HEALTH & DISABILITY COMMISSIONER
TE TOIHAU HAUORA, HAUĀTANGA

Missed diagnosis of ruptured abdominal aortic aneurysm

1. On 20 June 2022, the Health and Disability Commissioner (HDC) received a referral from the Coroner about the care provided to Mr A by Health New Zealand | Te Whatu Ora Waikato (Health NZ). The matter was referred following Mr A's death from a ruptured abdominal aortic aneurysm[1] (AAA) on Day2 June 2020. Dr B, an Emergency Department (ED) consultant from Health NZ, told the Coroner that a diagnosis of AAA was not considered during Mr A's initial ED presentation of Day1 June 2020.

Information gathered

2. Mr A, aged 82 years at the time, had a history of diabetes, prostate cancer, diverticular disease,[2] and in 2010 an infrarenal[3] AAA found incidentally in a CT scan of the abdominal and pelvic area. On 14 April 2020, Mr A was referred to the Vascular Outpatient Department at Health NZ as the AAA had increased in size. A General Surgery Department letter dated 28 April 2020 recorded that Mr A had an AAA and that he had been referred to the Vascular Department for ongoing monitoring and treatment.

3. In the early morning of Day1 June 2020, an ambulance was called to attend to Mr A as he had been unable to get up after he had been on his hands and knees working under his kitchen bench. He was found to be clammy, nauseated, and pale, and he had progressive hip pain. The ambulance care summary recorded that Mr A had a medical history of 'vascular disease, chest aneurysm,[4] leaking abdomen' and that he was given medications to treat his pain and nausea. He was transported to Waikato Hospital's ED for treatment.

4. On his arrival at the ED, an ED nurse completed an assessment and recorded that Mr A had a painful left hip, with pain radiating across his lower back. Health NZ completed an adverse event review (AER), which found that staff did not recognise the AAA as being a possible cause for Mr A's sudden severe pain. The AER states that patterns of pain referable to AAA vary widely related to the diameter and position of the aneurysm and whether it has ruptured or is contained. While typically the pain is located in the abdomen, back pain can also occur, particularly when the AAA is near the renal arteries.

5. The ED nurse recorded in the ED pathway that Mr A had a history of 'AAA [and] extensive diverticular disease'. The AER states that the CT scans from May 2010 and March 2020 were available to clinicians on Health NZ's electronic patient record. Vital signs were measured at 10.40am, and Mr A's blood pressure was found to be low at 91/51mmHg.[5] The ED pathway

[1] A bulging dilation or ballooning in the wall of a blood vessel, usually an artery, due to weakness or degeneration that develops in a portion of the artery wall.
[2] A condition characterised by small pouches in the colon.
[3] Below the kidneys.
[4] A weak or expanded part of the artery, resembling a bulge in a balloon.
[5] The AER notes that a normal blood pressure for an older person is around 140/90mmHg.

noted an early warning score (EWS)[6] of 2 at 10.40am, and all other vital signs were stable. At 1.20pm Mr A's vital signs were re-measured, and his blood pressure remained low at 106/53mmHg. Clinical records do not state whether the persistent low blood pressure was escalated to medical staff.

6. A note on the ED pathway document[7] states, 'abdo[men]/back pain > 55 years (?AAA)' under the 'red flags' section. However, the AER found that the ED nurse did not communicate any concerns regarding Mr A's low blood pressure and his history of AAA to medical staff.

7. At 3pm, Mr A was seen by an ED house officer (a junior doctor), Dr C. Dr C completed an assessment, noting Mr A's clinical history and presenting complaint. The physical examination noted that Mr A's chest was clear, his abdomen was soft and non-tender, his blood pressure was 106/53mmHg, and that he looked well and was alert and orientated. Dr C told HDC that Mr A's blood pressure had remained stable throughout his ED stay and that Mr A had some pain that was reproducible on movement of the left hip. Dr C said that this made him think that Mr A had suffered a musculoskeletal injury to the left hip. Dr C recorded that Mr A '[l]ikely [had a] left hip sprain'. No differential diagnoses are listed. The plan was to complete an X-ray of the left hip and, if this was clear, to discharge Mr A.

