

Medical Officer, Dr D
Emergency Department Consultant, Dr C
Whanganui District Health Board

A Report by the
Health and Disability Commissioner

(Case 07HDC17769)



Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Overview

This case relates to the care Mr A (then aged 19) received when he presented to Wanganui Hospital Emergency Department on Wednesday afternoon 12 September 2007 following a snowboarding accident. Over that afternoon and evening, two ED doctors had input into Mr A's care — Dr D, a locum who first reviewed Mr A and ordered chest and spinal X-rays to investigate whether he had sustained a spinal fracture, and ED consultant Dr C, who took over Mr A's care at the conclusion of Dr D's shift.

There was a very high demand for ED and radiology services at Wanganui Hospital that evening. Being the only ED doctor on duty, Dr C worked under considerable pressure, and did not review Mr A personally. Instead, he issued instructions through nursing staff about mobilising Mr A and discharging him. However, because of differing understanding of clinical staff and Mr A about mobilising and returning home, Mr A left Wanganui Hospital before he was formally discharged. Overnight, he experienced increased pain and numbness in his body. On 13 September 2007, he was transferred to a large public hospital where it was found that he had sustained a T3 fracture. Mr A underwent orthopaedic surgery, and was transferred to a spinal unit for rehabilitation in late September 2007. He was discharged from the spinal unit in mid-December 2007.

This report considers the appropriateness of the care provided by Dr D, Dr C, and Whanganui District Health Board to a patient with incomplete spinal injuries. It also discusses the importance of recognising and responding to symptoms, the handover of a patient's care from one clinician to another, and the need for clear communication amongst clinical staff.

Parties involved

| | |
|---------------------------------|--|
| Mr A | Consumer |
| Dr B | Complainant/Locum doctor at a medical centre |
| Dr D | Provider/ED locum medical officer |
| Dr C | Provider/ED consultant |
| Dr E | ED Clinical Director |
| Ms F | Duty nurse/Registered nurse |
| Whanganui District Health Board | Provider/Employer |

Complaint and investigation

On 5 October 2007, the Health and Disability Commissioner (HDC) received a complaint from Dr B about the services provided by Whanganui District Health Board to Mr A. The following issue was identified for investigation:

- *The appropriateness of the care provided by Whanganui District Health Board to Mr A at Wanganui Hospital on 12 September 2007.*

An investigation was commenced on 2 November 2007. Independent expert advice was provided by Dr Garry Clearwater, an emergency medicine specialist, and Dr Mark Coates, a musculoskeletal radiologist. Following review of the expert advice, the investigation was extended on 14 April 2008 to include the following issues:

- *The appropriateness of the care provided by Dr D to Mr A at Wanganui Hospital on 12 September 2007.*
- *The appropriateness of the care provided by Dr C to Mr A at Wanganui Hospital on 12 September 2007.*

Further expert advice was obtained from Dr Clearwater.

Information gathered during investigation

Chronology of events

Accident on ski field

In mid-2007, Mr A (then aged 19) came to New Zealand on a working holiday. He worked at a café on the Turoa Ski Field.

While snowboarding in Mt Ruapehu on the afternoon of 12 September 2007, Mr A fell approximately five metres and landed on his back. He experienced a loss of sensation in his legs, along with intense pain in his chest and centre of his back (thoracic region). Ski patrol members attended the accident and immobilised Mr A's neck with a cervical collar. He was taken to a medical centre (the Centre) on a back-board and seen at approximately 2.45pm by Dr B (then a locum doctor at the Centre). Dr B recorded that Mr A had "pins & needles both legs from waist down" and made provisional diagnoses of "back injury?fracture" and "chest injury". Mr A was given morphine and transferred by helicopter to Wanganui Hospital.

Initial review at Wanganui Hospital ED

An hour later, Mr A arrived at Wanganui Hospital Emergency Department (ED). He was triaged at 3.40pm, and assessed as category 3 using the Australasian Triage

Scale.¹ Shortly afterwards, he was seen at 3.50pm by Dr D, one of the ED doctors on duty.

Dr D gained his medical degree in America, in 2004. He had a particular interest and experience in neurophysiology and neurosurgery including being awarded “Clinical Rotation Honours” in a neurosurgery clerkship during his medical training. At the time of the events in question, he was employed on a four-month contract as a locum ED medical officer, and was working under a provisional general scope² supervised by ED Clinical Director Dr E.³ Dr D had approximately three years’ post-qualification experience at that point, and was not regarded as a junior doctor by Whanganui District Health Board.

Dr D was due to finish his shift at 4pm but ended up working three hours overtime as the Emergency Department was particularly busy that afternoon/evening. Dr D reviewed Dr B’s referral letter including his concerns that Mr A had suffered a significant spinal injury. Dr D recorded the details of Mr A’s fall, and noted that Mr A was alert with a GCS⁴ of 15/15. A physical examination for trauma patients with suspected spinal injuries was carried out, and Dr D recorded his findings as “no neuro changes, CNs II-XII intact”. He subsequently clarified:

“During my evaluation, [Mr A] did not complain of pain. He did not exhibit any posturing or facial grimacing nor did he request analgesia. He did not verbally complain of pain and conversed without signs of distress. He did, however, describe mild tenderness to my palpation of his thoracic spine. The pain that [Mr A] had, was mild. Therefore, I documented that he was in ‘mild distress secondary to back pain’ in the general portion of my examination and ‘mild tenderness to palpation’ in the back portion [of the ED assessment form]. I also visually depicted the site of [Mr A’s] ‘mild tenderness to palpation’ with an arrow pointing to a box overlying the site of the back that was tender. Additionally, I wrote an order for NSAID⁵ analgesia.

¹ Patients in this category are considered “urgent” and should be seen by a doctor within 30 minutes of presentation.

² The Medical Council of New Zealand requires all registrants (regardless of seniority) to work under supervision for their first 12 months in New Zealand to familiarise themselves with the local working culture. During this period, the doctor’s performance is assessed by senior colleagues, and the doctor is required to complete certain requirements to be registered within a general scope (the next stage of the registration process).

³ Dr E is a Fellow of the New Zealand Accident and Medical Practitioners Association (FAMPA) but is not a Fellow of the Australasian College for Emergency Medicine (FACEM). AMPA requires all ED-based Accident and Medical Practitioners who are not FACEMs to work under the general oversight of a FACEM.

⁴ Glasgow Coma Scale. GCS is a numerical system used to estimate a patient’s level of consciousness after a head injury. Each of the following are numerically graded: eye opening (4), motor response (6), and verbal response (5). The higher the score, the greater the level of consciousness. A score of 7 or less indicates a coma.

⁵ Non-steroidal anti-inflammatory drugs.

...

After completing my standard neurological examination ..., I documented ... that [Mr A] had ‘normal range of motion’. When I write this, I am indicating that the patient has easily moved all four extremities, exhibiting normal strength throughout a full range of motion; with no loss of power, no abnormality of tone, and no changes in a free and fluid range of motion; without spasticity, rigidity, paratonia, or clonus; without weakness, monoplegia, hemiplegia, paraplegia, or quadriplegia; without a weak or absent response. When I write this, therefore, I am implying that the patient has demonstrated normal tone and power. These findings are also supported by my documentation in the neurological portion of my notes, ‘no neurological changes’. ...

[Mr A’s] sensory examination, including light touch, temperature, pain, and deep pressure modalities, as I have detailed above, was completely normal. When a patient has completely normal sensation, I document these findings as: ‘normal sensation,’ just as I did in ... my notes for [Mr A]. ... [W]ith regards to the documentation of the sensory examination of [Mr A’s] neck, back, chest, abdomen, and pelvis, I do not document all normal findings due to time (*i.e.*—‘normal light touch sensation of abdominal wall’). Standard documentation does not require every dermatome to be specifically commented upon. If [Mr A] had demonstrated a specific neurological sensory change, then I would have documented that abnormal finding (*i.e.*— ‘[sensory change] of abdominal wall’). Because [Mr A] had specifically described a previous, and resolved, sensory change involving his extremities, my documented sensory examination involving that specific area is expanded to *include* the normal findings of ‘normal sensation’.”

After completing his physical examination of Mr A, Dr D removed Mr A’s hard cervical collar in accordance with NEXUS⁶ guidelines as Mr A “denied any midline cervical spine tenderness to palpation, had no neurological deficits, and only mild back pain”. (Mr A remained in a supine position while his collar was being removed.) Dr D then discussed Mr A’s case with Dr E but was interrupted in the process by a house officer who reported that Mr A was experiencing numbness in his left leg. Dr D asked the house officer to replace the hard cervical collar, and advised him to ensure that Mr A remained in a supine position. Dr D was concerned that Mr A might have sustained a spinal fracture, and ordered X-rays of his cervical and thoracic spine to rule out this possibility. (The X-rays were taken at approximately 6pm.) Dr D also ordered ibuprofen 800mg in response to Mr A’s complaint of mild pain. However, Dr D stated that he “did not have the opportunity” to review Mr A as the “ED was particularly busy” that afternoon/evening.

⁶ National Emergency X-radiography Utilisation Study.

Handover to second ED doctor

Shortly before finishing his shift at 7pm, Dr D handed over Mr A's care to ED consultant Dr C. Dr C qualified as a Fellow of the College of Emergency Medicine in the United Kingdom in July 2006, and is vocationally registered in Emergency Medicine with the New Zealand Medical Council.⁷ Dr D stated:

"I verbally informed [Dr C] of [Mr A's] historical information (fall ~5 metres, back pain, previously identified neurological symptoms), his complaint of thoracic back pain, his current physical examination findings (normal, no dysfunction), his recent development of emerging neurological symptoms (unilateral lower extremity sensory changes), my decision to reapply his cervical collar, my decision to keep him supine, my impression of a possible spinal fracture, and my plan to obtain cervical and thoracic spine X-rays to identify this possibility.

I also provided [Dr C] with written documentation in the form of [Dr B's] transfer note and the ED Assessment Note. This documentation included [Mr A's] mechanism, site of pain, previously identified neurological symptoms, spinal immobilization, transport, current physical examination findings including a visual depiction of the site of thoracic spine tenderness, my orders to reapply the hard collar, [Dr B's] & my assessment of a back injury and possible fracture, my orders to keep him supine, my intentions to rule out thoracic and/or cervical spine fracture with radiographic studies, and my administration of analgesia."

The Emergency Department was especially busy that evening. Wanganui Hospital's ED records show that on 12 September 2007, a total of 52 patients presented to ED. Four new patients arrived between 7pm⁸ and 8pm, with a further two arriving between 8pm and 9pm. Dr C was the only doctor working at ED that evening (discussed below) and, owing to a heavy workload, he did not review Mr A personally that evening. Dr C stated:

"... [T]he department was busy and I had to prioritize accordingly. Since the X-rays had been already ordered I decided to wait for them as they could provide me with a definitive diagnosis of a fracture. I decided that any further examination of the patient at this stage was unlikely to provide me with any useful information or change my management."

⁷ The Medical Council considers FCEM equivalent to the specialty qualification of Fellowship of the Australasian College for Emergency Medicine (FACEM). However, the New Zealand Faculty of the Australasian College for Emergency Medicine does not share this view.

As at the date of this report, Dr C is seeking to become a Fellow of the Australasian College for Emergency Medicine. One of the requirements to become a FACEM is to work under supervision for three months in an accredited multi FACEM Emergency Department.

⁸ After Dr C took over Mr A's care from Dr D.

There was also a high demand for radiology services that evening. Consequently, Mr A's X-rays were not available until two and a half hours after they had been ordered by Dr D. Mr A's X-ray films were given to Dr C, who examined them in the nurses' station "as soon as [he] got the chance". He recalls "being under considerable pressure at the time". Dr C found no evidence of fracture although he noted that Mr A's top three vertebrae "were clearly not visible". His impression was that Mr A had suffered a mid-thoracic, rather than an upper thoracic injury. As there was "no possibility of an urgent radiological input" at the time of his assessment, Dr C did not discuss his findings with a radiologist. (Two days later, on 14 September 2007, the radiologist reported that there was "normal appearance of the dorsal spine" and "no bony injury or abnormal pathology could be identified".) Dr C stated:

"At this point my usual practice would have been to double check the point tenderness, even in patients I had seen myself, to make sure I investigated the correct region. The main reason I did not was the lack of time as I was the only doctor on the floor. On the basis of a normal X-ray finding and a history of no significant neurology I felt that a soft tissue injury was the most likely diagnosis. As a consequence I assumed that it would be safe to instruct the patient to attempt mobilization to help and finally clear him clinically. ..."

Dr C informed the ED duty nurse RN Ms F of his findings from the X-ray films. Dr C instructed RN Ms F to mobilise Mr A and to discharge him if he was able to mobilise satisfactorily. Dr C explained that "in patients who do not have other injuries or obvious neurological deficit, it is a recognised and common clinical practice to assess patient's injuries by mobilisation". His follow-up plan included reassessing Mr A himself and ordering a CT scan of Mr A's thoracic spine if Mr A was unable to mobilise satisfactorily. A take-home prescription for pain relief was written. Dr C explained:

"... I had also written a prescription for take home analgesia, should the patient mobilise successfully. This is not my usual practice, but taking into account my other likely commitments with other patients, I decided to organise this while I had time available. It was not intended that [Mr A] receive the script, as I would have wanted to assess him myself before discharge and after mobilisation. Unfortunately, he did receive the script, which might have given him the wrong impression that we considered him fit for discharge."

RN Ms F went to inform Mr A of Dr C's instructions. She stated:

"I recall at that point my prioritisation and focus of care for [Mr A] had changed from potential spinal injury to soft tissue injury and mobilising. I advised [Mr A] that the plan was to mobilise and then discharge him and advised him of some expectant pain due to possible contusion and soft tissue injury after his fall. I then encouraged [Mr A] to start moving. I emphasised the importance of mobilising as I noticed his address was [local] and advised him that he would be cramped in his car for up to 3 hours."

Around this time, Mr A's girlfriend and another friend arrived at Wanganui Hospital to see him. They enquired about Mr A's condition and RN Ms F explained that his X-rays were "clear, no fracture was seen", and that it was important that he receive oral analgesia before he began mobilising. RN Ms F stated:

"At this point I gave the patient's script to the female [friend] and explained to her the doctor's plan, to mobilise and then discharge.

[Mr A] was given oral analgesia⁹ before mobilising and I encouraged him to start trying to sit up and beg[i]n moving. I then attended to my other patients in resus including one who was having a heart attack. ..."

Mr A understood from RN Ms F that he had to "mobilise as much as possible because [he] was going home".

At 9pm, RN Ms F returned to see Mr A and to administer more analgesia. He informed her that he was "still stiff" and that he had experienced "significant pain in [his] back", "electric bolts through [his] body", tight muscles, and spasms throughout his lower body when attempting to mobilise. RN Ms F went to Dr C for a stronger prescription of analgesia, and Tramadol and Diazepam (pain relief) were prescribed.

On her way back, RN Ms F was approached by a nurse from the Acute Assessment Unit (AAU). (A decision was made to open up the AAU that evening to alleviate the "bed block"¹⁰ at ED.) RN Ms F agreed to assist her colleague as all four patients she was looking after (including Mr A) were in a stable condition. Mr A had not mobilised at all when RN Ms F was called out of the department.

