6 May 2025

HEALTH & DISABILITY COMMISSIONER
TE TOIHAU HAUORA, HAUĀTANGA

Missed diagnosis of unstable fracture in neck vertebra

Decision 21HDC02865

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1. On 15 November 2021 this Office received a complaint from Mrs A about the care provided to her husband, Mr A (aged 78 years at the time of the events), at Health New Zealand|Te Whatu Ora (Health NZ) Capital, Coast and Hutt Valley.

2. Mr A arrived at a public hospital's Emergency Department (ED) by ambulance on the morning of Monday 27 September 2021 following a fall at home the previous night, in which he injured his neck and was experiencing breathing difficulties. Mr A was admitted to the Intensive Care Unit (ICU) after a specialty team examined him in ED. A CT[1] scan was booked but was not performed because Mr A was unable to lie flat due to worsening stridor.[2] The intention was to rebook the CT scan later that day, if still required. Mr A's airway swelling and breathing improved during the day, so a CT scan was not rebooked. Mr A was discharged from ICU the following day. Mrs A said that when her husband was admitted to ED, she mentioned his ankylosing spondylitis.[3]

3. On Saturday 2 October 2021 Mr A was referred to the public hospital's ED by a medical centre with worsening right shoulder pain and suspicion of pneumonia (he had a fast heart rate and had been on antibiotics for a chest infection). Mr A was assessed by an ED doctor and an orthopaedic registrar, and an X-ray was taken of his shoulder (the reported site of his pain), but no fracture was found. No further investigation was recommended, and Mr A was discharged home with codeine.

4. Mr A was in intensifying pain for over a month, until his GP referred him for an X-ray. An unstable C6 fracture was discovered at this point, and Mr A was transferred to hospital for emergency surgery.

5. Mrs A raised concerns that a holistic approach was not taken in examining Mr A and that it took over a month to make this diagnosis and treat the injury, during which time he was in significant pain and distress. A review by the geriatric team was not recommended, and Mrs A feels that she was not listened to, particularly in ICU when the decision was made to discharge Mr A a day after admission. Mrs A raised concerns that Mr A had 'cognitive deficit', which was communicated to staff, and this should have resulted in more advice and information being sought from her when Mr A was experiencing confusion.

6. Health NZ completed a System Analysis Review (SAR), which found that gaps in the care provided to Mr A resulted in the fracture being missed. In summary, Mr A's fall was not seen

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[1] Computerised tomography (a diagnostic scan).
[2] An abnormal, high-pitched sound produced by irregular airflow in a narrowed airway.
[3] An inflammatory disease that, over time, can cause vertebrae to fuse.

as significant trauma, so his treatment focused on the soft tissue injury and breathing difficulties. The review found that there was a lack of recognition of Mr A's complex care needs and the need for multi-disciplinary planning in his discharge from ICU to his home. In addition, ICU and ENT failed to consider the 'bigger picture' of Mr A's presentation adequately, in that they lacked a holistic approach.

7. Mrs A was given an opportunity to comment on the provisional opinion. Mrs A said that she is happy that the process is coming to its conclusion and she feels validated to some degree.

8. Health NZ was given an opportunity to comment on the provisional opinion. Health NZ advised that it accepts my proposed findings, recommendations, and follow-up actions.

9. Independent advice was obtained from emergency medicine specialist Dr David Prisk (Appendix B). Dr Prisk advised that the focus on Mr A's airway management was appropriate. However, Dr Prisk was disappointed not to see a documented assessment of Mr A's cervical spine in the clinical records. Dr Prisk also commented on the lack of a tertiary survey.[4]

10. Independent advice was also obtained from orthopaedic surgeon Dr Thomas Geddes (Appendix A). Dr Geddes considered that the physical examination of Mr A was adequate but noted some gaps in the clinical documentation regarding review of Mr A's range of motion. Dr Geddes also noted that the threshold for obtaining imaging of the neck (with plain X-rays or a CT scan) should have been relatively low given Mr A's medical history. Dr Geddes advised that during Mr A's admissions to the public hospital on 27 and 28 September and 2 October 2021 there were several occasions on which imaging of his cervical spine might have been considered.