8. The AER found that there was a missed opportunity to identify whether a rupture of Mr A's AAA was, or was not, the cause of his sudden severe hip and back pain, and consequently there was a missed opportunity to provide earlier management of the AAA. The AER notes that had this occurred, an earlier endovascular repair[8] may have been undertaken.

9. There is conflicting information as to whether medical staff had been aware of Mr A's history of AAA. Mrs A said that at no point was an AAA mentioned during the admission of Day1 June 2020. The medical assessment completed by Dr C did not document the AAA diagnosis. Statements to the Coroner and HDC by Dr B, a consultant in the ED, indicate that he was not aware of the AAA; however, Dr C said that Dr B had mentioned an AAA diagnosis to him. The AER notes that Dr C could not recall being informed of the AAA diagnosis. In contrast, the AER also noted that Dr D, an ED registrar, had mentioned the diagnosis of an AAA to Dr C; however, when questioned by HDC, Dr D had no recollection of the events. In response to HDC's information request, Dr C acknowledged that the AAA diagnosis had been documented on the ED pathway; however, he told HDC that an AAA rupture was not high on his list of differential diagnoses as Mr A's presentation and symptoms were not in keeping with the training he had undertaken on AAA. Dr C said that an AAA rupture is often a dramatic presentation whereby the patient appears unwell with haemodynamic instability[9] and abdominal and back pain, and Mr A's presentation was not in keeping with this.

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[6] The EWS is calculated from routine vital sign measurements. This is used to detect clinical deterioration. The Health Quality & Safety Commission (HQSC) guidelines on the EWS advises staff to consider increasing the vital sign frequency for an EWS of 2 (see Vital_sign_chart_user_guide_July_2017_.pdf).

[7] This note was not written by a staff member but rather was a part of the ED pathway document.

[8] A minimally invasive procedure performed inside blood vessels to treat vascular disease.

[9] A condition characterised by unstable blood flow and inadequate circulation, resulting in insufficient blood flow to vital organs.

10. Following the ED assessment by Dr C, an X-ray was completed, which Dr C discussed with the radiology registrar. Dr C recorded that the X-ray showed an old bone fragment and very subtle cortical change to the left hip. However, given that Mr A was able to mobilise, it was unlikely to be a fracture. Dr C told HDC that the X-ray changes were not significant. The AER states that no hip or pelvic cause for Mr A's pain was found on the X-ray. In addition, the AER notes that the left leg was of a normal length and was not rotated; the spine, hip joint and flanks were not tender; and the left leg had a full range of movement and normal power.

11. Health NZ's ED Orientation Manual states that junior doctors are to work in consultation with a departmental consultant. Health NZ said that Mr A's care was discussed with Dr B, which is routine when junior medical staff see patients. Dr C said that he reviewed Mr A's history and examination findings, and then Dr B reviewed the electronic records and radiology records on file. Dr C said that Dr B looked at Mr A's previous CT scans and commented on the AAA. In contrast, Dr B said that he does not recall discussing the AAA or being informed about the vital signs. The clinical records contain no documentation of the discussions that were held with Dr B. Health NZ said that Dr B did not examine Mr A personally, which is accepted practice when no concerns are raised.

12. The AER also indicates that Dr D was involved in Mr A's care. However, the clinical records contain no documentation of the discussions held with Dr D. In response to HDC's information request, Dr D told HDC that he cannot recall being involved in Mr A's care.

13. At 4.25pm on Day1 June 2020, Mr A was discharged with safety-netting advice to return to the ED if the pain worsened or did not improve. Mrs A said that Mr A continued to experience pain on discharge and had difficulty mobilising.

14. Around 12 hours after Mr A's discharge, he re-presented to the ED due to a rupture of his AAA. Sadly, Mr A deteriorated and passed away on Day2 June 2020.

Independent clinical advice

15. Independent clinical advice was sought from an emergency medicine specialist, Dr Martin Watts (Appendix A). Dr Watts identified cumulative severe departures from the accepted standard of care with respect to the lack of consideration of differential diagnoses, the inadequate history taking, the lack of examination of the vascular system, and the failure to document a previous history of known AAA following the medical assessment.

Responses to provisional report

16. Mrs A was given an opportunity to comment on the provisional report. She said that she feels validated knowing that Mr A did not receive appropriate care but that nothing changes the outcome for Mr A. She also said that she was not given accurate information from Health NZ when they met with her.