Departure from Wanganui Hospital

During RN Ms F's absence, Mr A's girlfriend requested a wheelchair for him. They were under the impression that he had been discharged from hospital because his X-rays were normal. Mr A stated:

"... An orderly brought a wheelchair over and helped me into it. This was not an easy process and it caused me a significant amount of pain. He then pushed me all the way to the main entrance and helped carry me into my friend's car. I remember the emergency department being very empty by the time we left which was around 11pm,¹¹ we also went straight past the doctors and nurses' station[s] without any hint of stopping us. My instructions were clear — I had been discharged from hospital and advised to mobilise. I was given a prescription for painkillers to take home."

⁹ Recorded as 8pm on the nursing notes.

¹⁰ Bed block refers to a situation when there is a delay from the time a decision is made to admit a patient to when the patient is admitted (ie, physically leaves ED for an inpatient bed or designated short stay/observation bed). Bed block is a major cause of ED overcrowding.

¹¹ This differs from Whanganui DHB's account of events.

On her return to ED, RN Ms F was “surprised” that Mr A was not there. She asked a colleague where he was, and was told that Mr A’s friend had requested a wheelchair, and they had left ED together with the orderly. RN Ms F stated:

“I had no knowledge [of] what level of mobilisation [Mr A] had before he was discharged. I had told [Dr C] that [Mr A] was still feeling stiff, but he was not in severe pain as he was lying still and so raised no concern. I assumed therefore that [Mr A] was all right when he left and that the analgesia had worked. I didn’t talk to [Dr C] about it when I returned as I didn’t think there was any problem. I was aware that [Mr A] had no fracture and so I had no reason for concern.

I took [Mr A’s] notes out of the basket in the office and wrote that the patient was discharged with his script at the approximate time of 2130hrs because I didn’t know the exact time of the discharge. [Mr A] had not been mobilised before I left [ED] for AAU. The need to mobilise before leaving and the fact that he had three hours to travel in the back of the car was emphasised to him before I left for the AAU.

... [Mr A] had not mobilised at all when I last saw him. Mobilised is what I called getting up and walking. What I know is that [Mr A] could move his hands and feet.”

RN Ms F subsequently clarified:

“I did not record any concerns on my return because the reported normal X-ray and the doctor’s order to discharge with the script when he had mobilised, led me to the assumption that [Mr A] had mobilised to the doctor’s satisfaction in my absence. I did not look at the doctor’s notes on the chart to confirm this when returned as I was busy transferring other patients from resus [resuscitation] to AAU [Acute Assessment Unit].

My vital sign assessments after 1800 hours changed to visual observations for the reason that after [Mr A] was X-rayed, the order was for mobilising then discharge as there were no fractures. I was operating on the impression, as is suggested in ... the report, that medically there was little to be concerned about regarding the injury. I truly regret that this was not the case for [Mr A].”

The exact time Mr A left Wanganui Hospital is unclear. After returning home, Mr A was unable to move his legs and experienced increased pain and numbness in his body. He stated:

“... Two of my mates had to carry me from the car to a bed in the living room, I was in a huge amount of pain and the feeling in my legs was very scary. I was trying my best to mobilise because it was the advice given to me by the doctors

at Wanganui Hospital but after several attempts, it was just not possible because of pain and discomfort. ...”

13 September 2007

In the morning, Mr A contacted Dr B to complain that his legs were paralysed. However, owing to Dr B’s work commitments, he was unable to attend to Mr A until that evening.

Later that evening, Mr A was seen at his home by Dr B and a physiotherapist. A decision was made to transfer Mr A by helicopter to a major public hospital. Dr B recorded in his admission letter that Mr A’s condition had deteriorated with reduced sensation in his left leg and altered sensation up to his chest. Dr B also noted that Mr A’s mid-thoracic spine was tender, his bladder was distended and he had not passed urine since his accident.

Subsequent care

Mr A arrived at the public hospital at 1am on 14 September 2007. Later that morning, he had a CT scan of his thoracic spine, which revealed a burst fracture of the third thoracic vertebra (T3) with associated posterior displacement (subluxation) on T4. Later that day, Mr A had orthopaedic surgery to decompress his spinal cord from T1 to T5.

Following surgery, Mr A experienced ongoing lower limb weakness. An MRI on 18 September 2007 showed a haematoma (blood clot) at T3 level. That evening, Mr A had surgery to evacuate the haematoma, and to further decompress his spinal cord. Thereafter, he regained strength in his lower limbs.

On 27 September 2007, Mr A was transferred to a rehabilitation unit, and received ongoing input from a multidisciplinary team. He developed blisters around the surgical wound, which was aspirated on 19 and 23 October 2007. His condition did not improve, and he was admitted to another hospital between 24 October and 5 November 2007 for further treatment. After returning to the rehabilitation unit on the afternoon of 5 November 2007, Mr A continued his rehabilitation programme and returned to his home country on 14 December 2007.

Rehabilitation

A year following his accident, Mr A is walking independently (without the aid of a wheelchair or walking stick) but his co-ordination, proprioception and balance remain poor, especially when he is fatigued. He exercises at a gymnasium several times a week to build his muscle strength, power and endurance. The sensation from the nipple line to his feet has not improved, and he is unable to recognise the effects of pain, hot/cold, sharp/blunt and hard/soft objects. Mr A continues to suffer muscle spasm while fatigued and lying horizontally, along with ongoing moderate–strong pain in his upper thoracic region.

Subsequent actions by Whanganui DHB

After learning of the missed T3 fracture, Wanganui Hospital ED conducted an investigation into its care of Mr A. Several peer review meetings were held to discuss Mr A's case and to identify areas for learning and improvement. Mr A's X-ray films were reviewed again by radiology and ED staff.

On 9 November 2007, Mr Memo Musa (the former Chief Executive Officer of Whanganui DHB) wrote to Dr B regarding the findings of the investigation. In relation to the missed T3 fracture, Mr Musa explained:

“When the X-ray was reviewed no fracture was identified in the Emergency Department and these findings were echoed in a report from the Radiologist on 14 September 2007. When we were informed of the missed diagnosis, the films were reviewed and with the benefit of hindsight an extremely difficult to identify fracture of T3 was visible on the ‘swimmer’s view’ of the cervical series. The fracture of T3 was not visible on the thoracic spine views.

In the peer review process to date, all clinicians agree that this was an extremely difficult fracture to identify on the available films.”

Mr Musa also explained the circumstances surrounding Mr A's departure from Wanganui Hospital. He stated:

“The circumstances surrounding [Mr A's] discharge are the pivotal issue in this case. Having analysed the evidence, [Mr A] was not definitively cleared by the medical staff to leave the hospital. The patient was not viewed to mobilise and no staff member (including receptionists) observed him leave the hospital. It appears that somehow, with or without assistance, [Mr A] managed to get out of bed and make his way to a waiting car with two female companions. We remain unaware of his clinical status at the point of discharge including significant pain indicators or neurological deficit. If staff had been aware of and had concerns about [Mr A's] status in regard to these two features we would certainly have interrupted the discharge plan. Unfortunately, the clinical staff in the Emergency Department were denied an opportunity to finally evaluate the case as a result of the patient's premature departure.

As mentioned previously, the discharging doctor's note states, ‘..... mobilise, and home if no problem.’ The nurse involved with [Mr A] shared these instructions with him but unfortunately was never afforded an opportunity to witness [Mr A's] attempted mobilisation. ... [K]nowing the experience of the nurse involved ... any difficulty or failure to mobilise would have been reported to the attending doctor. Under these circumstances, [Mr A] would not have been permitted to leave without reassessment by a clinician.”

Mr Musa also apologised “sincerely” on behalf of Whanganui DHB “for the series of events that occurred whilst Mr A was in [its] care”.

In a subsequent letter to HDC, ED Clinical Director Dr E stated:

“This case has been thoroughly investigated and has been the subject of numerous peer review activities. ... The care the patient received was to a large extent influenced by a set of circumstances unique to this case. This case also provides everyone involved in the patient’s care and the rest of the department an opportunity to learn and improve the quality of care provided.

Areas of improvement include:

1. All clinical staff, in particular [Drs D and C] and Registered Nurse [Ms F], have reviewed and improved their knowledge of spinal trauma. Standard Emergency textbooks such as Tintinalli, Emergency Medicine (6th edition), Rosen’s Emergency Medicine (6th edition) and Jelinek Cameron’s textbook of Adult Emergency Medicine (2000) have been thoroughly scrutinised. The texts and algorithms relating to blunt spinal trauma now appear in our guidelines file.
2. Communication in the retrieval and handover processes. This applies to [Dr B] when referring serious or potentially serious injuries of our Emergency Department. [Dr D] has learned the importance of emphasising crucial signs and symptoms when handing over cases.
3. Documentation and its importance has again been highlighted to all concerned. This applies particularly to [Dr D’s] use of abbreviations.
4. Communication of information and instructions to patients. This relates to the way the patient understands what was meant by the term ‘mobilisation’ in the process of discharging the patient.

Note: The concept of ‘safe mobilisation’ has been clearly described to all clinical staff. Our Clinical Nurse Educator has conducted a number of training sessions with nursing staff about the subject. This topic has received considerable attention at the doctor’s peer review sessions conducted in the wake of this case.

Mobilisation in the clinical context means independent ambulation with reasonable fluency. In ideal circumstances this should be supervised by both doctor and nurse. A minimum requirement is nurse supervision and report back to the doctor.

5. Emergency department staffing. We realised the risks associated with a single doctor and how this affected [Dr C’s] ability to review the case at the bedside. Solo shifts are now avoided where possible with the introduction of additional senior and junior staff to the roster. We say where possible because we are constantly challenged with workforce

shortage issues and work hard to care for staff so they are persuaded to stay.

6. [Dr D's] neurological assessment. [Dr D] appreciates the importance of a thorough neurological examination."

Dr E concluded:

"... This incident has provided us the opportunity to learn and improve the quality of care we provide. We are all without exception very sorry that [Mr A] left our hospital without the correct early diagnosis and consequent treatment. His case will live on in our [institutional] memory. Most of all we are pleased and consoled that [Mr A] has made an impressive recovery to date. On behalf of the department, we would like to extend our best wishes for a complete recovery ..."

ACC

On 5 October 2007, Dr B completed a treatment injury claim on behalf of Mr A. The injury was stated as "fracture T3 missed by Wanganui Hospital, patient discharged same day and advised to mobilise. Next day he had extensive paralysis ?caused by forced mobilisation with thoracic spine fracture."

On 17 April 2008, ACC accepted the claim for a consequential injury. In reaching its decision, ACC obtained external clinical advice from independent ED specialist Dr Andrew Swain and Dr William Taine, orthopaedic surgeon.¹²

Dr Swain noted that "a number of issues contributed to [Mr A's] misdiagnosis and mismanagement at Wanganui Emergency Department". He commented:

"... [Mr A] was allocated triage category 3 indicating that it would have been appropriate for him to wait up to 30 minutes to be seen by a doctor. In some centres (eg. Wellington), triage category 1 would apply to such a patient and a multidisciplinary trauma team would have been called to await the patient's arrival. The main reason for this is that spinal cord trauma is frequently associated with serious internal injuries and other complications. ... As a minimum, I would have expected the patient to have been allocated triage category 2, indicating that he should have been seen by a doctor within 10 minutes. However, I am pleased that [Dr D] did see the patient on arrival despite the allocated triage category.

¹² Dr Swain and Dr Taine provided their advice to ACC before HDC extended its investigation on 14 April 2008. (It appears that their reports were not circulated to Dr D, Dr C and Whanganui DHB for comment.) Dr D and Dr C provided additional information to HDC about their care of Mr A, and further advice was obtained from emergency medicine specialist Dr Garry Clearwater (attached as Appendix B). Dr Swain and Dr Taine's comments should therefore be read in conjunction with Dr Clearwater's further advice.

...

[Dr D's] neurological examination was inadequate.¹³ He documented 'no neuro changes, cranial nerves intact'. I see no evidence of any assessment of sensation or power in the trunk or limbs, muscle tone, or reflexes. Such an examination is mandatory in a patient with symptoms of spinal cord injury. ...

A full neurological examination must be completed in such cases and all neurological symptoms, such as tingling or weakness, must be taken seriously until spinal injury is excluded. The presence of anal tone does not exclude spinal cord injury and is consistent with incomplete cord injury.¹⁴

... [I]t is also accepted that spinal cord injury can occur without an accompanying x-ray abnormality.¹⁵ ... Whilst not all patients who are tender between the shoulder blades warrant CT scanning, the obvious symptoms of spinal cord injury in [Mr A's] case fully justified the need for CT scanning as the x-rays were inconclusive. ...

There is no evidence that [Mr A] was referred or discussed with ... specialist staff (e.g. the orthopaedic registrar). This further endorses my impression that the injury was underestimated.¹⁶ ..."

Dr Taine advised:

"... It would seem that on perusing the information available to staff in the Department at the time of presentation, that there was sufficient information available to maintain a high index of suspicion that a significant injury may be present. This includes the information from the ski field that the patient initially was aware of loss of sensation from his waist down, that a significant force had occurred, with the height of the fall (5 metres) being in his Wanganui charts, the ongoing level of pain and inability to fully mobilise. While not fully required to comprehensively diagnose the details of the fracture, I think it is reasonable to conclude that there were sufficient clues available to treat this rather more circumspectly, in particular not relying upon xrays alone as an indication that mobilisation was appropriate. Referral for an orthopaedic opinion, or precautionary immobilisation until further investigation was undertaken, could be regarded as more appropriate. While it is difficult to judge in retrospect, management of [Mr A's] case in the Emergency Department does appear to be substandard.

¹³ See also Dr Clearwater's further advice on Appendix B where he stated that "there is now evidence that Dr D did undertake an appropriate neurological assessment".

¹⁴ Dr D confirmed (in his response to the provisional opinion) that he is "fully aware" of this.

¹⁵ Dr D confirmed that he "fully understands" this.

¹⁶ In his response to the provisional opinion, Dr D disagreed with Dr Swain's conclusion and reiterated that he "most definitely did not underestimate Mr A's injury".

... [I]t is my opinion that the patient should have been managed differently at that point. However, it is less certain as to whether he would have had a better outcome. He may well have developed progression of his neurological symptoms even if managed ideally. However, particularly with documentation of his neurological status in detail, this would then be able to be attributed to the natural history of the injury. Given the lack of detail in the notes of the neurological examination at that time, it is difficult to avoid the conclusion that deterioration may have occurred as the result of management.”

Independent advice to Commissioner

Independent expert advice was obtained from:

- Dr Garry Clearwater, an emergency medicine specialist. Dr Clearwater’s initial advice is attached as Appendix A and his further advice as Appendix B.¹⁷
 - Dr Mark Coates, a musculoskeletal radiologist. Dr Coates’ advice is attached as Appendix D.
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Responses to provisional decision

Responses to my provisional opinion were received from the following parties:

Mr A

Mr A confirmed that the information gathered in the report is accurate.