11. On 16 July 2024 I notified Health NZ of HDC's investigation and proposed that HDC adopt the findings of Health NZ's SAR and the independent advice received by HDC as the basis for establishing a breach of Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code)[5] in relation to the care provided to Mr A. I proposed this finding as Health NZ acknowledged that there were gaps in the care provided to Mr A that resulted in the fracture being missed. I also took into consideration the identified areas of improvement and the changes made by Health NZ as a result of these events. On 18 December 2024 Health NZ accepted HDC's proposed breach finding.

12. My opinion is that all the teams involved in Mr A's care failed to consider his complex needs adequately and apply a holistic approach, recognising Mr A's frailty and underlying health conditions during their assessment. I am also concerned about the inadequate coordination of Mr A's care and the failure to have Mr A reviewed by the geriatric team. As such, I find Health NZ in breach of Right 4(1) of the Code.

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[4] The aim of a tertiary survey is to ensure that all injuries are recognised, including those injuries not identified during primary and secondary survey, and the survey should be undertaken within 24 hours of admission for trauma.

[5] Right 4(1) states: 'Every consumer has the right to have services provided with reasonable care and skill.'

13. Health NZ advised that the following changes have been made since the events:

- The ICU has implemented an evidence-based Adult Cervical Spine Imaging and Clearance in Trauma Policy to ensure a consistent approach to assessing and managing the cervical spine in blunt trauma patients, with a particular focus on the elderly and those with known or suspected conditions affecting the spine.
- The Regional Trauma Committee's Trauma Tertiary Survey Guidelines have been updated by ED staff to include a modified nexus rule to allow for a lower threshold for spinal imaging on elderly patients and to acknowledge existing or suspected spinal pathology.
- Ongoing education on neck injuries is provided to registrars.
- The approach to managing trauma in elderly patients has been updated, with these changes incorporated into the Trauma Tertiary Survey Guidelines.
- A senior geriatrician was invited to the ENT Department monthly meeting to discuss frailty in the elderly.
- A senior orthopaedic medical officer addressed ankylosing spondylitis in frail elderly patients during an education session with the ENT service. The presentation was also given to the ED.
- These events have been used as part of an ED Morbidity and Mortality session dedicated to elder trauma and hidden spinal injuries.
- The ICU completed a quality improvement programme focused on tertiary surveys, including a qualitative study to identify barriers to assessment completion. The programme features an ongoing educational initiative with online training for registrars and the introduction of new documentation to standardise tertiary surveys for trauma patients across the hospital.
- The Orthopaedic Department has increased its ongoing education with respect to neck injuries.

14. These changes indicate that Health NZ took responsibility for the errors identified in the SAR to prevent a similar incident occurring. I am satisfied that the issues contributing to Mr A's delayed diagnosis have been identified by Health NZ and that appropriate improvements have been implemented.

15. Further to the changes made by Health NZ, I recommend that Health NZ provide a written apology to Mrs A and her family for the deficiencies in Mr A's care. The apology is to be sent to HDC, for forwarding to Mrs A, within three weeks of the date of this report.

16. I recommend that Health NZ provide further information to HDC on the implementation of an ICU policy to avoid the discharge of elderly patients directly home from ICU. Evidence of its implementation, or an action plan for its implementation, is to be provided to HDC within three months of the date of this report.

17. I recommend that Health NZ use this report as a basis for training staff on the importance of involving family and guardians of elderly patients and those with cognitive decline in important conversations regarding their care to ensure a safe and reliable transfer of

information. Evidence of this is to be provided to HDC within three months of the date of this report.

18. An anonymised copy of this decision (naming only Health NZ Capital, Coast and Hutt Valley and the advisors on this case) will be placed on the HDC website (www.hdc.org.nz) for educational purposes.