17. Health NZ was given an opportunity to comment on the provisional report. Health NZ said that it has reviewed the decision, recommendations, and follow-up actions and has no other comments to make.

Decision: Health NZ — breach

18. I express my sincere condolences to Mrs A for her loss.

19. After carefully reviewing all the information on file, including the clinical notes, provider responses, and Health NZ's AER, I consider that Health NZ did not provide a reasonable standard of care to Mr A and breached Right 4(1)[10] of the Code of Health and Disability Services Consumers' Rights (the Code). A diagnosis of a ruptured AAA was not considered during Mr A's ED presentation on Day1 June 2020. I concur with Dr Watts that given the lack of a musculoskeletal cause for Mr A's hip pain, alternative differential diagnoses should have been considered. The inadequate assessment of Mr A's symptoms meant that there was a failure to examine his vascular system, and consequently a failure to provide him with appropriate care.

20. In making the above decision, I have considered the conflicting information provided to me. I also acknowledge that individual providers played a part in Mr A's care and bear some responsibility for the failings. However, overall, I consider this to be a systemic failure due to the lack of recognition of AAA symptoms and history taking by multiple ED staff, the inadequate oversight of a junior doctor, the poor documentation practices as evidenced by the lack of records relating to important discussions held with the ED consultant and the ED registrar prior to discharge, and the poor communication among Health NZ providers as evidenced by the conflicting accounts of the discussions that took place regarding Mr A's care.

Changes made

21. Following the events, Health NZ met with Mrs A to discuss the findings of the AER. Health NZ also planned to make the following changes:

a) Investigate the alert systems for the practicalities of using this to note significant patient clinical risk factors, eg, known AAA under surveillance.

b) Present Mr A's case and the AER findings at the ED Mortality and Morbidity meeting to raise awareness around AAA presentations and missed opportunities for proactive management.

c) Develop a requirement that bedside ultrasounds be completed for patients over 65 years who present to the ED with unexplained abdominal/back pain, in order to maximise the opportunities for proactive management of AAAs.

Recommendations and follow-up actions

22. I recommend that Health NZ Waikato provide a formal written apology to Mrs A for its breach of the Code. The apology is to be sent to HDC, for forwarding to Mrs A, within three weeks of the date of this report.

23. I recommend that Health NZ Waikato provide evidence to HDC that its internal recommendations (as discussed in paragraph 21) have been complied with, within three months of the date of this report.

[10] The right to have services provided with reasonable care and skill.

24. I recommend that Health NZ Waikato ED medical and nursing staff undertake further training on AAA, including its symptoms, diagnosis, and management. Evidence of training completion is to be provided to HDC within three months of the date of this report.

25. I recommend that Health NZ Waikato's ED review its process for providing oversight of junior house officers to determine how this can be improved. A summary of this review, including any corrective actions to be implemented, is to be provided to HDC within three months of the date of this report.

26. A copy of this report with details identifying the parties removed, except Health NZ Waikato and my independent clinical advisor, will be placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

27. A full copy of this report will be sent to the Coroner.

Dr Vanessa Caldwell
Deputy Health and Disability Commissioner

Appendix A: Independent clinical advice to Commissioner

The following independent advice was obtained from emergency medicine specialist Dr Martin Watts:

'Report by: Dr Martin Watts, MB ChB, FACEM, DCH.

I am a qualified and fully registered specialist in Emergency Medicine with more than twenty years of full-time experience working in Emergency Medicine including time in leadership roles including as Clinical Director. I have authored research published in peer reviewed journals including trauma-related articles.

I confirm that I have read the HDC Guidelines for Independent Advisors.

I am not aware of any conflict of interest pertaining to this case. My opinion is based upon the documentation as supplied to me by the HDC.

1. Whether the assessment and investigations made on [Day1] June 2020 were appropriate, taking into account the symptoms [Mr A] presented with.

a. The initial assessment by the medical provider was reasonable given the presentation of apparent musculoskeletal pain. However, there appears to have been no appreciation of, or consideration for, any alternative differential diagnoses. The history taken does not document a significant known relevant medical condition abdominal aortic aneurysm (AAA).

b. This is below standard of care for a qualified medical practitioner. (For example, if a medical student being assessed failed to identify and document a history as significant as an AAA, they would fail the assessment.) This is a serious departure from accepted standards. Because this was missed, investigations performed were appropriate only for the condition of musculoskeletal pain and were inadequate for any differential diagnosis for the cause of the pain.

c. As noted above, this would be seen as a serious failure by peers.

d. Education and supervision of the clinician.

2. Was sufficient regard to [Mr A's] history of AAA given when reaching the diagnosis of musculoskeletal pain.

a. A reasonable history of the acute events leading to the presentation to the ED was taken. The omission of the history of AAA effectively means that this was not taken into account when reaching the diagnosis of musculoskeletal pain. A reasonably thorough musculoskeletal examination of the area of concern was performed, but no examination of the vascular system was documented and therefore presumably not performed.

b. The omission is a significant severe departure from standard of care. It is notable that the nursing notes and the ambulance notes do give clues to the presence of a known AAA, and this is documented in the nursing notes.

c. This would be viewed as inadequate history taking and information gathering by peers.

d. Education regarding the importance of taking a good history and cross referencing with other available information in medical notes and previous investigations.

3. **The medical notes taken contemporaneously make no mention of [Mr A's] previous diagnosis of AAA. Please provide comment on the standard of history taking and documentation.**

a. Standard of care would be that a significant and serious diagnosis of an AAA would be clearly noted and documented. This information would usually be obtained directly from the patient or from review of previous electronic records and imaging studies. This has not been done. There is no contemporaneous documentation to suggest the case was discussed with an SMO, or further medical notes regarding progress or review. This would normally be standard of care.

b. This omission of a mention of the AAA from the medical notes is a significant, severe departure from expected standard of care. It is the expectation in most peer Emergency Departments that a discussion of a case with an SMO is documented; again, this is a departure from standard of care.

c. This would be viewed as a serious omission by peers.

d. The provider concerned should be made aware of the seriousness of these omissions.

4. If [Mr A's] history of AAA had been attended to, would further investigation have been warranted?

a. If the provider had been aware of the history of AAA and passed this on to the supervising SMO it is almost certain that further investigation or review would have been sought. The presence of a known large AAA would have been an immediate red flag. When combined with back pain, further imaging would have been warranted.

b. The failure to clearly document a discussion/consultation including the information regarding the known AAA would be considered a serious significant departure from standard of care.

c. This would be viewed as a serious failure by peers.

d. Education should be used to reinforce the importance of making efforts to ascertain important relevant history from all available resources.

5. Review of the X-ray and report on any significant findings.

a. The hip X-ray taken on [Day1] June does show a subtle change to the cortex of the superior part of the sub-capital neck of femur. However, this may be compound shadowing and is not convincing or conclusive.

b. The X-ray and the report of this are of adequate, acceptable standard.

c. The quality of the X-ray images and the report would be viewed as acceptable by peers.

d. The problem is that this is not an imaging study that is in any way useful for diagnosing or ruling out aortic pathology such as an AAA.

6. Any other matters in this case that you consider warrant comment

a. There appears to be the cognitive failure of premature diagnostic closure. Once a presumed diagnosis of musculoskeletal pain has been made, further examination and investigations are based solely on this diagnosis. There is no apparent attempt made to consider other alternative diagnoses. There is no apparent knowledge of the variety of ways in which AAA catastrophes can present.

b. The imaging of the pelvis is wholly adequate in the initial work up for suspected skeletal injury in this case but is wholly inadequate if a potential vascular (aortic) cause was being considered.

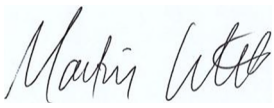
c. There are differing accounts as to whether the presence of a known AAA was discussed with the SMO supervising the case. It is not possible to definitively state whether the SMO was made aware of the presence of a known AAA. However, it is my opinion that the SMO was likely not made aware of this. This is based on:

1. The presence of the AAA was not documented in the junior doctor's notes.

2. Had the doctor been aware of the AAA then it would be expected that at least some form of vascular assessment was performed, such as checking appropriate pulses. Once again, this has not been documented and probably did not occur.

3. An experienced SMO/FACEM would immediately be aware of the significance of a known AAA with back and hip pain in a patient such as this and would seek further review and likely imaging.

4. There is no documentation of discussion of the case with the SMO to clarify this.



Dr Martin Watts MB ChB, DCH, FACEM'