the CPU indicate that there was no clear indication to escalate HJW's care before 8.00am on 9 June 2024.

89. After that time, there were several abnormal observations, but not so abnormal as to trigger a MET call. These included falls in systolic blood pressure, diastolic blood pressure, widened pulse pressure, and increased heart rate. HJW's family also raised concerns with nursing staff. Recognition of these signs may have provided an earlier opportunity for review and intervention.

90. Eastern Health did not accept my proposed recommendation to educate emergency department clinicians to recognise that falling diastolic blood pressure and widening pulse pressure may precede hypotension and may signal early distributive shock in sepsis because pulse pressure or diastolic blood pressure are not recommended *standalone markers* of sepsis or deterioration. I note that the CPU considered pulse pressure or diastolic blood pressure as possible warnings and did not go so far to categorise them as standalone markers. While I will not make a formal recommendation in this regard, I am satisfied that falling diastolic blood pressure and widening pulse pressure *may* be a signal of early distributive shock in sepsis and should therefore be considered during assessment, alongside other observations and investigations.

91. I note that the SAPSE review found early physiological changes, including hypotension and subtle alterations in mental status, represented missed opportunities for earlier local escalation.

92. I acknowledge Eastern Health has indicated it intends to improve Emergency Department and General Medicine clinician awareness of the potential presence and associated risks of occult serious infections.

93. I am otherwise satisfied that Eastern Health has addressed my other proposed recommendations which negates the need for me to make formal recommendations.

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

Pursuant to section 73(1A) of the Act, I order that this finding be published (in redacted form) 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:

TSQ, senior next of kin (copy to Shine Lawyers)

Eastern Health

Signature:

Coroner Sarah Gebert

Date: 01 July 2026

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.