Nāku iti noa, nā

Carolyn Cooper
Deputy Health and Disability Commissioner

Appendix A: Independent clinical advice to Commissioner

The following independent advice was obtained from Dr Tom Geddes:

> 'My name is Tom Geddes. I am an orthopaedic surgeon practising at Middlemore Hospital in Auckland. I have specialist experience in spine surgery, arthroplasty and trauma and I am involved in training orthopaedic registrars. I have been asked to comment on the standard of care provided to [Mr A] in [the public hospital] in September of 2021. I have no conflict of interest in this case.
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> In particular I have been asked to comment on:
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> 1. The assessment undertaken in the management of [Mr A] by the orthopaedic registrar on the 2nd of October 2021.
> 2. Whether consideration should have been given to cervical spine imaging during [Mr A's] review.
> 3. Any other matters or comment.
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> To give context [Mr A] had been admitted to [the public hospital] on the 27th of September 2021 after he sustained an injury to his neck when he fell. This resulted in significant swelling to the neck. After being assessed in the Emergency Department he was monitored and observed for a day as there were concerns, he may have a degree of airway obstruction. He was able to be discharged home on the 28th of September 2021. Since the time of his fall, he had been complaining of shoulder pain which continued after the initial discharge and he was readmitted to [the hospital] on the 2nd of October with concern that he may have developed pneumonia.
>
> At that time, he was continuing to have a significant amount of shoulder pain on the right-hand side. The medical team that had admitted him requested orthopaedic opinion with regards to the shoulder pain. At that time, they felt that the pain may be due to an underlying pneumonia but wanted to rule out other potential causes such as a fracture.
>
> It was noted during his second admission that the shoulder had been previously looked at in ICU during the initial admission for the neck injury and swelling at that time it was felt that the pain was likely due to a sprain and that there were no indications for x-ray.
>
> In the orthopaedic review notes, the orthopaedic registrar noted that [Mr A] had had a fall six days previously that had resulted in a pharyngeal haematoma with an admission to ICU. It had been noted that the fall had "mainly trapped neck".
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> Since his discharge from the ICU, he had ongoing pain in his right shoulder which was felt more in the scapula region rather than the shoulder joint. On the examination note it was recorded that there was no pain to palpation around the thoracic or cervical spine, the right scapula nor the right glenohumeral joint. A full active range of movement in the shoulder was documented and provocative testing for rotator cuff injury was negative. His neurovascular status was noted to be intact.

An x-ray of the shoulder was performed and some proximal humerus arthropathy and an old clavicular fracture were noted. Osteoarthritic changes in the acromioclavicular joint were also noted but no acute injury was identified.

After this examination it was felt that [Mr A] was suffering from musculoskeletal shoulder pain with no real identifiable cause and no fracture was noted. A management plan that included analgesia, physiotherapy, a sling as needed was prescribed with no orthopaedic follow up organised. It was noted that if any of his symptoms were to change or worsen, that re-contact with the orthopaedic service was recommended.

The orthopaedic registrar that performed this assessment was a resident medical officer that was non-SET, in other words he was not in specific orthopaedic training but rather a junior registrar working in the orthopaedic department.

The physical examination of [Mr A] was adequate for a doctor at that stage. It had been noted that there was no tenderness in the cervical spine and on the basis of this it was felt that there was no significant injury to the neck. However, given the history of a fall with trauma to the neck and scapula pain, with no other identifiable cause, additional documentation of an adequate pain free range of motion of the neck would reasonably be expected as part of this examination. The threshold for obtaining imaging of the neck with plain x-rays or a CT scan, should have been relatively low.

I note that during his initial admission to ICU that it had been planned for him to have a CT scan of his neck. Due to the fact that [Mr A] became short of breath when he lay down flat, this was abandoned. Given that he had had significant enough trauma to his neck to create a haematoma that threatened his airway, it would have been reasonable to expect that imaging of his neck should have been performed, particularly in the presence of shoulder pain with no definable shoulder injury. Rescheduling of some form of neck imaging could reasonably be expected.

