Registrar, Dr B

A Report by the
Health and Disability Commissioner

(Case 03HDC07979)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Parties involved

Mr A	Consumer
Dr B	Provider/Registrar in Emergency Medicine
Dr C	Clinical Leader of a Public Hospital Emergency Department
Dr D	General Practitioner

Complaint

On 3 June 2003 the Commissioner received a complaint from Mr A about the standard of care provided to him by Dr B. The complaint was summarised as follows:

Whether Dr B provided services of an appropriate standard to Mr A on 10 May 2003. In particular, whether she responded appropriately to his presenting symptom of pain after a fall.

An investigation was commenced on 27 November 2003.

Information reviewed

- Information from Mr A
- Information from Dr B
- Information from the Public Hospital, including Mr A's medical records

Independent expert advice was obtained from Dr Scott Pearson, specialist in emergency medicine.

Information gathered during investigation

Injury and ED consultation
On 9 May 2003 Mr A, aged 20 years, attended Territorial Army training at a pool, in a city. During the course of his training, at approximately 9.00pm, Mr A injured his back as a result of diving from a 10 metre high platform. Subsequently, Mr A experienced significant back pain.

On 10 May 2003, at 9.39am, Mr A presented to a Public Hospital Emergency Department complaining of continuing back pain and vague bilateral abdominal pain. He consulted Dr B,

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Registrar, at 10.11am. She noted: "fell onto back on water with high impact". On examination, Dr B observed that Mr A could walk without difficulty and that he had a good range of back movement. Dr B did not elicit any bony tenderness, but performed a urinalysis because of pain Mr A was experiencing around his lower back and sides. The results of this test were unremarkable.

Dr B decided, on the basis of Mr A's ambulant state and lack of bony tenderness, not to refer him for an X-ray. Her diagnosis was of "muscular back pain secondary to landing awkwardly on water". Dr B prescribed diclofenac, an anti-inflammatory, and gave Mr A an ACC leaflet about back pain. Mr A obtained his medication and returned home. Dr B documented her consultation with Mr A at 10.36am.

Subsequent events
Despite Mr A's use of diclofenac, his discomfort persisted. Consequently, he decided to consult his general practitioner, Dr D, on 16 May 2003. Dr D referred Mr A for an X-ray of his thoracic and lumbar spine at a Private Hospital, in a city. The X-ray, taken the same day, reported an anterior wedge compression fracture of the T12 vertebra. This X-ray was read by a diagnostic radiologist. On receiving the X-ray report, Dr D referred Mr A to the orthopaedic fracture clinic of the Public Hospital. Dr D's referral is dated 20 May 2003.

Response from Dr B
In her response to my investigation, Dr B made the following comments:

> "As a result of this complaint, and after my discussion with my mentor and Senior Consultant, Dr [C], it is now my practice to X-ray anybody with back pain following trauma, regardless of the mechanism of injury. I now recognise that vertebral fractures can be sustained from impact on water."

Independent advice to Commissioner

The following expert advice was obtained from Dr Scott Pearson, an emergency physician:

> "Thank-you for asking me to provide an opinion for the Commissioner on case number 03/07979. I have read and agree to follow the Commissioner's guidelines for Independent Advisors.
>
> I am a specialist Emergency Physician and have practised as a specialist in public hospital Emergency Departments for 8 years. During this time I have practised as a specialist in the United Kingdom, Australia and New Zealand.

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Expert Advice Required:

Did Dr [B] provide Mr [A] with services of an appropriate standard on 10 May, 2003?

In particular:

1. On the evidence available, was Dr. [B's] examination of Mr [A's] condition adequate?
2. Was Dr. [B's] decision not to refer Mr [A] for an x-ray appropriate in the circumstances?

History of Events:

Mr [A], aged 20 yrs, dived off a 10 metre high diving board into a pool of water on the evening of 9th May, 2003. He landed on his back. He sustained back pain at the time and he subsequently returned home. The next morning, some 12 hours after injury, he attended the Emergency Department at [the Public] Hospital.

Mr [A] was seen by Dr. [B], a registrar in Emergency Medicine at 1036 hrs. She documented the above details and in addition that Mr [A] complained of back pain and 'vague bilateral abdominal pain'. There were no lower limb symptoms. Dr. [B] examined Mr [A]. He had walked into the Emergency Department. He had 'good range of movement of the back' and was tender in the paralumbar muscles. There was some abdominal tenderness at the sides. Dr. [B] diagnosed muscular back pain and checked the urine (trace protein only). She then prescribed Mr [A] anti-inflammatory analgesics, gave him a back pain advice sheet, and discharged him.

I understand Mr [A] consulted General Practitioner, Dr [D], on 16 May, 2003 because of continuing back pain. Dr. [D] requested x-rays of the thoracolumbar spine which were performed the same day. This demonstrated an anterior wedge compression fracture of the body of T12. No posterior fragments were seen. Mr [A] was subsequently referred to the Orthopaedic Fracture Clinic by Dr. [D]. The letter of referral is dated 20 May 2003. Dr. [D] also states that Mr [A] was taking 300mg Diclofenac (twice the prescribed dose), 'he is now taking 150mg diclofenac per day, 4 G paracetamol and 180mg codeine per day'.

Mr [A] was taken by ambulance to [the Public] