

Delayed diagnosis of sepsis in older woman

Introduction

1. This Office received a referral from the Coroner regarding the care provided to Mrs A by Health New Zealand | Te Whatu Ora Waitaha Canterbury (Health NZ), who, sadly, died from urosepsis.¹ The referral expressed concern around the delayed recognition and subsequent management of Mrs A's urosepsis. Health NZ completed an adverse event review ('the AER') into Mrs A's care, which also found delays in the recognition and treatment of urosepsis.

Background

2. Mrs A, 65 years old at the time of the events, presented to Christchurch Hospital's Emergency Department (ED) at 8.16am on 27 January 2022 with acute flank² pain. Mrs A had a history of high blood pressure (BP), Crohn's disease³ with a previous bowel resection (removal) and small bowel obstructions,⁴ and a kidney stone found in 2019.
3. Following assessment in the ED, Mrs A was diagnosed with renal colic.⁵ She received multiple doses of opioid⁶ pain relief and immediate-release doxazosin 2mg (at 11.55am) to treat her elevated BP, which was in line with local guidelines. At 12.00pm Mrs A was transferred to the Urology Unit for medical management of her renal colic. She received regular opioid pain relief, and anti-emetics to treat her nausea. Mrs A's vital signs (observations) were measured every four hours in accordance with the Early Warning Score⁷ (EWS) policy (dated 2021). On admission to the Urology Unit, Mrs A's EWS⁸ was 0 and she did not have a fever.
4. At 8.57pm on 27 January 2022, Mrs A's EWS score increased to 3 due to low BP (hypotension) (96/54mmHg).⁹ This improved temporarily overnight with minimal intervention. However, from 7.49am on 28 January 2022, Mrs A experienced prolonged hypotension that did not improve.
5. At the time, medical reviews suggested that Mrs A's hypotension may have been due to the effects of the doxazosin and opioid analgesia. Health NZ said that Mrs A's BP was being treated and monitored on this basis. However, the AER noted that the onset of the

¹ A life-threatening syndrome caused by a urinary tract infection that leads to organ dysfunction.

² Area on the sides and back of the abdomen, between the lower ribs and hips.

³ Inflammatory bowel disease.

⁴ Blockage in the small or large intestine that prevents food and liquids from moving through the digestive tract.

⁵ Intense pain that occurs when a kidney stone obstructs the urinary tract.

⁶ Pain relief used to treat moderate to severe pain.

⁷ The EWS is a nationally standardised scoring tool that assists with the recognition of a patient at risk of clinical deterioration and supports clinical decision-making.

⁸ The score is an aggregate score calculated from the seven core vital signs. Score of 0 = normal, score 1–5 = early sign of clinical risk, score 8–9 = likely to deteriorate rapidly, and score 10+ = immediately life-threatening critical illness.

⁹ Normal blood pressure is around 120/80mmHg.

hypotensive effects from immediate-release doxazosin are likely to occur within one to two hours, with the peak effects occurring within one to six hours post administration. The AER also noted that Mrs A's bowel problems may have reduced absorption and delayed the onset of the effect.

6. Throughout the day, Mrs A received intravenous fluid boluses¹⁰ as the primary intervention for her hypotension. However, her BP did not respond to this adequately. The AER found that a lack of response or improvement from the fluid should have triggered a challenge of the diagnosis and consideration of other possible differential diagnoses or causes. However, this did not occur.
7. Clinicians also noted that Mrs A was 'chirpy' and 'chatty' throughout the day and that she did not have a fever. Although clinical notes do record instances of Mrs A shivering, which is a symptom of sepsis, the AER found that clinical staff exhibited anchoring bias¹¹ — that is, there was an over-reliance on the absence of a fever, which normally is present in urosepsis, despite the lack of improvement over the day.
8. The EWS chart shows several incomplete observations over 28 January 2022, and the total EWS was not recorded, which is not in line with the EWS policy.¹² The AER states that the risk of entering partial or incomplete observations is that they do not generate a score or colour, which would trigger the actions within the mandatory escalation pathway. In addition, although some of the observations sat in the blue or red zones¹³ of the EWS chart, the mandatory escalation pathway was not always followed as per the EWS policy.¹⁴ While the nurse in charge, the house officer, and the registrar were informed of Mrs A's deterioration, there is no evidence of a senior medical officer consultation (after the initial ward round at 8am), consideration of involvement of the Intensive Care Unit (ICU) team, or a rapid response call being made when Mrs A's observations were in the red and blue zone, as required by the mandatory escalation pathway. The need for ICU and consultant urology review when a patient is haemodynamically unstable¹⁵ is reiterated in the management of renal colic protocol (dated May 2019) and the management of urosepsis policy (dated May 2019).
9. The EWS policy states that the chart does not replace clinical judgement and that a medical review should be considered if there is concern in the absence of a high EWS score. The AER found that, while there were multiple incomplete observations and an absence of an overall EWS score, the trend in the recorded observations demonstrated significantly abnormal blood pressures, with increasing changes in the heart rate and a rise in the respiratory rate. The mandatory escalation pathway also notes that when an observation is in the red or blue

¹⁰ A rapid fluid injection into the vein.

¹¹ A type of cognitive bias that makes one rely on the initial pieces of information received. This leads to insufficient adjustments from the initial anchor, skewing judgement and decision-making processes.

¹² The EWS policy states that all seven vital signs are to be recorded to obtain an accurate EWS score.

¹³ A vital sign in the red zone (regardless of the total EWS score) demonstrates the likelihood of rapid deterioration, and a vital sign in the blue zone demonstrates the likelihood of an immediately life-threatening critical illness.

¹⁴ There were no modifications to the escalation pathway.

¹⁵ The circulatory system's inability to maintain adequate BP and blood flow effectively to deliver oxygen and nutrients to organs.

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zone, observations must be measured every 15 minutes. This did not occur. The AER notes that there was a loss of situational awareness as the day progressed.

10. The AER also found that there was an omission of concurrent medical documentation in the progress notes or deteriorating patient clinical review templates when reviews were undertaken by the medical team. Clinical records confirm this finding.
11. Between 7.33pm and 8.48pm on 28 January 2022, Mrs A's EWS was 19. This triggered a deteriorating patient review, which subsequently initiated further interventions such as taking urgent blood specimens, commencement of intravenous antibiotics, ICU consultation, and a urology consultant review. At this stage, it was suggested that Mrs A's diagnosis was likely urosepsis, and it was agreed that she would need surgery urgently. Unfortunately, Mrs A deteriorated during the procedure and passed away a few days later. Health NZ expressed sincere condolences to Mrs A's family for Mrs A's passing.

Independent clinical advice

12. Independent clinical advice was obtained from urologist Dr Ian Mundy (Appendix A). Dr Mundy found the following departures from the accepted standard of care:
 - Attribution of hypotension solely to the use of doxazosin and opioid use on 28 January 2022 = moderate departure;
 - Management of hypotension on 28 January 2022 = severe departure;
 - Lack of adherence to EWS mandatory escalation pathway = **severe** departure; and
 - Lack of adherence to urosepsis policy and renal colic protocol = **severe** departure.

13. On the basis of Dr Mundy's advice and the AER undertaken by Health NZ, I proposed that the Health and Disability Commissioner (HDC) find Health NZ in breach of Right 4(1)¹⁶ of the Code of Health and Disability Services Consumers' Rights (the Code). Health NZ accepted my breach proposal but did not accept that the failures in this case were as severe as Dr Mundy has opined.

Responses to provisional report

14. Mrs A's son, Mr B, and Health NZ were provided with an opportunity to respond to the provisional report. Mr B said that all he wanted was an apology from Health NZ for the heartache his family experienced. Health NZ accepted the breach finding.

My decision — breach

15. At the outset, I express my sincere condolences to Mrs A's family for their loss.
16. Having reviewed all the available information, including the clinical advice and the AER, I consider that Health NZ failed to provide Mrs A with a reasonable standard of care. I have carefully reviewed the AER in conjunction with all other evidence, and I concur that there was a failure to recognise urosepsis in a timely way, which subsequently led to a lack of appropriate treatment being provided to Mrs A. In my opinion, while the initial treatment

¹⁶ The right to have services provided with reasonable care and skill.

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of intravenous fluid therapy was reasonable, this was no longer appropriate after Mrs A failed to improve and when her other vital signs became deranged. I agree with Dr Mundy that not all presentations of sepsis include a fever, particularly in older patients.