Dr D

Dr D acknowledged my criticisms of his care, and confirmed that he has reviewed his practice as a result of this case. Dr D also apologised to Mr A for the deficiencies in his care.

In relation to his omission to review Mr A and document the numbness that Mr A developed in his left leg, Dr D commented:

“It is correct that I did not review [Mr A] when the nurse advised me of numbness. Ideally, I would have done so, and personally recorded this in the notes (nursing staff do also record patient’s symptoms). However, as you have

¹⁷ Appendix C sets out Dr Clearwater’s comments on the providers’ responses to my provisional decision.

noted, the ED was particularly busy, and I did not have the opportunity to do so prior to finishing my shift and handing over to [Dr C]. In this regard, while I saw [Mr A] immediately following his 1540 arrival, I note that my shift ended at 1600, not 1900 ... You do not suggest that a re-examination at this point would have made a difference to the outcome for [Mr A], and nor do I believe that it would have.

Additionally, you mention in your Provisional Opinion that documentation of [Mr A's] unilateral numbness 'may have assisted [Dr C] who took over [Mr A's] care that evening'. You reasoned that '[a]t the very least, a written record of the new symptom would have reminded [Dr C] to follow up on it with [Mr A]'. In a busy ED, when finding a chart and re-reading through it can become time-consuming and occasionally fruitless, ongoing verbal reminders such as the ones conveyed by the nurses to [Dr C] multiple times can be much more beneficial as cues. There were already a number of physical symptoms in the notes that indicated physical examination was necessary, and I do not think it can be said a further note by me 'would' have prompted [Dr C] to do this, in the circumstances."

Dr D concluded:

"... This case was definitely a reminder about the importance of verbally emphasizing matters of significance at handover (as you know, I consider I did properly hand over care), and of fully documenting my examination and findings ... [Dr E] comments about my appreciation of the need to perform a thorough neurological examination. To be clear, I was well aware of this at the time, as I believe I have demonstrated."

Dr C

In relation to not reviewing Mr A personally on the evening of 12 September 2007, Dr C stated:

"The Commissioner claims that I should have reviewed [Mr A] personally — although it is not clear from the opinion as to when I should have reviewed him and whether it would have made any difference. The need for review was based on the information that I had available to me at the time, which was prospective. ... The facts that I had available to me were that the patient was stable, and at no point was any deterioration reported to me. It was also never reported to me that he was in any discomfort until the very end. The initial plan of investigation (plain thoracic spine X-ray), was in place and according to Dr Clearwater, it was a reasonable request as a first measure. At that point my review would have been of little benefit and was unlikely to change the initial management. The X-ray came back as normal and I decided to try and mobilize the patient to assess the need for further investigations or personal

review and in the words of Dr Taine: ‘... or precautionary mobilisation¹⁸ until further investigation was undertaken, could be regarded as more appropriate’. This was exactly what I did. I was then further informed that [Mr A] failed the trial and was unable to mobilize off the bed as he was in significant pain. I prescribed further analgesia for him, with a view of examining him as soon as I was able to. At that point it was almost 7 hours post the incident and no signs of significant deterioration were noted. By the time I was able to attend to him personally [Mr A] had left the department.”

Dr C explained his documentation of Mr A’s care:

“... I appreciate that the unreasonably heavy work load was taken into account as a mitigating factor but I just wanted to fully stress the reality of such situations especially in Wanganui where we have a particularly high percentage of high acuity major cases. Most of our minor cases tend to be seen by the Wanganui Accident and Medical department. I agree with Dr Clearwater’s advice that ‘most Emergency Medicine specialists would have recognized that this clinical picture warranted high priority for attention especially when patient developed new neurological symptoms’. I want to stress that there were NO NEW neurological symptoms that I was aware of at any stage during my shift and the ‘high priority of attention’ is only relative to the other patients I had to deal with, I had several new patients, undifferentiated and potentially unstable who could have rapidly deteriorated at any point. Had they not been there I would have certainly attended to [Mr A] earlier, the plan to mobilize him without my direct supervision was not ideal but I felt that was the best I could do taking into account external pressures. These were caused by resource issues which were beyond my control that evening.”

Dr C concluded:

“Since [the events in question,] our staffing situation has changed dramatically and we virtually never have a single doctor on the shop floor. As far as I can remember this was the only occasion I mobilized such a patient without my direct involvement and I certainly have not done so in the last year. I have taken the lessons from [Mr A’s] case to heart and I try to [make] my note keeping and plan ... more clear and understandable for the patient to avoid them leaving the department unexpectedly.”

¹⁸ Dr C subsequently explained that he based his response on what he understood to be Dr Taine’s advice about precautionary *mobilisation*, and only subsequently discovered that there had been a typing inaccuracy, and the correct word was *immobilisation*.

Whanganui District Health Board

Whanganui DHB accepted my provisional opinion and outlined the various remedial measures the DHB has initiated.

In relation to addressing the specific concerns in this case, Whanganui DHB stated:

“With regard to steps we have taken specific to [Mr A’s] case, I am pleased to advise that we have been successful in recruiting to our full complement of Junior Medical Officers and now have an Emergency Department Consultant on duty with a minimum of one other Doctor on all shifts, apart from the night shift when there are two Junior Doctors on duty. ... We submit that, at the time, every District Health Board in New Zealand was facing the same challenge [staff shortages], and some are continuing to do so.

Implementation of your proposed recommendations has, or is, occurring including management supporting our Emergency Department staff, to widen the interaction that they have with other Emergency Departments for purposes of sharing and learning.

Further improvements include Emergency Department now being co-located with Whanganui Accident and Medical Clinic, in a purpose-built facility. This has improved the communication and working relationships between the two units. The co-location and the effect this has had on triaging, is contributing to the patients being treated in the best setting for their acuity, a factor which is also contributing to improved staffing levels in Emergency Department.

The old Emergency Department was a ‘rabbit warren’ with five uncontrolled exit points and limited access to all bays and cubicles from the observation station. Thus, it was very easy for a patient to leave the department unobserved. There is now an Emergency Department receptionist 24 hours a day and only one controlled patient entry and exit point for the entire department. Further, within the department the processes surrounding patient discharge have been reviewed and tightened up.

The Acute Assessment Unit was previously on the third floor of another building and is now located within the Emergency Department. This negates the need for nursing staff to leave the Emergency Department to relieve staff in the Acute Assessment Unit. There is now a radiology screening room next to the Emergency Department, which is dedicated to outpatient X-rays. This frees up the main Radiology Department for inpatient examinations and has reduced waiting times for outpatients.”

Whanganui DHB also commented:

“Accepting and acknowledging mistakes, is fundamental to the environment that we are trying to create for our patients and our staff. ... Our organisation

is working to develop a strong patient safety culture. We have identified communication, including clinical documentation and clinical handover, as the first of our two priorities for patient safety improvement over the next couple of years.

We are confident that we have taken steps to address the breaches and that all staff involved have learned from the mistakes made in [Mr A's] case. It is our sincere wish that the Whanganui DHB community realises that we have responded in this manner and has confidence that our Emergency Department provides sound assessment and treatment for everyone who presents there.”

Review of providers' responses

Emergency medicine specialist Dr Clearwater was asked to review the providers' responses to my provisional opinion. Dr Clearwater's comments are attached as Appendix C.

Code of Health and Disability Services Consumers' Rights

The following Rights in the Code of Health and Disability Services Consumers' Rights are applicable to this complaint:

RIGHT 4

Right to Services of an Appropriate Standard

- (1) *Every consumer has the right to have services provided with reasonable care and skill.*
 - (2) *Every consumer has the right to have services provided that comply with legal, professional, ethical, and other relevant standards.*
 - ...
 - (5) *Every consumer has the right to co-operation among providers to ensure quality and continuity of services.*
-

Other relevant standards

The Medical Council of New Zealand's publication *Good Medical Practice — A Guide For Doctors* (October 2004) states:

“Good clinical care must include:

- an adequate assessment of the patient’s condition, based on the history and clinical signs, and an appropriate examination.

...

- Taking suitable and prompt action when necessary.

...

[Doctors] must keep clear, accurate and contemporaneous patient records that report the relevant clinical findings, the decisions made, the information given to patients and any drugs or other treatments prescribed.”

Opinion: Breach — Dr D

Standard of care

Dr D gained his medical degree in America in 2004 and developed an interest and experience in neurophysiology. At the time of the events in question, he was employed on a four-month contract at Whanganui DHB as a locum medical officer and was supervised by ED Clinical Director Dr E.

Dr D was the first of two ED doctors involved in Mr A’s care when he presented to Wanganui Hospital Emergency Department on the afternoon of 12 September 2007. Mr A arrived at ED after he was airlifted from Mt Ruapehu where he had injured his back in a snowboarding accident.

I share ACC independent ED advisor Dr Swain’s view that the triage nurse should have considered Mr A either a category 1 or 2 case. However, despite being triaged category 3 (which requires a doctor to see a patient within 30 minutes), Dr D attended promptly and saw Mr A shortly after his arrival. Dr D appropriately recognised the potential spinal injury “red flags” recorded in Dr B’s referral and conducted a comprehensive neurological assessment of Mr A’s limb muscle and sensory function. However, Dr D only recorded “no neuro changes, CNs II-XII intact” in his notes. He says that it did not reflect the extent of his assessment (discussed below).

After completing the review, Dr D appropriately discussed Mr A’s case with his supervisor, Dr E. During the course of his discussion, Dr D was interrupted by a house officer who reported that Mr A was beginning to experience numbness in his left leg. This was a significant neurological development, which should have prompted Dr D to return urgently to review Mr A, and to document the new symptom in his notes. However, Dr D stated that he “did not have the opportunity to do so prior to finishing his shift and handing over to Dr C”. Instead, Dr D instructed the house officer to replace the hard cervical collar and to ensure that Mr A remained in a supine position.

Dr D also referred Mr A for spinal X-rays to ascertain whether he had sustained any fractures. Dr Clearwater advised that this was reasonable “as a first measure as approximately 75% of fractures will show up on [X-rays]”. However, owing to the high demand for radiological services that evening, Mr A’s X-rays were not available before Dr D finished work that evening. It appears that Dr D provided Dr C with a clear and detailed handover of Mr A’s case, including the need to follow up on his X-rays.

In my view most aspects of Dr D’s care were appropriate but he made a wrong judgement call in not returning to review Mr A when he began experiencing numbness in his left leg. In this respect, even as a relatively junior locum ED doctor, Dr D should have taken more care. The numbness was a significant new symptom in a young man who had suffered a back injury, and he should have re-assessed Mr A. By his failure to do so, Dr D breached Right 4(1) of the Code. Dr Clearwater advised that Dr D’s omission constituted a mild departure from expected standards.

Documentation

Health professionals are required to document accurately and fully a patient’s symptoms and the findings from any examination conducted. Record-keeping is an essential part of good quality care.

As discussed above, Dr D’s neurological documentation was brief and apparently did not reflect the extent of his assessment. He also omitted to document the numbness that Mr A developed in his left leg. Dr Clearwater commented that this information may have assisted Dr C, who took over Mr A’s care that evening. At the very least, a written record of the new symptom could have reminded Dr C to follow up on it with Mr A. I share Dr Clearwater’s view that given Dr D’s interest and experience in neurophysiology, “one could expect a higher than average level of understanding of the standards expected, including a high level of documentation of neurological assessment, particularly for a patient who was about to be handed over to a colleague”.

Dr D disagrees that he should have documented the numbness in Mr A’s left leg. In his view “there were already a number of physical symptoms in the notes that physical examination was necessary” and he did not consider that “a further note ... ‘would’ have prompted [Dr C] to do this, in the circumstances”.

Dr Clearwater commented that it is “disappointing” that Dr D does not appreciate the importance of documenting significant neurological symptoms, signs and new developments. Dr Clearwater advised that this is “a basic standard of care” that professional bodies such as the Medical Council and the Australasian College for Emergency Medicine expect. My advisor also considered it “risky” to rely on nurses to convey verbal reminders to other medical staff. I endorse these comments.

In mitigation, Dr Clearwater noted that there was a heavy demand for ED services that Wednesday afternoon/evening. There was also a lack of a template or form to

document neurological examinations — something I recommend that Whanganui DHB develop. Nonetheless, patients rely on their doctors to record all significant clinical findings and developments, even on busy shifts. Indeed, Dr Clearwater commented that “it is even more important to have good documentation during a busy shift — even though it is more difficult to take time to document well”.

Taking into account these factors, I conclude that Dr D’s documentation did not comply with professional standards and breached Right 4(2) of the Code. Dr Clearwater advised that Dr D’s record-keeping would be viewed with mild disapproval by his peers.

Opinion: Breach — Dr C

Standard of care

Dr C, an ED consultant (trained in emergency medicine in the United Kingdom and holding a provisional general scope of practice with the New Zealand Medical Council at the time of these events¹⁹) assumed responsibility for Mr A’s care from approximately 7pm onwards. Dr Clearwater advised that Dr C’s care fell moderately below the standard of care expected of a vocationally trained specialist in emergency medicine. His comments are consistent with the views expressed by ACC’s independent emergency medicine advisor (Dr Swain) and orthopaedic advisor (Dr Taine).

Mr A had an unstable fracture of all three columns in his bony spinal canal (anterior, middle and posterior column). He was in a “very unstable situation” and was at risk of developing permanent spinal cord injury. Earlier on, Dr B and Dr D had recorded symptoms of pain, weakness and sensory changes (“pins and needles” and numbness). These were warning signs that should have alerted Dr C that Mr A was a “high-priority” case and required close monitoring.

Dr Clearwater commented that “being attentive to ‘red flags’ amongst chaotic information overload is one of the core skills of an Emergency Medicine specialist”. However, it appears that Dr C did not recognise the red flags in a patient at high risk of a permanent spinal injury. My advisor noted that “this lack of recognition was at the core of [Dr C’s] subsequent actions”, which included omitting to review Mr A personally, giving limited instructions to nursing staff regarding mobilisation and writing out an early discharge script which reinforced the message to the nurse (and indirectly to Mr A) that there was no significant injury. In effect, this created a “default plan for the patient to depart without further (medical) review”, which was a “risky” way to manage Mr A’s care. Better strategies would have been to request the

¹⁹ Dr C now has vocational registration in Emergency Medicine.

orthopaedic team to review Mr A and to take over his care at an early stage, and to request a spinal CT scan or MRI before issuing instructions to mobilise.

Dr C questions when he should have reviewed Mr A personally, and whether it would have made any difference. I share Dr Clearwater's view that Dr C's response is disappointing as it suggests that he does not fully appreciate the deficiencies in his care, nor how it impacted on nursing staff and Mr A. My advisor considered that Dr C should have reviewed Mr A early in the shift rather than later, as an early review would have prompted him to order a spinal CT scan and/or request an orthopaedic review. Dr C would also have seen for himself that Mr A was in a more serious condition than the impression he had gained during handover. It may have led him to initiate a more effective management plan.