It would be unusual but not rare for an injury to the neck to present as solely shoulder pain in the absence of any other neurological symptoms or findings, the absence of localised tenderness in the neck and a pain free range of motion. The assessment by the orthopaedic registrar overall appeared to be appropriate for his level of training. Adequate pain free motion may well have been observed by the registrar but its presence or absence should have been noted. I note the registrar's response to the HDC that he has reflected upon the case and discussed it with local spine surgeon … This had resulted in the group of orthopaedic registrars receiving further teaching on cervical spine fractures. This should continue to be an ongoing process as new registrars are rotated through the orthopaedic department.

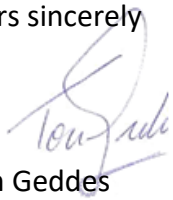
Over the course of his two admissions, one would have expected that [Mr A] should have had imaging of his neck particularly given his unexplained ongoing shoulder symptoms and his age. His inability to have the scan on his initial admission due to difficulty with breathing is understandable and acceptable however it generally would be expected that some form of imaging would have been performed once his breathing status improved.

In general, this would be felt to be a moderate departure from the standard of care though it is very hard to pin this down to a single episode as there are a number of occasions during his two admissions where imaging of his cervical spine might have been considered.

Ongoing education on the various presentations of cervical spine injuries appears to have been performed at [the public hospital] after this incident but a continued programme of this education as new groups of registrars rotate through would be beneficial.

I trust this is helpful to making your assessment of this complaint. I would be very happy to answer any other questions if there is anything further you wished to know.

Yours sincerely



Tom Geddes
Orthopaedic Surgeon'

Appendix B: Independent clinical advice to Commissioner

The following independent advice was obtained from Dr David Prisk:

'My full name is David Lee Prisk. I graduated from the West Virginia School of Osteopathic Medicine in Lewisburg, WV, USA, in 2002, and completed a categorical residency in emergency medicine at East Carolina University/Pitt County Memorial Hospital in Greenville, NC, USA, in 2005. I became certified by the American Board of Emergency Medicine in 2007 and became a Fellow of the Australasian College for Emergency Medicine in 2016. I have been a consultant emergency physician in the Palmerston North Hospital Emergency Department since 2012 and have served as clinical director/medical lead of the department since 2014.

I have been asked to provide an opinion to the Commissioner on case number **C21HDC02865**.

I have read and agree to follow the Commissioner's Guidelines for Independent Advisors.

Background
[Mr A] presented to [the public hospital] on 27 September 2021 after suffering an unwitnessed fall. He was assessed in the Emergency Department and admitted to ICU for airway observation. [Mr A] was discharged on 28 September 2021. [Mr A] was eventually diagnosed with a neck fracture.

I have been requested to advise whether I consider the care provided to [Mr A] at [the public hospital's] Emergency Department was reasonable in the circumstances, and why.

In particular, I have been asked to comment on:

— The adequacy of the assessment of [Mr A's] cervical spine at the Emergency Department (ED);
— Whether consideration should have been given to cervical spine imaging prior to [Mr A] leaving the ED, and the role of ED staff in this decision;
— Whether consideration should have been given to brain imaging prior to [Mr A] leaving the ED (noting he was on anticoagulant medication at the time of this admission), and the role of ED staff in this decision.
— Any other comments on [Mr A's] management in the ED; and
— Any other matter that warrants comment.

For each question, please advise:

— What is the standard of care/accepted practice?
— If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate, or severe) do you consider this to be?
— How would it be viewed by your peers?
— Recommendations for improvement that may help to prevent a similar occurrence in future.

Documents Provided

Department of Emergency Medicine Clinical Record
General Discharge Summary from Ear Nose and Throat
Observation chart from Emergency Department
Shared Goals of Care form
Intensive Care Admission Report
Screening Form for COVID-19
ACC injury claim form
National Medication Chart
ENT Consultant note
Two ECGs
Ambulance Care Summary
Complaint by [Mrs A]
Response to HDC by [Health NZ]

Advice

The adequacy of the assessment of [Mr A's] cervical spine at the Emergency Department

[Mr A's] cervical spine does not appear to have been assessed in the Emergency Department by [specialty registrars].