17. In addition, I am critical of Health NZ's failure to follow its mandatory escalation policy, the urosepsis policy, and the renal colic protocol. Had these policies been adhered to, the delay in the diagnosis of urosepsis may have been avoided.
18. For the reasons described above, I find Health NZ in breach of Right 4(1) of the Code.
19. In making my decision, I acknowledge Health NZ's view that the departures were not as severe as Dr Mundy has opined. While this may be the case, ultimately there were multiple failings by Health NZ, which when considered cumulatively, amount to a breach of the Code.

Changes made

20. Health NZ stated that it has made the following changes:
 - a) It amended the Urology Service Renal Colic Clinical Pathway to highlight the need to consider an alternative diagnosis if a patient has delayed persistent hypotension.
 - b) Urology staff have completed the HealthLearn sepsis education package as refresher education. Health NZ said that all new staff will undertake the HealthLearn Sepsis education package.
 - c) It plans to complete a refresher education session for Urology nursing staff on the EWS pathway and documentation of observations.
 - d) It rolled out the national sepsis action plan, which includes a focus on training in sepsis recognition, use of critical language, and clinical tools to guide resuscitation. The Urology Unit will be part of this rollout.
 - e) The Urology Unit considered trialling a prototype dashboard to provide clinicians with an 'at a glance' view of a patient's vital signs and EWS to enhance visibility of patients at risk of deterioration throughout the hospital and local area. In response to the provisional decision, Health NZ said that this has proved not to be a workable solution.
 - f) It reviewed and updated the clinical notes used for deteriorating patients to ensure that clinical information is recorded.
 - g) It plans to add an additional functionality to the digital Adult EWS pathway to reinforce the expected escalation pathway.

Recommendations and follow-up actions

21. I recommend that Health NZ Waitaha Canterbury provide a written apology to Mrs A's family for its breach of the Code. The apology is to be sent to HDC, for forwarding to Mrs A's family, within three weeks of the date of this report.
22. I recommend that Health NZ Waitaha Canterbury provide confirmation that the recommendations outlined in paragraph 20c) and g) have been completed. Evidence that the recommendations have been met should be provided to HDC within three months of the date of this report.

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23. I recommend that Health NZ Waitaha Canterbury use this case as a basis for developing education/training for staff on diagnosing urosepsis and on the importance of medical documentation. Evidence confirming the content of the education/training (eg, training material) and delivery (eg, attendance records) is to be provided to HDC within six months of the date of this report.
24. An anonymised copy of this report (naming only Health NZ Waitaha Canterbury and my clinical advisor) will be placed on the HDC website (www.hdc.org.nz) for educational purposes and forwarded to Te Tāhū Hauora Health Quality & Safety Commission.
25. A full copy of this report will be provided to the Coroner.

Nāku iti noa, nā

Carolyn Cooper
Deputy Health and Disability Commissioner

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Appendix A: Independent clinical advice to Commissioner

The following independent clinical advice was obtained from urologist Dr Ian Mundy:

'Dear Commissioner

I consider that there has been a departure from the standard of care provided to Mrs [A] by Te Whatu Ora Waitaha Canterbury. This will be expanded upon in the answers to your questions.

1. The appropriateness of the initial diagnosis of hypotension on the morning of 28 January 2022.

The interpretation of the clinical sign of hypotension was incorrect, which led to a delay in the diagnosis of sepsis. It was not appropriate to attribute the hypotension solely to the use of the alpha blocker doxazosin and the use of opioids. It is well described that while septic patients often have a fever, this is not always the case. Some patients with sepsis are normothermic (afebrile) and some septic patients are hypothermic. This is especially true in elderly patients in whom sepsis can occur without a fever.

The absence of fever does not exclude sepsis.

Mrs [A] had presented with an acutely obstructed kidney, she had been tachycardic (increased heartrate) since 23:03 hrs the previous evening, there were three references in the nursing progress notes to Mrs [A] feeling cold and shivery or rigoring overnight, and so the sudden onset of hypotension should have prompted consideration of sepsis as the most likely diagnosis even though she was afebrile.

The Christchurch Urology department's own *Management of Urosepsis* protocol states that 'There should be a low threshold for suspecting urosepsis for any patient who is febrile or describes rigors' (section 1.1 of the Urosepsis policy)

In this situation I think most clinicians would have considered sepsis as the most likely explanation for the sudden onset of hypotension in a tachycardic patient, and so there has been a departure from the standard of care which I would consider at least moderate.