While it was reasonable for Dr C not to detect any fractures from reviewing the X-ray films, Dr Clearwater advised that "spinal fractures are difficult to diagnose in X-rays of the upper thoracic spine and that CT scan was an appropriate follow-up investigation". Dr Clearwater's views are supported by musculoskeletal radiology expert Dr Mark Coates, who commented that the upper thoracic spine is a "notoriously difficult area to visualise on plain radiographs" and that many radiologists "proceed to CT if there is clinical concern". Furthermore, given that mobilisation was a major decision in itself, it would have been good practice for Dr C to personally review Mr A and supervise his mobilisation.

I am concerned by Dr C's plan for mobilisation of a spine-injured patient. It suggests that there may be gaps in Dr C's knowledge and understanding of spinal injuries, and how to manage such patients effectively. Dr Clearwater stated that mobilisation was a "very risky" strategy as it could have exacerbated the unstable spinal injury, and resulted in worsening pain and/ or worsening/new neurological symptoms. Dr C's comment that there were "NO NEW neurological symptoms that [he] was aware of at any stage during [his] shift" misses the point that a spine-injured patient lying still in bed is unlikely to develop any new symptoms.

In mitigation, Dr C was the only ED doctor on duty that Wednesday evening and had to manage an "unreasonably heavy" workload. Dr Clearwater commented that "in a busy ED with multiple sick patients to manage and a heavy chaotic information load from multiple sources, it is understandable that Dr C might have been unable to reflect on the significance of the 'red flags' that were presented to him".

Although the heavy workload was a significant mitigating factor, I consider that Dr C did not meet the standard expected of an ED consultant. He did not review Mr A personally, and did not recognise and respond to the red flags of a case of high-risk spinal injury. I accept Dr Clearwater's advice that "most Emergency Medicine specialists would have recognised that this clinical picture warranted high priority for attention especially when the patient developed new neurological symptoms. It was a high-risk scenario with significant risks."

In these circumstances, Dr C did not provide Mr A with an appropriate standard of care and breached Right 4(1) of the Code.

Documentation

After reviewing Mr A's X-rays, Dr C noted that there was nothing abnormal detected, and recorded a brief plan ("mobilise and discharge home if no problems"). Apart from this, Dr C did not document any other information about Mr A's care. Dr C explained that "there were a lot of patients requiring his attention" and consequently, he "did not have the luxury of being able to sit down and write explicit notes". I share Dr Clearwater's view that Dr C's documentation was "minimal". Dr C's record-keeping did not comply with the professional standards expected of an ED consultant and he therefore breached Right 4(2) of the Code. I note that Dr C accepts that finding.

Opinion: Breach — Whanganui District Health Board

There were a number of gaps and deficiencies in the overall running of Wanganui Hospital ED on the afternoon/evening of 12 September 2007, which impacted on the care Mr A received, and for which Whanganui DHB is responsible. I acknowledge that the heavy workload ED staff faced that evening may have impacted adversely on their standard of communication and documentation. Dr Clearwater commented that overloaded emergency departments are at an increased risk of morbidity and mortality, and Mr A's case illustrates how overloading can translate to poor outcomes. I also accept Whanganui DHB's point that at the time of the events in question, they were facing a shortage of junior and senior medical officers similar to other district health boards throughout New Zealand. That, however, does not excuse the district health board from its duty to provide an emergency department that has sufficient staff and robust systems to withstand fluctuating demands and ensure that good communication occurs between staff and with patients. On 12 September 2007, Whanganui DHB failed to fulfil the duty of care it owed Mr A.

Documentation

In addition to the brevity of Dr D and Dr C's clinical notes, there were deficiencies in the nursing notes. The nursing records of the triage assessment and medication administration were of a good standard, and there were also regular recordings of Mr A's vital signs up to 6pm. But no vital signs were recorded after 6pm, nor the concerns that Mr A had not mobilised sufficiently. A "pseudo-accurate" term was used to describe Mr A's departure from hospital following the nurse's return to ED. I share Dr Clearwater's view that "the nursing progress notes were minimal for a patient with spinal injury".

I acknowledge that the paucity of nursing records may reflect an impression from medical staff that Mr A was not in any significant danger or injury, as well as the heavy workload that evening.

A district health board is responsible for the quality of documentation by its medical and nursing staff. Staff need to be trained to keep good records, and they need appropriate support and sufficient time to do so, and audits of the quality of documentation should be undertaken on a regular basis. There is no indication that Whanganui DHB took these steps. In these circumstances, Whanganui DHB breached Right 4(2) of the Code.

Communication

Dr Clearwater noted that there “was a series of miscommunications” between clinical staff at Wanganui Hospital. As discussed above, it would have helped Dr C if Dr D had documented the numbness that Mr A developed in his left leg, since good documentation becomes even more important during a busy shift. After taking over Mr A’s care from Dr D, Dr C omitted to provide clear advice to nursing staff on the symptoms and signs that warranted a medical review, and the brief plan he recorded provided minimal guidance. Although it was pragmatic for Dr C to organise a discharge script ahead of time in light of his workload, his actions reinforced to the nurse and Mr A that discharge was “effectively under way”. Consequently, the nurse handed the discharge script to Mr A’s girlfriend, and encouraged Mr A to mobilise with a view to being discharged. When the nurse returned to check Mr A an hour later, she noted that he experienced stiffness and significant pain in his back (described as “lightning bolts” through his body). Although the nurse informed Dr C that Mr A was “still stiff”, the details of what she relayed is unclear. It is likely that Dr C did not have an accurate picture of Mr A’s clinical situation when he was asked to prescribe more pain relief.

These are all examples of communication between clinical staff that fell below acceptable standards. In these circumstances, Whanganui DHB breached Right 4(5) of the Code.

Discharge advice

My advisor also commented that “the communication to the patient was suboptimal, especially the absence of discharge advice”. Clinical staff did not provide Mr A with clear instructions about mobilising, and did not explain when it would be safe for him to be discharged from hospital. Instead, nursing staff encouraged Mr A “to mobilise as much as possible because [he] was going home” and gave him the take-home prescription from Dr C. There is no indication that Mr A was told that he had to be reviewed by medical staff before he was allowed to leave hospital. It is not surprising that Mr A thought he had been discharged, and left Wanganui Hospital prematurely with his friends.

Clear advice about discharge is all the more important in a risky situation such as Mr A’s. In addition to sustaining a back injury, Mr A was returning to an area where access to medical help was limited. It was therefore vital to provide him with detailed instructions about the ongoing management of his symptoms including when to seek

further medical assistance.²⁰ That did not happen. The lack of clear discharge advice was another factor that compromised Mr A's care and highlights a systems failure at Wanganui Hospital. In this respect also, Whanganui DHB breached Right 4(5) of the Code.

Actions taken

In response to my provisional opinion, Whanganui DHB outlined the various measures it has implemented within the Emergency Department since the events in question. They include re-designing the layout, and processes within ED, increasing staffing levels and reducing outpatient waiting times for X-rays by having an adjacent radiology screening room. In addition, Whanganui DHB has identified clinical documentation and clinical handover as its first of two priorities for patient safety improvement over the coming years.

I commend Whanganui DHB on these initiatives. Dr Clearwater commented that "the re-design of the ED and the commitment to minimum staffing levels will be of benefit to patients".

Recommendations

Dr C

I recommend that Dr C:

- Provide a written apology to Mr A for his breaches of the Code. The apology is to be forwarded to HDC by **12 December 2008** for sending to Mr A.
- Undertake additional training and education in managing spinal injuries, and provide evidence of this to HDC by **31 March 2009**.

Whanganui DHB

I recommend that Whanganui DHB:

- Devise a form/template for clinical staff to record a patient's neurological
-

²⁰ The importance of clear discharge information is also discussed in another case involving a patient discharged from Wanganui Hospital ED; see case 05HDC14141, 28 February 2007 (available from www.hdc.org.nz).

findings.

- Review its discharge process to ensure that patients receive discharge prescriptions only at the time they receive their discharge summary.
 - Liaise with the Australasian College for Emergency Medicine to run an educational update in spinal injuries for clinical staff.
 - Provide written confirmation by **19 December 2008** that it has implemented the above recommendations.
-

Follow-up actions

- A copy of this report will be sent to the Medical Council of New Zealand.
- A copy of this report, with details identifying the parties removed except the experts who advised on this case, Whanganui District Health Board and Wanganui Hospital, will be sent to the Minister of Health, the Director-General of Health, all district health boards, the Australasian College for Emergency Medicine, the Royal Australian and NZ College of Radiologists, and the New Zealand Accident and Medical Practitioners Association, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix A

Independent advice to Commissioner — Emergency Medicine

Initial advice

The following expert ED advice was provided by Dr Garry Clearwater, an emergency medicine specialist:

“I have read and agreed to follow the Guidelines for Independent Advisors provided by the Office of the Health & Disability Commissioner.

I am an Emergency Medicine Specialist, qualified MBChB in 1982 and a Fellow of the Australasian College for Emergency Medicine (FACEM) since 1999. I currently work as a full-time staff specialist in 2 Emergency Departments (EDs) at Waitemata District Health Board and I have previously worked as a GP in a semi-rural practice and as a Medical Officer of Special Scale at Middlemore Hospital ED. Our service employs specialists, Senior Medical Officers and registrars in training as well as locums. We employed Senior House Officers up until 2005.

I have been asked to review the appropriateness of the care provided by Whanganui District Health Board to [Mr A] at Wanganui Hospital on 12 September 2007.

I have read the following documents:

- Complaint from [Dr B], marked ‘A’ (Pages 1–3).
- Written account from [Mr A] marked ‘B’ (Pages 4–5).
- Whanganui DHB letter of 9 November 2007 to [Dr B] marked ‘C’ (Pages 6–8). [Dr B’s] response of 16 November 2007 marked ‘D’ (Pages 9–12).
- HDC notification letter of 2 November 2007 to Whanganui DHB, marked ‘E’ (Pages 13–15).
- Whanganui DHB response of 23 November 2007 to HDC marked ‘F’ (Pages 16–17).
- HDC letter of 14 December 2007 requesting clarification from Whanganui DHB marked ‘G’ (Pages 18–19).
- Response of 18 January 2008 from Wanganui Hospital’s Emergency Department with enclosed statements from [Dr D] and [RN Ms F], marked ‘H’ (Pages 20–26).
- Response of 26 January 2008 from Whanganui DHB marked ‘I’ (Pages 27–28). HDC letter of 8 February 2008 requesting further information from Whanganui DHB marked ‘J’ (Pages 29–30).
- Response of 7 March 2008 from Whanganui DHB with enclosed statement from [Dr C] marked ‘K’ (Pages 31–32).

- [Dr B's] admission note to Wanganui Hospital dated 12 September 2007 marked 'L' (Page 33).
- [Mr A's] clinical records from Whanganui DHB marked 'M' (Pages 34–48).

I do not have:

- A record of the helicopter or transport record for his transfer from Turoa to Wanganui Hospital.
- Information about the training, status or experience of [Dr D] who saw [Mr A] when he arrived at Wanganui Hospital ED.
- Information about the training or experience of [Dr C] who discharged [Mr A] from Wanganui Hospital ED.
- Information about the training or experience of Registered Nurse [Ms F] who cared for [Mr A] in Wanganui Hospital ED.
- Details of the ED staffing levels and workload on the 12 of December.
- Details of any departmental guidelines, teaching materials or textbooks regarding spinal injury available in the ED.
- Hospital records from [the Public] Hospital where [Mr A] was referred and treated and his fracture was confirmed (although I do have some indirect information in a summary from the HDC Office).

[At this point, Dr Clearwater lists the questions asked of him, which he repeats in his advice. This has been omitted for the purpose of brevity.]

OUTLINE OF EVENTS

[Mr A] was a 19 year old man who was usually fit and well. At approximately 1400h on Wednesday 12 September 2007 he fell from a height of approximately 5 metres, landing on his back while snowboarding on the Turoa Ski field at Mount Ruapehu.

[Mr A] recalled that as soon as he landed, he could not move his legs and that he had intense back pain between his shoulder blades. A ski patrol team splinted him on a back board and applied a neck collar to transport him to the local Medical Centre where [Dr B] assessed him at 1445h. [Mr A] recalls that when he arrived at the medical centre he had a numb feeling below the level of the nipples and had intense pain in his back.

[Dr B] wrote a clinical report that accompanied the patient to hospital and included the following:

Mechanism: Fall on to back (after a jump). On scene had nil sensation legs. Painful chest and thoracic spine.

On examination: on (a spinal) board, 'Pins & needles both legs from the waist down.'

Provisional diagnosis:

1. Back injury ?# (i.e. possible fracture)

2. Chest injury

The patient was treated with intravenous morphine (5 mg at 1505h), a mild–moderate dose for pain, and was transferred to Wanganui Hospital via helicopter.

He arrived at the Emergency Department (ED) at 1540h where he received a triage category of 3 (to be seen by a doctor within 30 minutes).

The triage nurse recorded that initially he had no sensation below the waist and that in ED he had chest and back pain between the shoulder blades and normal recordings of his vital signs.

[Dr D] saw him on arrival. It is not clear from the records available to me what role or status he had in the ED. According to the Medical Council of New Zealand electronic database he gained his MD in the USA in 2004 and (in March 2008) has provisional registration (i.e. must work under supervision for at least their first 12 months in New Zealand to become familiar with the culture. During this time performance will be assessed by senior colleagues).

The nursing notes record that [Dr D] removed the patient's neck collar and the spinal immobilization back board.

[Dr D] hand-wrote his notes over one and a half pages and noted that the patient was in 'mild distress secondary to back pain.'

A general examination of the patient was recorded with the following relevant findings:

- 'Mild' tenderness to palpation of the thoracic spine between the shoulder blades
- An abrasion of the thoracic level of the back
- Normal examination of the anal area (an assessment for nerve damage and internal bleeding)

The neurological examination is otherwise covered in 2 lines:

'Ext (extremities) — NL (normal) range of motion, NL (normal) sensation.'

'Neuro — no neuro change. CNs II intact'

- i.e. the face and neck nerves were examined (Cranial Nerves 2 to 12) in some detail but there is no record of a detailed examination of the nervous system in the limbs or trunk apart from 'sensation'.

The recorded plan was to order the following X-rays:

- chest PA [and lateral views (usually implying that the patient would be sitting up for the films)]
- neck (cervical spine)
- thoracic spine (the spine at the level of the chest)

In his outline of events, [Mr A] recalls having an ‘alien’ numbness below the level of his nipples down to his feet and that he had ‘slightly regained movement’ in his legs but they were weak. He does not describe how he was examined by [Dr D].

[Dr D] later says that he checked the neck thoroughly, removing the cervical splint and then asked for it to be reapplied because ‘one of my resident medical officers informed me that the patient was beginning to experience numbness of his left lower extremity.’ The nursing notes record that the patient had his neck collar re-applied at 1630h at the request of [Dr D].

[Dr D] states later ‘a complete and thorough neurological examination was performed.’ ‘During my sensory examination of the patient, all parts of the patient’s anatomy were examined and touched: head, eyes, ears, neck, chest, back, abdomen and extremities were evaluated ...’ ‘My documented examination is abbreviated in (the notes), which implies that the patient was able to feel my touch, there were no sensory deficits, and he denied any pain to my palpation. If the patient had a specific neurological sensory change ... then the formal finding would have been documented, In other words, not all normal findings are documented due to time.’

[Dr D] states that he was aware of the accompanying ski field medical report of ‘previously identified loss of sensation (‘Pins & needles both legs from waist down’) and the development of numbness of his left lower extremity ... after my exam, my suspicion for spinal injury still existed and ... I then ordered cervical and thoracic spine X-rays to delineate this possibility.’

[Dr D] handed this case over to [Dr C] for the evening shift: ‘I informed [Dr C] of [Mr A’s] historical information & physical examination findings, as well as the recent development of [Mr A’s] neurological symptoms.’

According to the Medical Council of New Zealand, [Dr C] graduated as a doctor in 1992 in the UK and was registered there with the Fellowship of the College of Emergency Medicine (FCEM) in 2006. This is a different qualification to the Fellowship of the Australasian College for Emergency Medicine (FACEM); the latter is the standard specialty qualification recognised in New Zealand. He is not vocationally registered as a specialist in New Zealand.²¹

In his response to the complaint, [Dr C] explained that [Dr D] told him at the handover that ‘there was a vague history of some numbness in his legs but he was fine now and no weakness was found on examination.’

²¹ Dr C is now a vocationally registered specialist in Emergency Medicine, although he does not yet hold the FACEM qualification.

The patient was taken to the Radiology Department at 1800h for X-rays.

The only other documentation in the notes:

- 2000h (nursing notes): given pain relief and advised to mobilise
- 2030h (drug record): Ibuprofen (an anti-inflammatory pain-killer) 800 mg and Paracetamol (a mild pain killer) 2 g by mouth
- 2100h (nursing notes): Remains 'stiff', given further analgesia
- 2130h (nursing notes): Feels sore still back wanting to go (sic). Given script and dx (discharged?)

In a later statement about the case, Staff Nurse [Ms F] states that on return to ED after his X-rays, 'patient pain-free and normal movement hands/feet.'

The subsequent medical notes are not timed and take 3 lines. There is no indication in the notes as to who wrote them but [Dr C] presumably wrote them:

- 'X-rays were NAD' (No Abnormality Detected).
- (Plan): mobilise and H (home) if no prob (problems). Analgesia.'

The workload in the ED was reportedly heavy: 'we had a very busy department with a lot of patients waiting to be seen.' [Dr C] states that he was too busy to review the patient personally but he reviewed the X-rays and 'on several occasions I enquired about his well being ... I was reassured that he remained stable.'

[Dr C] could not detect a fracture in the spine when he checked the X-rays. The subsequent formal radiological report (by a radiologist) was that no fracture could be detected.

'Based on previous assessment of the patient by [Dr D] I assumed that there was little chance of there being a significant injury, however I was obviously unable to clear the patient at that stage. In view of the other patients awaiting assessment I decided to reassess the patient if he was unable to mobilise independently and with ease.'

In her statement, Registered Nurse [Ms F] stated '[Dr C] ... advised no fracture seen and advised mobilise then discharge ... Patient advised of some expectant pain due to possible contusion and soft tissue injury post his fall. Patient then encouraged him to start moving.'

A friend of the patient asked the nurse what was happening and in her statement [RN Ms F] says 'I, at this point, gave the patient's script to the female and explained to her the Doctor's plan — mobilise and discharge.'

Discharge script written by [Dr C]:

Ibuprofen 800 mg three times a day for 1 week
Paracetamol 1 g four times a day for 1 week.

[Mr A] describes being told that there was no fracture in his spine, 'only bruising and to mobilise as much as possible because I was going home.'

He describes having significant pain, 'what felt like electric bolts through my body' as well as 'tight muscles and spasms.' After telling this to the nurse, he was given Tramadol (a moderate pain-killer) 100 mg and Diazepam (a sedative relaxant) 2 mg by mouth at 2115h: prescribed by [Dr C].

The patient describes sitting up on the side of the bed with some difficulty and was helped into a wheelchair by an orderly: it 'was not an easy process and it caused me a significant amount of pain.' He was wheeled to a car where he was assisted into a seat.

Discharge time was recorded and initialled as 2120h but [RN Ms F] explained later that she had to leave her station to attend to other matters, handed over to another staff nurse and, 'on return to ED I was surprised to find that [Mr A] was not in the department. I then wrote patient discharged with script and a discharge time of 21:30 but I do not know the exact time of discharge.'

[Dr C] states that 'As far as I am aware he was gone before the 2200(h) handover as he was not there when I left the department later that evening.'

[Mr A] estimated that he left ED at 'about 11 PM' (2300h).

There is no record of any discharge advice given verbally or in writing to the patient.

There is no recorded follow-up plan.

Discharge diagnosis recorded on the medical notes: 'contusion' (not signed or timed/dated).

The hospital clerical discharge coding was:

- Contusion of the lower back and pelvis
- Contusion of the thorax.

The patient travelled to his residence by car (reportedly, a three-hour drive).

He was re-assessed by [Dr B] the next day and he reports that [Mr A] had paralysis of both legs. He was transferred to [a public] hospital where CT scans on 14 September 2007 (i.e. 2 days after the injury) reportedly demonstrated an 'unstable 3 column injury of T3 (third thoracic vertebra) with a fracture involving anterior and posterior vertebral body.'

The patient had surgery later that day to relieve pressure on his spinal cord and had further surgery on 18 September 2007. He was subsequently transferred to [a] Spinal Unit for rehabilitation and eventually returned to [his home country] on 14 December 2007. It is not clear what residual neurological impairment (if any) he had at this stage.

SPINAL INJURY

Background

The spine is a series of 24 bone blocks (vertebral bodies) stacked on top of each other, each interlocking with the block above and the block below for flexibility. They surround and protect the spinal cord: the main nerve trunk that leaves the base of the brain and runs down in a space (the spinal canal) near the back of each vertebral body.

There are 4 levels in the spine: 7 vertebral bodies in the neck (cervical spine), 12 vertebral bodies in the thoracic spine (the level of the chest, where the ribs join the vertebrae), 5 in the lumbar spine (the lower back, behind the abdomen) and several fused vertebrae in the sacral spine (forming a single unit where the pelvis joins the back).

As the spinal cord descends in the spine, it passes out nerve branches at each level between each vertebral body, feeding layers of nerve supply to different levels of muscles (for motor control), skin (sensation of differing types) and 'visceral' functions (such as opening and closing blood vessels, skin pores, bladder and bowel sphincters).

The vertebral bodies are supported by strong ligaments and muscles which protect and move the spine.

Generally, it takes a lot of force to damage the bones of the spine. It is more common to damage the supporting muscles or ligaments (as occurs in back strain). The major concern with a spine injury is the possibility of damage to the spinal cord running down its length: once damaged, the spinal cord is slow to heal. Severe spinal cord injuries may be permanent.

When the spinal cord is injured, nerve signals are impaired at the level of injury: the brain cannot send normal nerve signals below that level and it cannot receive full sensory information from nerves below that level. Spinal cord injury is easiest to diagnose if it is complete: all nerve function is lost below a level of injury: the patient loses all sensation and all muscle power below the level of injury. This has a poor prognosis for recovery. However, milder, incomplete 'bruising' injuries may occur to the spinal cord: they may produce patchy or mild dysfunction (as opposed to complete loss of function)

depending where and on how deeply the bruising and swelling extend into the depth of the spinal cord.

In a partial fracture of a vertebral body, some parts of that bone may be forced backwards into the spinal canal, bruising and stretching the cord without destroying it. These injuries may be harder to detect, the nerve dysfunction may be subtle — but they are important to identify and protect because undue movement may damage the cord further. It is much better to prevent a spinal cord injury from getting worse compared to having to deal with a permanent injury after the event.

In retrospect, we are told that the patient in this case had a fracture of the third thoracic vertebral body. An injury at this level will produce motor and sensory changes below the nipple line: noticed by the patient as impaired sensation below that level (lower chest, abdomen and legs) as well as impaired function of muscles in the legs. Incomplete injuries may produce only subtle weakness in some or all areas of the spinal nerves below the level of injury. They may affect some or all of the different sensory nerve pathways for pain, light touch, limb position (proprioception), temperature differentiation — to varying degrees.

It is likely that this fracture partially damaged the spinal cord at that level at the time of injury sufficient to irritate and partially impair the function of the spinal cord with typical features of severe localised pain, impaired sensory and motor function below that level. It is probable that some of the spinal cord injury was limited by the prompt application of a splint at the scene (limiting movement of the spine that could have further impinged or bruised the spinal cord). It is possible that the severity of the spinal cord symptoms and signs started to ease by the time the patient reached hospital because of the splinting. It is also likely that mobilising the patient, having him sit upright for a three-hour car trip home and subsequent mobilisation would have exacerbated the partial injury to the spinal cord and is consistent with the finding of more significant spinal cord impairment when examined the next day.

Emergency Medicine standards regarding Thoracic Spine injury

Approximately 30% of spinal injuries occur in the thoracic spine. Textbook discussions of spinal injury tend to emphasise neck injuries; thoracic spine injuries are often discussed generally, without much detail.

A standard and accessible textbook of Emergency Medicine is available in many EDs, published by the American College of Emergency Physicians: Tintinalli JE, Kelen GD et al (eds). Emergency Medicine — a Comprehensive Study Guide (Ed.) 2004, McGraw-Hill.

Chapter 256 (by Barob Bi, Scalea TM: ‘Spinal Cord Injuries’), deals with general principles on pages 1578 and 1579 (bold emphasis is mine):

‘Once patients are stabilised ... **a detailed neurological examination should be performed** ... The presence of neck or back pain, or urinary or fecal incontinence **clearly defines the patient at risk for spinal cord injury** ...’

‘**A complete initial neurologic examination must be documented** for appropriate comparison should a patient deteriorate later. **Motor function for muscle groups should be tested and recorded on a scale of 0 to 5. The level of sensory loss should be determined. Gross proprioception or vibratory function must be investigated to examine posterior column function. Deep tendon reflexes should be tested.**’

‘Certainly one of the real dilemmas facing the clinician in ED is identifying which patient requires evaluation for a potential spinal cord injury. ... Thus it is prudent to completely image and evaluate all patients with the possibility of spinal cord pathology.’

It deals with imaging of thoracic spine injuries on page 1580 (Thoracolumbar spine):

‘Plain films of the thoracic and lumbar spine are the initial examinations generally used to image these spinal levels ... **It can be difficult to image the upper thoracic spine adequately**, even if maximal power of the x-ray beam is used, ... **Patients with point tenderness and normal films are a special subset, CT scanning can be useful in this subset**, although the yield is low. The thoracic spine has inherent stability from the rib cage. Few fractures in these patients will be unstable. Alternatively, patients can be treated with analgesics and investigated selectively if symptoms persist.

‘More recently, CT has assumed a much more important role in the imaging of spinal injuries. Plain films can be imperfect and may miss a number of such patients ..., **CT scanning is indicated in almost all patients with proven bony spinal injury, subluxations, for patients with neurological deficits but no apparent abnormalities on plain films, those with severe neck or back pain and normal plain films** ...’

An Australasian textbook has some guidance via a chapter on spinal injuries: Wassertheil J. Spinal Trauma, Chapter 2.3 in Cameron P, Jelinek G et al (eds). Textbook of Adult Emergency Medicine (2nd ed.), Churchill Livingstone 2004.

It has a list of ‘Essential Points’ about spinal trauma that includes:

A lack of neurological symptoms and signs does not eliminate spinal column injury or spinal cord at risk.

A patient can be ambulant and still have a major vertebral injury, even a potentially unstable one.

However, it has little detail about thoracic spine injuries except to note that ‘most thoracic spine injuries are stable.’ On page 62 it states ‘The following summarises key points in medical imaging of spinal trauma’:

- **‘Initial examination must include a supine lateral film. The sensitivity of this film (for detecting fractures) is reported as varying between 65% and 85%.**
- **Bony definition is best demonstrated by CT.’**

It emphasises the need for thorough documentation of the neurological system:

‘A thorough examination of the peripheral nervous system is required. It is strongly recommended that both motor and sensory examinations be undertaken ...’

Thus, these standard textbooks point out that back pain and neurological symptoms warrant a high index of suspicion for fracture, the importance of a detailed comprehensive neurological examination, the limitations of plain X-ray of the spine (that miss approximately 25% of fractures) and that CT is the better examination to detect bony injury (detecting virtually all fractures).

ACC has a guideline regarding low back pain (the lumbar spine) and there are Decision Rules guidelines regarding neck injury (cervical spine) but I am not aware of any ‘standard’, readily available New Zealand guideline relating to injuries of the thoracic spine.

ISSUES RAISED:

1. Comment generally on the standard of care provided to [Mr A] while he was a patient in the Emergency Department.

In general, this was suboptimal and I have detailed the points below.

2. Please comment on the appropriateness of the clinical observations and the actions taken as a result of the observations.

A. Nursing Staff

Some of the clinical observations by nursing staff were of a good standard including triage assessment, regular recordings (up to 1800h) and drug administration. The nurse appropriately requested analgesia and had this prescribed.

There were a number of suboptimal elements to the nursing documentation:

- There are no recordings of vital signs after 1800h.
- The nurse who hand-wrote the discharge time as ‘2120’ (and initialled this) later admitted that this time was an estimate, as the patient had left the ED while she was away. She also wrote that at 21 30h ‘Given script and dx’ (discharged). This is a ‘pseudo-accurate’ form of documentation; it would have been more accurate to simply write ‘patient not in ED at ...h’.
- The nurse later explained that the patient ‘had not sufficiently mobilised before I left the department’ but there is no record of any concerns in her notes; if she was sufficiently concerned after the patient left ED she could have documented this and notified the doctor.²²
- The nursing progress notes were minimal for a patient with spinal injury. The only documentation of the patient’s condition between 1630h and 21 30h was ‘remains stiff’ (2100h) and ‘feels sore’ (21 30h — when the nurse admitted that the patient was already gone). The rest is a brief outline of the management plan.

Overall, the nursing notes reflect a moderate departure from the standard of care. This may have reflected an impression from medical staff that there was little concern about the injury.

B. [Dr D]

The clinical observations by [Dr D] were substandard, even for a relatively inexperienced doctor 3 years out of medical school. [Dr D] was aware of the report from the ski field that his patient had significant sensory symptoms and that later his patient developed sensory symptoms in one leg but, crucially, he did not fully appreciate the significance of these red flags.

My specific concerns include:

- Documentation of the neurological examination was minimal (2 lines), even though this was the main reason that the patient was transported to hospital.

²² In her response to the provisional opinion, RN Ms F confirmed that “[Mr A] had not mobilized at all when [she] was called out of the [Emergency] Department”. RN Ms F explained that she did not record her concerns following her return to ED because the normal X-ray report and Dr C’s order to discharge along with the take-home script led her to assume that Mr A had mobilised satisfactorily in her absence. RN Ms F also explained that she did not review the medical notes following her return as she was “busy transferring other patients from resuscitation to AAU [Acute Assessment Unit]”.