It appears from Emergency Department notes that all specialty registrars involved in [Mr A's] care were appropriately concerned about his airway, but I cannot find in any of the documentation provided to me a clinical examination of [Mr A's] cervical spine.

While the overriding concern for [Mr A's] airway appears to have been appropriate, one would think the significant trauma to soft tissues of his anterior neck would have raised concerns about his cervical spine. [Registrar 1] documented that [Mr A] had "left neck ecchymosis at base with associated swelling. Palpable fluctuance present here." [Registrar 1's] clinical impression of [Mr A] was of a patient with "neck blunt trauma with haematoma related hypopharyngeal oedema." [Registrar 2] noted that [Mr A] had "boggy swelling symmetrically around neck;" it is unclear if [Registrar 2] is describing circumferential swelling of [Mr A's] neck. Circumferential swelling of his neck would correlate with [Mr A's] wife's observation that [Mr A] had "progressive swelling on his upper back along the top of his spine" after being discharged from hospital, but symmetrical swelling may simply have been around the anterior aspect of [Mr A's] neck; it is difficult to tell from the provided documentation. However, all of these observations and examinations of [Mr A's] neck soft tissues could have indicated that he had a deeper bony injury.

Based on Emergency Department documentation, the primary focus on [Mr A's] airway seems to have been appropriate. However, examination of his cervical spine at some point in his clinical course would also have been appropriate. Even if concerns about his cervical spine were unable to be addressed immediately, a documented examination of his cervical spine may have indicated that further investigations were needed at some point during his admission.

[Mr A] seems to have presented to the [public hospital's] ED in extremis with impending airway compromise, which rightly prompted consideration of endotracheal intubation; in the setting of trauma to his anterior neck, examination of his cervical spine would have been important as in-line stabilisation would have been indicated during intubation. However, since [Mr A] improved on non-invasive ventilation and he did not seem to require emergent intubation, examination of his cervical spine may have been deemed less important in the acute phase of his evaluation and treatment. It may also have been that there was concern an examination of his cervical spine would cause him pain, possibly agitate him, and potentially compromise the improvement he'd made with conservative measures. Inferring from the Emergency Department notes that [Mr A] was in imminent danger of losing his airway, and that his airway was anticipated to be difficult, it may have been that concerns about injury to his cervical spine were secondary. In these circumstances, not initially examining his cervical spine would be seen as a mild to moderate departure from the standard of care by my peers; the initial care provided to him would be considered of an acceptable standard.

Whether consideration should have been given to cervical spine imaging prior to [Mr A] leaving the ED, and the role of ED staff in this decision

It does appear that consideration was given to imaging [Mr A's] neck while he was in the ED. It seems that a CT of [Mr A's] neck was appropriately ordered and then was appropriately cancelled or deferred out of concern for airway compromise, as [Mr A] developed stridor when lying flat. While the CT seems to have been requested to evaluate injury to his anterior neck, it would also likely have captured injury to his cervical spine.

There is no documentation that plain x-rays of [Mr A's] cervical spine were considered, and this may have been appropriate. Moving [Mr A] to an x-ray room, either within the ED or in the Medical Imaging Department, would have been inappropriate because of the potential for him to lose his airway. Portable x-rays of his cervical spine may have been limited in quality and in the types of views obtained depending on a number of factors, including the type and size of room he was in and his ability to cooperate with the imaging technicians. Removing him from non-invasive ventilation might also have been required to obtain adequate views, and this would likely have been inappropriate; [Mr A] not only had soft tissue swelling affecting his airway and breathing but seemed to have an element of pulmonary oedema that was being treated with non-invasive ventilation. Additionally, even under the best conditions, sensitivity of plain x-rays to detect significant cervical spine injuries is generally considered to be only 30–50% and so even if they had been obtained initially, plain x-rays may not have revealed the fracture at C6. It is acknowledged that plain x-rays done approximately one month after [Mr A's] discharge from hospital did reveal an unstable C6 fracture, but there is no guarantee that this would have been found on x-rays done in the acute phase of his evaluation.