2. The reasonableness of the management Mrs [A]'s hypotension over 28 January 2022.

The management of Mrs [A]'s hypotension was based on an incorrect diagnosis and so although the initial step of giving IV fluids was entirely appropriate and correct, as sole management alone, this was not reasonable.

The failure of Mrs [A] to improve with a fluid challenge after an hour or so should have prompted re-evaluation to determine if another diagnosis was possible. Had the possibility of sepsis been recognized earlier, Mrs [A] would have received antibiotics much earlier in the day and would have been taken to the operating theatre sooner for placement of a ureteric stent.

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In the situation where a hypotensive, tachycardic patient with an acutely obstructed kidney fails to respond to a fluid challenge in a timely fashion, most clinicians would have a low threshold for starting antibiotics and arranging for urgent drainage of the obstructed kidney.

In Mrs [A]’s case there has been a departure from the standard of care which I would consider severe.

3. Appropriateness of actions taken when the treatment plan of administering intravenous fluids failed to improve Mrs [A]’s condition.

The actions taken when the treatment plan of administering intravenous fluids failed to improve Mrs [A]’s condition were not appropriate.

As pointed out in the answer to Question 2, the failure of Mrs [A] to improve with an intravenous fluid challenge after an hour or so should have prompted re-evaluation to determine if an alternative diagnosis was possible.

The escalation pathway of the early warning score (EWS) tool and the department’s Urosepsis policy were not followed. During an eight-hour period from 07:48, Mrs [A] had her blood pressure measured on six occasions. On five occasions the systolic blood pressure was in the red zone on the EWS tool and – according to the mandatory escalation pathway – this should have triggered a Registrar bedside review within 20 minutes, discussion of the case with a senior specialist, an increase in frequency of recorded observations to a minimum of every 30 minutes, and contact with the ICU outreach if there was no improvement.

On one occasion the systolic blood pressure was in the blue zone of the EWS tool and according to the mandatory escalation pathway this should have triggered immediate ICU outreach review.

The Urology department’s *Management of Urosepsis* policy was not followed. Mrs [A] was haemodynamically unstable and did not respond to simple measures and so ICU should have been involved as per bullet point 5.9 in the *Management of Urosepsis* document.

The accepted practice is to follow the mandatory escalation pathway of the EWS tool and so there has been a departure from the accepted practice which I would consider severe.

4. The adequacy of the *Renal Colic Clinical Pathway*, *Management of Renal Colic* and *Management of Urosepsis* policies.

The *Renal Colic Clinical Pathway*, *Management of Renal Colic*, and *Management of Urosepsis* documents are all very detailed, comprehensive and of a high standard.

5. Whether the *Renal Colic Clinical Pathway*, *Management of Renal Colic* and *Management of Urosepsis* policies were appropriately followed.

The *Management of Renal Colic* protocol was not followed. The Consultant Urologist should have been phoned earlier in the day about the persistently low systolic blood pressure because the blood pressure readings were in the red and blue zones of the EWS tool, which should have activated ICU involvement (section 3.6 of the Renal Colic protocol).

The *Management of Urosepsis* protocol was not followed. Mrs [A] was haemodynamically unstable and had not responded to simple resuscitation and so ICU should have been involved much earlier (section 5.9 of the Urosepsis protocol).

Similarly, as with the *Management of Renal Colic* protocol, the urology consultant should have been rung much earlier because the low systolic blood pressure should have activated ICU involvement (5.10 of the Urosepsis protocol).

These Urology department policies were not appropriately followed and so there has been a departure from the standard of care which I would consider severe.

6. Additional comment

Many organisations have published guidelines on the recognition and management of sepsis, including Best Practice Advocacy New Zealand (www.bpac.org.nz/guidelines), whose sepsis guidelines are based on those published by the UK's National Institute for Health and Care Excellence (NICE).

There is a common message that is repeated in all of these guidelines: Sepsis is difficult to diagnose with certainty, and fever is not present in all cases. The signs and symptoms of sepsis can be very non-specific and can be missed if clinicians do not think 'could this be sepsis? If you don't think about it, you will miss it.'

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