- From his letter, it appears that he tested one modality: light touch. He says that he determined whether it was present or hypersensitive or absent (i.e. he did not test for subjective reduced sensation). He did not describe any test for sensation of pain (pinprick), position or vibration any of which could have been abnormal if performed carefully. In his explanation, he does not indicate that he was aware of the need to test different modalities. He seemed to confuse testing sensation vs pain when he stated that the patient ‘denied any pain to my palpation.’
- He did not appreciate that his tests for muscle power (motor function) were incomplete; he states that he asked his patient ‘easily moved all four extremities. This normal limb movement excludes a weak or absent response and implies normal tone and power.’ This is incorrect and reflects a basic lack of knowledge for a doctor. A patient can move a limb and still have significant weakness; muscle strength is usually graded from 1 to 5 in any detailed assessment of neurological impairment. An appropriate test would be full power against resistance (of the examiner’s counter-force), for all major muscle groups.
- He did not test reflexes in the legs.
- The patient stated that while in hospital he felt an ‘alien’ numbness below the level of his nipples down to his feet and that he had ‘slightly regained movement’ in his legs but they were weak. This is consistent with his fracture and with the medical description at the ski field.

The neurological assessment by [Dr D] reflects a moderate departure from the standard of care for a doctor and may reflect some basic deficiencies in his clinical knowledge.

It is likely that [Dr D] did not detect any abnormality because he took insufficient heed of the patient’s symptoms and his examination was incomplete.

The patient states that he repeatedly told [Dr D] that he had ‘very strong pain’ in his upper back. This is consistent with the fracture that was eventually diagnosed. In contrast, [Dr D] states, ‘the patient complained only of mild pain in his mid-thoracic back’. The discrepancy, along with the limited neurological assessment, suggests that [Dr D] ‘under-assessed’ his patient, especially in the light of what we know now about the presence of a fracture.

Furthermore, [Dr D] did not appreciate the significance of the patient having any neurological symptoms after such a fall. Feelings of pins and needles, subjective impaired sensation and weakness with a sensory level along with significant focal back pain at that level — all these constitute significant red

flags that ideally would have activated a prompt review by his consultant or by an orthopaedic service, regardless of any X-rays.

For a relatively junior doctor in a busy ED, the failure to appreciate the significance of the symptoms possibly reflects inadequate training, guidelines or supervision and seems to be a mild departure from the standard of care.

It was reasonable to request spine X-rays as a first measure as approximately 75% of fractures will show up on this.

Unfortunately, the net effect of these factors was that he did not convey an accurate description of the case in his handover to [Dr C].

C. [Dr C]

As described above, it seems likely that [Dr C] was given a misleading handover, along the lines that ‘there was a vague history of some numbness in his legs but he was fine now and no weakness was found on examination.’ He was presumably not aware of the limitations of the neurological examination performed by [Dr D].

However, his subsequent management of the case was suboptimal in a number of ways:

- As a consultant with advanced training in Emergency Medicine, he did not attend to the red flags associated with hearing that a young man had sustained blunt trauma to the back with neurological symptoms, even if these were apparently transient. It seems likely that he did not read the notes, as it is likely that the significance of the spinal injury and neurological impairment would have been evident (from the medical report at the ski field).
- He did not re-examine the spine-injured patient at any stage during the shift (a period of about 5 hours). During that time he prescribed extra pain relief at the request of the nursing staff so was aware of the persisting pain and spasm.
- He placed undue importance on the absence of any demonstrable fracture in the upper thoracic spine: one of the most difficult areas to assess on an X-ray.
- He did not consider the need for CT to determine more accurately whether there was a fracture; nor did he raise this possibility later in his letter of response. It is not clear whether he realised the limitations of plain X-rays and the role of CT in investigating fracture at this level.

- His management plan was somewhat risky: without re-examining the patient, knowing that there had been some neurological symptoms, he planned to only ‘reassess the patient if he was unable to mobilise independently and with ease.’ This suggests that he was prepared to risk exacerbating or eliciting spinal cord injury by having the patient mobilise without medical supervision.
- He wrote a script for one week’s worth of painkillers and had this given to the patient without any personal explanation. The nurse and patient could reasonably have interpreted this as a fairly firm plan not to review the patient.
- His documentation was minimal.

Overall, as supervising consultant, [Dr C] appears to have missed the significance of the spinal injury and neurological symptoms at handover, did not review his patient or the notes, did not realise the limitations of the X-rays, did not consider ordering a CT, made a risky plan to mobilise the patient without medical supervision and indicated a default plan for the patient to depart without further review.

This represents a moderate departure from the standard of care expected of a doctor with advanced training in Emergency Medicine.

A heavy workload could act as a mitigating factor.

Emergency Medicine senior doctors will all empathise with (and recognise) the stressful predicament of supervising a busy chaotic Emergency Department: trying to monitor the workload, manage their own patients, provide advice and supervision for other doctors and nurses and having to take risks in how they allocate their attention between competing demands. It is an unfortunate and unpleasant scenario that is all too common. Patient outcomes are inevitably compromised when an ED is overloaded and this case may well be an illustration of the risk.

However, there are strategies to help contain that risk and they include:

- Documenting concerns about the workload at the time of the risk.
- Being attentive to ‘red flags’ amongst the chaotic information overload. This is one of the core skills of an Emergency Medicine specialist.

In this case, the other two ED staff and hospital have not provided evidence of the extent of the workload and I note the patient’s comment that ‘I remember the emergency department being very empty by the time we left . . . , we also went straight past the doctors and nurses station without any hint of stopping

us.’ This does not disprove that there was an excessive load (patients and family may not see the full extent of the workload).

Thus, while a heavy workload could act as a significant mitigating factor, it is difficult to comment further on the issue of workload that day without any other information to corroborate or quantify it.

3. The appropriateness of the assessments and investigations performed. (If applicable) what other assessments and/or investigations should have been undertaken?

As outlined above, the assessment performed by [Dr D] appears to have been suboptimal. He did not appreciate the significance of the neurological symptoms reported by the patient (and the ski field doctor); he did not make an adequate neurological examination.

This was at the least, a mild departure from the standard of care for a relatively inexperienced doctor.

The decision to request plain X-rays was a reasonable first step.

A CT of the spine ideally would have been performed on the basis of the technical difficulty associated with interpreting plain X-rays of the upper thoracic spine and the history of significant neurological symptoms.

[Dr C], the consultant, should have personally reviewed the patient. If he had perused the referral letter from the ski field or if he had interviewed the patient in any detail or if he had undertaken an expert neurological examination, he would almost certainly have elicited the presence of significant neurological risk.

This was a moderate departure from the standard of care for a consultant.

If the patient was to be mobilised (a major decision in itself), a doctor should have personally reviewed the patient first and should have supervised this.

This was a mild–moderate departure from the standard of care for a consultant.

4. Whether appropriateness of the instructions given regarding mobilising [Mr A] and discharging him from hospital.

This has been addressed in the comments above.

The instructions given by [Dr C] to the nurse, to mobilise the patient, were risky. Knowing that the patient had (at least temporarily) some neurological

sequelae of a back injury, he made an unwise decision not to review the patient himself. He appears to have placed undue emphasis on a normal spine X-ray.

From the clinical notes and the report of the nurse, it seems that no detailed instructions were given by [Dr C] as to what would warrant concern enough for him to assess his patient.

Overall, the decision to ask the nurse to mobilise the patient, without reviewing the patient first or supervising the mobilisation himself, represents a moderate departure from the standard of care, especially when no detailed advice was given to the nurse.

From the instructions reported by the nurse, the provision of script for painkillers and his own report, it appears that [Dr C] only expected to review the patient if he was not mobilising easily. However, he wrote an order for moderate pain relief / sedation (Tramadol and Diazepam) hours later and it seems that the request for this did not prompt him to review the patient.

No discharge advice was given although this may have reflected some misunderstanding about when [Mr A] should leave the department.

[Dr C] indicates that he only intended to assess the patient 'if he was unable to mobilise independently and with ease.' Otherwise, it seems that he had no plan to assess and advise the patient. In a patient who had neurological symptoms of spinal cord injury, even if the doctor was convinced that these were transient symptoms, it would have been important to advise the patient of the warning symptoms of delayed sequelae that would warrant urgent review. Examples of such warning symptoms would include return of any weakness or change in sensory sensation, possible bladder or bowel dysfunction.

He would also ideally advise the patient of the possibility of gastric irritation and bleeding from the Ibuprofen anti-inflammatory medication that he prescribed.

In general, the absence of discharge advice regarding the pain-killers and the possibility of worsening neurological symptoms represents a moderate departure from the standard of care. The mitigating factor may be the miscommunications outlined below.

5. The standard of communication between clinical staff

In general, this was a series of miscommunications. [Dr D] assessed the patient first and it appears that he did not adequately heed the clear findings (and concerns) outlined in the letter from the ski field doctor.

[Dr D] did not clearly communicate the extent of neurological symptoms when he documented his notes and handed over the case to [Dr C].

[Dr C] did not clearly communicate to the nurse the symptoms or signs that would warrant review: he documented a brief plan ('mobilise and discharge home if no problems').

[Dr C] presumably was not particularly concerned when asked to prescribe more pain relief. Writing a discharge script probably reinforced to the nurse and the patient that discharge was effectively under way.

The nurse may not have clearly communicated the patient's symptoms back to the doctor. The patient reported that 'Moving caused significant pain in my back and shot what felt like lightning bolts through my body, my muscles were very tight and getting spasm throughout my lower body. I told the nurse about this'. These significant debilitating symptoms probably reflected neurological irritation. The extent of these symptoms was not documented by the nurse. It is not clear whether the nurse appreciated their significance (keeping in mind that she had no written guideline). It is not clear which, if any, of these symptoms were relayed to the doctor. However, this would not have been an issue if [Dr C] had reviewed the patient himself.

The communication to the patient was suboptimal, especially the absence of discharge advice.

Overall, the communication between clinical staff was moderately below the standard of care. ..."

Appendix B

Independent advice to Commissioner — Emergency Medicine

Further advice

Dr Clearwater provided the following additional emergency medicine advice:

“Thank you for asking me to review the responses to my initial report regarding **the appropriateness of the care provided by Whanganui District Health Board to [Mr A] at Wanganui Hospital on 12 September 2007.**

I **have read** copies of the following correspondence from/received by the HDC Office since my initial report:

- HDC’s extension of notification letter to [Dr D], marked ‘N’ (Pages 49–51).
- [Dr D’s] response, marked ‘O’ (Pages 52–64).
- HDC’s extension of notification letter to [Dr C], marked ‘P’ (Pages 65–67).
- [Dr C’s] response, marked ‘Q’ (Pages 68–72).
- HDC’s extension of notification letter to Whanganui DHB, marked ‘R’ (Pages 73–74).
- Whanganui DHB’s response with enclosed information from the Emergency Department’s Clinical Director, Clinical Nurse Manager and [RN Ms F], marked ‘S’ (Pages 75–96).

I have also reviewed copies of clinical notes relating to [Mr A’s] subsequent care following his departure from Whanganui Hospital, including:

- The referral letter from [Dr B] to [the major public] Hospital, dated 13 September 2007 (Pp 97–98).
- The ambulance report regarding the transfer of [Mr A] from his [accommodation] to [the public] Hospital (p 99).
- The operation report regarding spinal surgery performed on 14 September 2007 at [the public] Hospital (p 100).
- The report of the CT scan of [Mr A’s] thoracic spine, performed on 14 September 2007 (Pp 101–3).
- The follow-up MRI scan of the spine performed on 18 September 2007 (Pp 104–5).

- The operation note relating to the second spinal surgery performed on 18 September 2007 (Pp 106–7).
- Transfer letters for [Mr A’s] discharge from [the public] Hospital to the [spinal unit] dated 27 September 2007 (Pp 108–112).
- A discharge letter from the Spinal Rehabilitation Service dated 24 October 2007 (Pp 113–114).
- Follow-up Orthopaedic Department reports from [the] Hospital dated between 24 October 2007 and 5 November 2007 (Pp 115–118).
- A final discharge summary from the Spinal Rehabilitation Service dated 12 December 2007 (Pp 119–120).

I was asked to review the above documents and advise the following:

[At this point, Dr Clearwater lists the questions asked of him, which he repeats in his advice. This has been omitted for the purpose of brevity.]

PREFACE

The responses have provided a lot of useful supplementary information. I would like to clarify some points, in light of some of the responses received.

Diagnosis and ‘stability’ of spinal injury.

Spinal injury usually elicits a high level of attention in the practice of Emergency Medicine. Special concern relates to incomplete spinal cord damage that teeters on the border of permanent injury, with a view to preserving the remaining neurological function and optimising recovery.

There is a lot at stake: complete spinal cord injury has a poor prognosis for recovery. There is little room for error; the spinal cord runs down a non-expansile space behind the vertebral bones. A relatively small amount of extra pressure on, or swelling in, the spinal cord can result in impaired circulation and critical damage.

Emergency Medicine clinicians are taught to be vigilant for the signals of borderline impairment in an alert patient — symptoms of pain, sensory changes (‘pins and needles’ sensations or impaired sensation) and degrees of weakness. These warning signs indicate possible critical injury but they also give hope of recovery and represent a better prognosis than complete weakness or sensory loss.

Any such symptom, even if transient, constitutes a major ‘red flag’ for spinal injury and warrants intense attention, including immobilisation until tests confirm that the spinal cord is out of danger.

To quote from Chapter 272 of the Emergency Medicine textbook, Tintinalli JE, Kelen GD et al (eds). Emergency Medicine — a Comprehensive Study Guide (6th Ed.) 2004, McGraw-Hill; Larson JL, ‘Injuries to the spine’, page 1711 (bold emphasis is mine):

*‘Acute bony or ligamentous injuries and injuries with **actual or suspected neurologic deficits** are best referred to the spinal surgeon to institute proper acute treatment ... which can minimise the development of delayed instability and pain syndromes.’*

‘Patients should remain in spinal immobilization until definitive diagnosis and evaluation of CT and MRI are made by the spinal surgeon.’

Another relevant quote from an Australasian textbook emphasises the importance of attending to ‘red flags’ in spinal injury [Wassertheil J. Spinal Trauma, Chapter 2.3 in Cameron P, Jelinek G et al (eds). Textbook of Adult Emergency Medicine (2nd ed.), Churchill Livingstone 2004]; Page 52:

‘Spinal cord injury is one of the most disabling, causing major and irreversible physical and psychological disability to the patient and permanently affecting their lifestyle. The emotional, social and economic consequences affect the individual, family, friends and society in general.’

This chapter lists some ‘essential’ points that include the following (quoted in my initial report):

- *Physical examination alone does not assist in the diagnosis of unstable vertebral injury unless deformity is gross.*
- *A lack of neurological symptoms and signs does not eliminate spinal cord injury or spinal cord at risk.*
- *A patient can be ambulant and still have a major vertebral injury, even a potentially unstable one.*

The records from [the public] Hospital, where [Mr A] was seen the day after leaving Whanganui, indicate that he had sustained a significant unstable injury of his thoracic spine that placed his spinal cord in a precarious condition.

The bony spinal canal is sometimes described as having 3 columns of stability: the front of the vertebral bony block (‘anterior column’), the posterior part of

the bony block ('middle column') and the interlocking posterior bones that form the boundary behind the spinal cord ('posterior column'). An injury to one column alone can be counterbalanced if the 2 other columns are intact. [Mr A] had an unstable fracture of all 3 columns — a very unstable situation.