It is unclear what role Emergency Department staff played in these decisions as there was no examination of his cervical spine documented and so, no medical decision-making regarding his cervical spine documented.

Whether consideration should have been given to brain imaging prior to [Mr A] leaving the ED (noting he was on anticoagulant medication at the time of this admission), and the role of ED staff in this decision

There is nothing documented to suggest that imaging [Mr A's] brain was considered at any time.

As [Mr A] could not lie flat for a CT of his neck due to the potential for complete airway compromise, ordering a CT of his brain (where he would also have had to lie flat for the study) prior to his leaving the ED would not have been appropriate. Additionally, there was no documented trauma to his face or scalp, even though trauma to his neck was documented by every specialty registrar involved in his care. It seems that most attention was appropriately paid to his airway. It was also documented that he had a Glasgow Coma Scale of 15 several hours after his trauma and so there may have been less concern about [Mr A] having an intracranial haemorrhage. This clinical reasoning would have been appropriate.

It is unclear what role ED staff played in this decision, as there is nothing documented to suggest that consideration was given to imaging his brain by any specialty registrar or consultant.

Any other comments on [Mr A's] management in the ED

[Mr A's] initial management in the ED seems to have been appropriate and would be considered of an acceptable standard of care by my peers.

Despite information in the Ambulance Care Summary suggesting that [Mr A's] signs and symptoms were solely due to an infectious process, ED staff seem to have quickly recognised that the most likely source of his stridor was trauma to his neck the night before.

Appropriate specialties were consulted in a timely manner: … All were appropriately focused on [Mr A's] airway, which seems to have been in imminent danger of being lost. Treatments were also appropriate: adrenaline nebulisers, steroids, antibiotics (in case there was an element of infection involved), and non-invasive ventilation. Additionally, Praxbind was prescribed to reverse the effects of dabigatran and so, hopefully arrest the expansion of his neck haematoma and prevent complete airway compromise. Clinically, [Mr A] seems to have improved while in the Emergency Department but he was still appropriately admitted to the Intensive Care Unit for monitoring of his airway.

It is disappointing that an examination of [Mr A's] cervical spine was not done or, if it was done, was not documented. It is also disappointing that a potential injury to his cervical spine was either not recognised or not documented by any of the involved specialties. Generally speaking, consideration of a patient's airway comes first when evaluating any critically ill or injured patient, and [Mr A's] airway compromise was appropriately recognised and appropriately addressed; in the acute phase of his evaluation and treatment in the Emergency Department the sole focus on his airway may have been completely reasonable. However, this clinical rationale can only be inferred from the provided notes; there is no specific documentation to support it.

Any other matter that warrants comment

Although it lies outside the scope of what I've been asked to comment on, it bears mentioning that it does not appear a proper tertiary survey was done on [Mr A]. A tertiary survey is a top to toe examination that should be done within 24 hours of admission for trauma, as it can potentially reduce the missed injury rate by more than one-third (depending on the study). It is unclear why a tertiary survey was not done on [Mr A]. It seems [Mr A's] right shoulder was examined prior to his being discharged from ICU, but his cervical spine was not examined. This seems odd. There is nothing in the provided documentation to suggest that a tertiary survey was not indicated or was undesirable or that there was something that prevented it from being done. [Mr A's] difficulty breathing during his initial presentation, combined with his baseline cognitive impairment, may have rendered his initial history and physical exam inaccurate or incomplete; a tertiary survey done after his airway was no longer in jeopardy may have revealed other injuries meriting investigation.

Please let me know if you require clarification of any part of this report or if you require further information.

Kind regards

Dr David Prisk, FACEM'