The CT scan report for [Mr A], performed on 14 September at [the public] Hospital, includes:

- *'unstable 3 column injury of T3 (the third thoracic vertebra) with a fracture involving the anterior and posterior vertebral body and horizontal fractures through both facets which are perched...'*
- The T3 vertebral body had collapsed 60% in the front and 40% in the posterior aspect.
- One vertebra (T3) had slipped 4 mm out of position in relation to the one below ('retrolisthesis').
- A fragment of fractured bone measuring 7 mm had been pushed backwards into the space of the spinal canal; *'it narrows the spinal canal at this level.'*

This emphasises the point that his spinal cord was in a precarious state. Any mobilisation of the spine increased the risk of shifting unstable bone fragments, exacerbating swelling and bleeding, and impinging more on the cord.

[Public] Hospital surgeons operated promptly to stabilise the fractures with metal rods and screws and a bone graft. The operation note commented (P 100), 'He understands that the aim of surgery is to stabilise his spine and to relieve ongoing pressure on the spinal cord.'

In light of this, [Mr A] was very fortunate that he did not sustain more severe, permanent spinal cord injury when he started to mobilise at Whanganui Hospital and then sat in a car for a three hour trip home. For example, it was fortunate that he did not have a heavy fall or that that the car did not brake or swerve suddenly. Any of these could have resulted in more severe damage.

ED workload and staffing.

The Chief Executive Officer, Mr Musa, stated that, 'there was one senior Emergency Department doctor and one junior Emergency Department doctor on duty on each of the afternoon and evening shifts' (P 76). I presume that he actually meant the day and evening shifts.

However, [Dr C] mentions that he was the sole doctor on duty for this shift, confirmed by the Clinical Director (P 86): 'we realised the risks associated

with a single doctor and how this affected (his) ability to review the case at the bedside. Solo shifts are now avoided where possible ...’

Typically, an afternoon/evening shift runs from 1600h to 2400h (including staff overlap at handover). The data provided by Wanganui Hospital (P 77) indicates that 22 patients presented during that time, apart from the 7 who presented between 1500h and 1600h (one of whom was [Mr A]). Thus, the staff on the afternoon shift were managing handovers from the day shift (the number is not given) as well as 22 new patients.

Triage statistics are only available for the full 24 hour period (P 79). There were 3 cases in Triage Category 2 (to be seen by a doctor within 10 minutes), 16 (31% of cases) in Triage category 3, 25 cases in Triage Category 4, 8 in Triage Category 5 — a total of 52 cases in 24 hours. 4 of these patients were triaged away to another primary care facility. 37% of all patients were admitted — a moderately high percentage, consistent with a moderate acuity workload.

Emergency Medicine doctors are expected to safely manage an average of 1 to 2 patients per hour — depending on acuity and back-up. The figure would be closer to 1 per hour in a high-acuity ED.

Apart from the handover cases, the new presentation rate averaged 2.7 per hour. Thus, a sole doctor on this shift was presented with a workload that was well above the accepted reasonable level.

SPECIFIC QUESTIONS

1. The standard of care [Dr D] provided to [Mr A] taking into account the additional information from [Dr D].

[Dr D] described himself as a ‘junior member of the Emergency Department’ at the time that he saw [Mr A], having graduated 3 years earlier. He was working under supervision.

[Dr D] clarified a number of points:

- He confirmed that he was aware of the referring doctor’s concerns about significant spinal injury and that the patient had impaired neurological function at the accident scene. In his words, he ‘recognised the following “red flags”’: fall (approximately) 5 metres, back pain, hard collar & backboard spinal immobilization and a history of neurological symptoms.’
- He describes performing a comprehensive neurological assessment of muscle and sensory function in the arms and legs of his patient and that he was unable to elicit any impairment.

- He admitted that his documentation was ‘perhaps too brief’, which he attributed to ‘time constraints that I was under while managing the busy ... Emergency Department’ and that ‘When pressed for time in a busy emergency department, I do not write out the normal findings of ‘normal light touch sensation and normal pain & temperature sensation.’ ‘I believe this is a practical approach to Emergency Room documentation.’
- He states (page 57) that he sought his supervisor’s advice ‘At the conclusion of my physical examination ... I then discussed the case with my colleague, [Dr E] ...’
- He emphasises that he handed over the pertinent aspects of the case to the consultant, [Dr C], including the red flags mentioned above as well as ‘the development of emerging neurological symptoms (unilateral lower extremity sensory changes), ... (and) my impression of a possible spinal fracture ...’ He states that he also provided the referral note from the doctor who assessed [Mr A] at the scene of his injury.

However, there are some points of concern.

- A. [Dr D] states that he had a particular interest and experience in neurophysiology and neurosurgery, including being awarded ‘Clinical Rotation Honours’ in a neurosurgery clerkship during his medical training. Thus, one could expect a higher than average level of understanding of the standards expected, including a high level of documentation of neurological assessment, particularly for a patient who was about to be handed over to a colleague.

Neurological assessment for spinal injury is typically repeated over a period of time to measure change. It is important for a doctor to record in some detail what was checked so that a subsequent examination has a baseline. This does not need to be highly detailed but 2 lines is below the expected standard and would have made it difficult for another doctor to determine what, if any, modalities had changed.

- B. [Dr D] emphasises that he only had one contact with [Mr A]. He then describes discussing the case with his supervisor [Dr E], ‘During this discussion, [the house officer] interrupted to inform me that ([Mr A]) was beginning to experience numbness of his left lower extremity. I instructed [the house officer] to replace the hard cervical collar and requested that ([Mr A]) remain supine to maintain spinal precautions.’

This report (of new sensory changes) represents a significant neurological development that would usually warrant urgent review but [Dr D] did not

review his patient and did not document anything about this development in the notes. This may have assisted the doctor who took the handover — a doctor who was, by his account, overloaded with other work.

Thus the last neurological piece of information seems to have been a new neurological impairment that was not documented or followed up.

In summary:

- There is now evidence that [Dr D] did undertake an appropriate neurological examination.
 - [Dr D] insists that he gave a clear handover of his patient's significant history and 'red flags' to his supervisor ([Dr E]) and then to the consultant starting the afternoon shift.
 - His neurological documentation in this case of critical neurological injury was suboptimal, falling mildly below the standard expected of a relatively junior doctor with special interest in neurology. Mitigating factors were workload and the lack of a template or form to easily document the neurological examination.
 - His actions relating to being informed of new neurological symptoms was at least mildly below the standard to be expected. Ideally he would have re-assessed his patient and certainly should have documented this significant development in his notes.
2. The standard of care [Dr C] provided to [Mr A] taking into account the additional information from [Dr C].

[Dr C] confirms that he is vocationally registered in New Zealand in the field of Emergency Medicine and that his qualification is a UK Fellowship in the College of Emergency Medicine which he completed in 2006. This is a separate specialist college to the local Australasian College for Emergency Medicine (ACEM) and it does not have automatic cross-recognition. His experience included being a Senior House Officer for 4 months in Orthopaedics.

He was the only ED doctor on a busy shift and was under some pressure having to manage several patients at once: 'at the time I felt that I had more pressing issues to deal with.'

[Dr C] was not convinced by the potential spinal injury 'red flags' listed on the referral: 'the notes were suggestive of possible injuries based on the superficial examination on the ski field. We were told that the examination was very quick ... The overall impression from the ski field was not of a definite spinal injury. By the time the patient arrived at our department he did not have any

definite neurology diagnosed by the attending doctor.’ (The referral letter described ‘nil sensation in legs’ at the time of injury and ‘pins and needles both legs from waist down’ at the scene, and a Provisional Diagnosis of ‘Back injury ?fracture.’)

This is at odds with the description of the handover given by [Dr D], as described earlier.

Somehow, the significant development of new neurological symptoms in the patient’s leg was overlooked. [Dr D] had not recorded this new neurological symptom in his notes.

In his follow-up letter, [Dr C] does not seem to acknowledge that his patient had the red flags of a significant spinal cord and bone injury. He states that, ‘on the basis of a normal X-ray finding and a history of no significant neurology I felt that soft tissue injury was the most likely diagnosis. As a consequence I assumed that it would be safe to instruct the patient to attempt mobilisation to ... finally clear him clinically. I feel that Dr Clearwater is rather overstating the possibility of exacerbating spinal injury ... by attempting to assess ... mobility.’ He notes that ‘thoracic spinal injuries are rarely unstable ...’

These comments stand in contrast to the points made in my preface. The presence of even transient neurological symptoms should have acted as a ‘red flag’ of potential spinal cord injury, warranting prolonged immobilisation until a CT or MRI cleared the spinal canal. [Mr A’s] injury was indeed ‘unstable’ and it was inappropriate to start mobilising him, unsupervised, as a clinical test.

[Dr C] refers to a textbook algorithm for blunt trauma to justify his use of symptomatic treatment once plain X-rays are clear (Tintinali 6th edition page 1579). But this is not an appropriate use of the algorithm. The decision pathway is based on there being no ‘Neurologic deficits’ whereas the information from the referring doctor’s letter and from [Dr D] both included significant neurological deficits, including the new onset of unilateral leg sensory changes. Had this algorithm been followed correctly, the recommended investigation would be CT and/or MRI.

I feel that [Dr C’s] standard of care was moderately below that expected of a vocationally trained specialist, based on the following points:

- It is my impression that [Dr C] has an incomplete knowledge of spinal cord injuries. He did not recognise the significant ‘red flags’ that were conveyed by the two doctors who had personally assessed [Mr A]. He may have overlooked an evolving neurological symptom.

- The decision to ask the patient to mobilise without medical supervision was risky, especially in light of what we know about the unstable nature of the fractures. [Dr C's] management plan was the wrong way around: 'I did consider ordering a CT' (of the spine) but he wanted the patient to mobilise first.
- In his last letter, he does not acknowledge the risks that he took, even with the benefit of hindsight: 'I do feel that mobilizing a patient with normal X-ray and no definite neurology is a valid and safe way of assessing the extent of their injuries, especially in thoracic spine injuries which tend to be inherently stable.'

[Dr C] understandably points to a heavy workload as a mitigating factor. He had to prioritise his time amongst several unwell patients. He notes that, 'had there been other doctors available I would have reviewed the patient at the time. I intended to review him as soon as time allowed.'

- However, most Emergency Medicine specialists would have recognised that this clinical picture warranted high priority for attention, especially when the patient developed new neurological symptoms. It was a high-priority scenario with significant risks.
- It would have been a reasonable strategy to ask the orthopaedic service to review the patient and take over his care at an early stage. Most orthopaedic services would recognise the red flags and could reasonably have been expected to arrange further investigations.
- It would have been a reasonable strategy to request a CT scan of the spine first, before considering mobilising the patient.

The key problem seems to be that [Dr C] did not recognise the red flags of a case of high-risk spinal injury. This lack of recognition was at the core of his subsequent actions, including giving limited instructions to the nurse to mobilise the patient and writing out an early discharge script to be given to the patient, reinforcing the message to the nurse (and indirectly to the patient) that there was no significant injury.

There are two potential mitigating factors.

The first is that [Dr C] was a relatively new specialist, trained in the UK under a system that differs from Emergency Medicine practice in Australasia (via the Australasian College for Emergency Medicine). My understanding of spinal injuries, my quotes from textbooks and my comments are based on the Australasian system and standards.

The second factor is workload. As outlined earlier, the workload was unreasonably heavy. Busy pressured workload can adversely affect the judgement of any doctor. In a busy ED with multiple sick patients to manage and a heavy chaotic information load from multiple sources, it is understandable that [Dr C] might have been unable to reflect on the significance of the ‘red flags’ that were presented to him.

If he had reviewed the patient personally, the significance of the spinal injury might have been more apparent. If he had the time to review the records and reflect on the case in a more considered way, he is more likely to have chosen a more appropriate strategy.

- I consider this issue of workload to be a significant mitigating factor.
- However, I am concerned at [Dr C’s] insistence, even in hindsight, that his strategy was safe and appropriate. There seems to be a component of incomplete knowledge of spinal injuries and the risks associated with his mobilisation strategy.

3. [Dr C’s] review of [Mr A’s] X-ray films.

The radiology report confirms that there was no significant fracture visible on the X-rays undertaken at the time and it was reasonable that [Dr C] did not see a fracture.

As described previously, [Dr C] did not fully appreciate that a significant bony and nerve injury could still have been present in this scenario, that spinal fractures are difficult to diagnose in X-rays of the upper thoracic spine and that CT scan was an appropriate follow-up investigation.

4. According to [Dr C], ‘the most likely sequelae was that as time went on the fracture caused further localised oedema resulting in spinal cord dysfunction which became more obvious the following day [13 September 2007]’. Please comment on the appropriateness of his view.

Ultimately, a spinal surgeon would be best placed to give expert comment. However, there probably was a component of oedema (swelling) developing subsequent to the initial injury and that would have developed even if the patient was fully rested.

However, I quote from the Emergency Medicine textbook chapter on Spinal Trauma (Wassertheil J. Spinal Trauma, Chapter 2.3 in Cameron P, Jelinek G et al (eds). Textbook of Adult Emergency Medicine (2nd ed.), Churchill Livingstone 2004; Page 52:

‘Observations from two studies suggest that possibly preventable neurological deterioration may be due to one or more of the following:

- *The injury not being recognised initially...*
- *The onset of the secondary effects of the spinal cord injury involving oedema and/or ischaemia*
- *Aggravation of the initial spinal cord lesion by inadequate oxygenation and/or hypotension (low blood pressure)*
- ***Aggravation of the initial spinal cord lesion by inadequate vertebral immobilisation.***

In this case, all factors were present except the third.

Mobilising the patient may have significantly exacerbated the oedema and contributed to collapse and shift of the fracture to the degree that one fragment was significantly pressing on the spinal cord at the time of surgery. I doubt that any spinal surgeon would have countenanced mobilising this patient at any stage prior to surgery because of the risk of exacerbating the damage.

One piece of evidence for the adverse effect of mobilisation is the patient's account of events (P 04). Having been asked to mobilise and carried into the car, his symptoms worsened: 'by the time I got back [home] I could not move any part of my legs at all and the numbness had seemed to intensify along with the pain between my shoulder blades. Two of my mates had to carry me from the car to a bed ... I was in a huge amount of pain and the feeling in my legs was very scary.'

5. Based on your review of the further responses from [Dr D], [Dr C] and Whanganui DHB, please state whether you wish to amend any aspect of your previous advice, giving reasons for your view.

Regarding [Dr D], he provides evidence that he did undertake a comprehensive neurological examination, that he had adequate clinical knowledge for his stage of training and that he gave an appropriate handover to [Dr C].

I cannot explain the discrepancy between the descriptions of the clinical features noted by [Dr D] and those described by the patient. The patient stated that while in hospital he felt an 'alien' numbness below the level of his nipples down to his feet and that he had 'slightly regained movement' in his legs but they were weak, whereas [Dr D] could not detect any weakness. The patient stated that he repeatedly told [Dr D] that he had 'very strong pain' in his upper back whereas [Dr D] stated, 'the patient complained only of mild pain in his mid-thoracic back'. The patient's description of his symptoms in ED was consistent with the spinal cord injury that was finally diagnosed at [the public hospital].

As outlined in question 1, [Dr D's] documentation was suboptimal and he should have personally reviewed [Mr A] when he heard that new neurological symptoms were developing.

Regarding [Dr C], my basic concerns remain, as outlined in question 2.

Heavy workload was more evidently a mitigating factor and probably adversely affected [Dr C's] ability to make a considered judgement on this case.

There seems to be an issue of limited knowledge of spinal injuries.

Appropriateness of assessments and investigations.

All of these issues involved decisions that were mitigated by the heavy workload:

- A CT scan should have been ordered at an early stage.
 - Consideration could have been made to referring the patient to the Orthopaedic service.
 - The decision to mobilise [Mr A] without medical review or supervision was suboptimal.
 - Documentation and communication are often adversely affected by heavy workload.
 - The limited documentation by nursing staff probably reflected the impression from the consultant that there was no significant injury or danger.
6. Please comment on the changes that [Dr D], [Dr C], and Whanganui DHB have made since the events in question. Have the concerns in this case been adequately addressed?

According to the Clinical Director, ED staff 'have reviewed and improved their knowledge of spinal trauma' which is commendable but the latest responses of the specialist and Clinical Director (addressed elsewhere in this response) indicate some lack of insight.

Improvements in documentation and handover are commendable. However, the Clinical Director has specified (P 85) that, 'This applies particularly to [Dr D's] use of abbreviations.' The issue was more that the documentation was too brief in relation to documenting neurology and failed to incorporate significant new information (the development of sensory changes in the patient's leg).

A commitment to avoid 'solo' medical shifts is probably the most important improvement, so long as this is actioned (which will be a recruitment challenge).

The improvement in instructions to patients will be useful.

7. Please outline any recommendations you may have for this case.

For reasons outlined in various parts of this report, I recommend that the staff undertake an externally-run educational update in spinal injuries: ideally supervised by a Fellow of the Australasian College for Emergency Medicine or a regional spine specialist. Some emphasis could be placed on assessing subtle symptoms and signs of incomplete spinal cord injury.

It would be useful to have a template to easily record neurological findings. An example is on pages 60–61 of the textbook by Cameron P, Jelinek G et al (eds). Textbook of Adult Emergency Medicine (2nd ed.), Churchill Livingstone 2004. The regional spinal service may have a suitable template. Advantages include faster documentation as well as acting as a prompt for the systematic graded documentation of abnormalities.

As an aside, the Clinical Director mentioned that the departmental educational resource included the 2000 edition of the aforementioned textbook: this could be updated with the 2004 2nd edition.

Staffing of the ED needs to be addressed as a primary concern, as advised by the hospital's response. However, recruitment shortfalls may be a continuing problem and there is always the risk of short-notice sickness. A fall-back contingency plan would be useful to manage the risk on any understaffed shifts. Components of such a plan could (and may already) include:

- Formal notification for the community and patients during staffing shortages, to help manage their expectations and as a component of informed consent to limited treatment.
- A policy and system to spread the load by recruiting other services to assist with ED patients: either by assessing selected suitable patients directly (without awaiting an ED workup first) or by accepting referrals at a lower threshold. For example, the orthopaedic service could take over the care of a patient with a history of spinal trauma, back pain and sensory symptoms.
- Offering options for selected patients to access alternative urgent care (e.g. by providing free vouchers for some patients to attend the local A&M clinic) — this is a strategy with some risks but may be better than major delays in seeing low-acuity patients. Note that recruitment shortfalls are usually associated with a component of un-used budget that is available for mitigating measures.

Regarding the discharge process, it would be useful to have a policy that patients should only receive discharge prescriptions when they receive their discharge summary at the same time.

As far as I can determine, there are no specialists in this hospital with Fellowship of the Australasian College for Emergency Medicine (FACEM). Ideally there will eventually be such specialists on staff but recruitment is a challenge. There could be a case for inviting one or more visiting FACEMs to provide regular periods of input into systems and training in the department. This system is used in some Australian provincial hospitals with benefit in keeping standards consistent around the country.

Finally, as suggested in my original report, it would be useful for clinical staff to be advised early of any significant complaints, including advice to consult with their professional body or indemnity insurers when preparing their initial responses. Such a policy would certainly be consistent with the recommendations of medical indemnity insurers as well as the standard employment contract.

8. Are there any other aspects of [Dr D], [Dr C] and Whanganui's care that you consider warrant additional comment?

The follow-up comments by the Clinical Director (Pp 81–87) in his letter dated 18 June 2008 indicate that he may not have fully appreciated the seriousness of the injury sustained by [Mr A] and that he may still have some gaps in his knowledge of spinal injuries. His report is discordant with the patient's own description of events (Pp 04–5).

My concerns include the following comments:

'[Dr B] (the referring doctor who initially assessed the patient at the scene) was not convinced by the neurological findings as his provisional diagnosis is 'Back injury ?#' ... No mention of a spinal injury.' (P 83)

— The referral letter (P 33) clearly indicates concern about a spinal cord injury: the patient initially 'had no sensation legs', thoracic back pain, 'pins and needles both legs from waist down' and it queried a fracture '?#'. It could not state that there was definite fracture without an X-ray. It documents that the patient was placed on a spinal board. These are unequivocal descriptions of spinal cord injury 'red flags.'

He suggests that the referring doctor should have phoned the Emergency Department to activate appropriate assessment in ED (P 83 & 84).

— The referral letter was unequivocal in its description of a significant spinal injury and had sufficient information to alert clinicians at the hospital. It is helpful for a clinician to phone ahead with important information but it should not be essential to an adequate assessment.

In hospital, 'At no stage does (the patient) ever mention concerns relating to lack of movement or weakness in the extremities.'

- It has already been established that documentation was suboptimal, that workload impeded a thorough assessment or review and the patient was only medically assessed once in the five and a half hours he was in ED. The only detailed evidence that we have in this respect is that of the patient (P 04): ‘I still had strong pain between my shoulder blades and repeated his fact to the doctor on several occasions. The feeling in my legs was very alien to me, a numbness spreading from my nipples down to my feet. I had slightly regained movement in my legs but was very weak.’
- When he was told to mobilise, he describes, ‘I tried moving as much as possible and managed to sit up on the side of the bed but in a lot of pain and still feeling quite weak.’
- He describes telling the nurse of pain and sensory symptoms in his back and legs and being reassured that ‘it was because of the bruising.’

‘(The patient)’s ability to leave the department with the assistance of two female friends is strong evidence of his motor capabilities. I would suggest that it would have been impossible to successfully transfer from bed to chair and chair to care, with untrained female assistance in the presence of significant paraparesis or paraplegia.’

- This statement contrasts with the points made in my preface about the difficulty excluding spinal cord injury. Relying on the development of full paraplegia would have been inappropriately late to confirm a diagnosis of precarious spinal injury.
- It belies the patient’s account: ‘An orderly brought a wheel chair over and helped me into it. This was not an easy process and it caused me a significant amount of pain.’

In relation to a normal X-ray: ‘With a fracture excluded, the whole complexion of the case changed. No longer was it a high risk spinal case, it became a low risk soft tissue injury.’

- Again, this statement contrasts with the principles of spinal injuries outlined in my preface. The ‘red flags’ of significant spinal trauma, local tenderness and neurological features (even if they are transient) still presents a significant possibility of precarious spinal cord injury.

On Page 85, he states that, ‘he made a near full recovery in a short space of time’

- The patient was under the care of the Spinal Unit until his discharge 3 months after the injury.

The Clinical Director also attributed the delayed neurological symptoms solely to the late development of spinal oedema (Pp 82 & 84). As mentioned in question 4, the patient clearly describes deterioration in his neurology after he was mobilised:

the major symptoms were present by the time he arrived home from the ED, three hours later.

[Dr D] states (Pg 57) that he discussed this case first with [Dr E] (presumably as the supervising consultant on his shift) and that [Dr E] was present when they were informed that the patient had developed new neurological symptoms in his leg — there is no indication that this information affected their management of the case apart from requesting replacement of a collar; neither doctor reviewed the case with this important new symptom in mind.

Thus the Clinical Director may have some gaps in his understanding of spinal injuries, even though he acts in a supervisory role and in the face of assurances (P 85) that, ‘all clinical staff... have reviewed and improved their knowledge of spinal trauma.’

A mitigating factor is that the Clinical Director is not a specialist in Emergency Medicine. The standard of knowledge and skills of members of the Accident & Medical Practitioners Association is not so detailed or focused on hospital emergency care as it is for specialists in Emergency Medicine.

As mentioned earlier, FACEMs visiting and occasionally working in the ED could be a useful support for the Clinical Director and his staff.”

Appendix C

Independent advice to Commissioner — Emergency Medicine

Expert review of providers' responses to Commissioner's provisional opinion

“Thank you for asking me to review the Commissioner’s updated report regarding the appropriateness of the care provided by Whanganui District Health Board to [Mr A] at Wanganui Hospital on 12 September 2007.

I was also interested to see the correspondence from the new CEO of Whanganui DHB, [Ms F], [Dr C] and [Dr D].

... From the report of the CEO, it seems that improvements are already underway, in the spirit of the Commissioner’s recommendations. The re-design of the ED and the commitment to minimum staffing levels will be of benefit to patients.

...

You highlighted a couple of passages in the latest responses.

[Dr D], in his letter, suggests that he gave adequate information about his assessment of [Mr A] in his verbal handover at the end of his shift. He questions whether documentation would have added anything useful.

It is disappointing that [Dr D] has apparently not fully appreciated a key issue in the Commissioner’s opinion regarding the importance of documenting clinically significant points in the notes.

One could argue that it is even more important to have good documentation during a busy shift — even though it is more difficult to take time to document well.

Three doctors were apparently aware of [Mr A] developing new neurological symptoms in his leg at the time of handover (after his neck collar had been removed). None of the evidence adequately clarifies why the patient was not reviewed at that time nor given a higher priority — a point noted by the Commissioner. However, I am confident that this new symptom should have been documented. It is a basic standard of care, emphasised by the Commissioner, ACEM [Australasian College of Emergency Medicine] as well as the Medical Council.

At the risk of stating the obvious, the Medical Council of New Zealand Guide to Good Medical Practice states, regarding ‘Keeping records’ www.mcnz.org.nz/portals/0/guidance/goodmedpractice.pdf (Page 6, excerpts):

4. *You must keep clear and accurate patient records that report:*

- *relevant clinical findings*
- *decisions made*

Make these records at the same time as the events you are recording or as soon as possible afterwards.

Thus I can only reiterate that [Dr D] should indeed have documented significant neurological symptoms, signs and new developments. It is risky to otherwise rely on nurses to convey verbal reminders.

[Dr C] has questioned when he should have reviewed [Mr A] and whether it would have made any difference.

This is a disappointing comment as it suggests that [Dr C] has not fully appreciated the points raised in the Commissioner's opinion (or in my advice).

[Dr C] defends his management of the case on the basis that he was not told of any serious symptoms or concern and that the X-rays were clear.

I don't want to reiterate the full details of the opinion but in response to [Dr C's] points, I suggest that he should have prioritised a personal review of his patient on the basis that this young man had significant neurological risk that could have presaged permanent long-term disability — from the history of injury and from the subsequent symptoms elicited by [Dr D]. That is to say, he should have reviewed the patient early in the shift, rather than later.

I would like to think that if he had personally reviewed the patient and his records, he would have elicited the significant history of injury (including the unequivocal concerns detailed in the referral letter), the patient's subjective on-going symptoms and would have realised that the case was more risky than first realised. Thus, I believe that an early review would have prompted him to consider ordering a CT and/or asking for an orthopaedic review.

I am also concerned at ... his plan for mobilisation of a spine-injured patient I have already spelled out why I believe that his strategy was very risky — essentially, that he would risk exacerbating an unstable spinal injury by asking the patient to mobilise with a view to precipitating worsening pain or worsening/new neurological symptoms.

Later in his letter, he stresses 'that there were no new neurological symptoms' that he was aware of during the shift. However, this is of little significance: a spine-injured patient who is lying still in bed, not moving, is quite likely to have no new symptoms — after all, that is the point of immobilising a spinal injury: to prevent further damage. It does not reduce the likelihood of significant spinal injury being present.

However, I concur with [Dr C's] points that he was dealing with a heavy workload and therefore had to make difficult judgement calls about prioritising all the cases in the ED, based on limited information.

This last point is crucial. There is plenty of evidence that overloaded Emergency Departments are a setting for increased morbidity and mortality. This particular case illustrates how that overloaded scenario can translate to poor outcomes. There were components of suboptimal documentation, incomplete handovers, inadequate time to systematically review patients, difficult and risky decisions made about how to prioritise precious time amongst several unwell patients, poor communication between busy staff and patient misunderstanding. It exposes any gaps in the knowledge of busy staff: there is little time to reflect on cases — and no free time to read up about them.

Another way of considering this is to ask: would this patient have had the same outcome if the ED was well-staffed and the consultant had time to personally review the notes and the patient in a timely manner? I think that it is unlikely — although this case did expose some limits in the staff's understanding of spinal injuries.”

Appendix D

Independent advice to Commissioner — Radiology

The following expert radiology advice was provided by Dr Mark Coates, a musculoskeletal radiologist:

“Introduction

I, Dr Mark Coates, have been requested to provide independent expert advice about whether Wanganui Hospital’s radiology service provided [Mr A] with an appropriate standard of care on 12 September 2007. I understand that independent expert emergency medicine advice is also being obtained.

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

Summary of qualifications, training and experience of expert

MB ChB (Otago 1989), FRANZCR (1999).

Current post: Musculoskeletal Radiologist at Christchurch Hospital, Private Bag 4710, Christchurch, New Zealand.

[At this point, Dr Coates lists the documents provided to him and a précis of the background of the case. These have been omitted for the purpose of brevity.]

Expert Advice Required

1. Please comment on the appropriateness of the interpretation and reporting of [Mr A’s] radiographical films on 12 September 2007.

Whilst the T3 fracture is identifiable in retrospect on the swimmer’s view from the cervical spine series, this is not well seen and it is understandable that this may have been overlooked initially.

2. A peer review of [Mr A’s] radiographical films by Wanganui Hospital clinicians on 12 September 2007 noted that the T3 fracture was ‘visible on the ‘swimmer’s view of the cervical series’ but ‘was not visible on the thoracic spine views’. Wanganui Hospital’s clinicians also agreed that the T3 fracture was ‘an extremely difficult fracture to identify on the available films’. Please comment on the appropriateness of these views.

The views taken for the thoracic spine were appropriate. In retrospect there is some loss of height of the T3 vertebra on the AP view, but as is often the case, this is not well seen on the lateral view. This is a notoriously difficult area to visualise on plain radiographs and the views taken are standard. Many centres, including my

own, accept the limitations of plain radiographs of the upper thoracic spine and proceed to CT if there is clinical concern (ie, clinical symptoms/findings or an appropriate mechanism of injury).

3. Are there any aspects of the care provided by Wanganui Hospital's radiology service that you consider warrant additional comment?

No further comment warranted.”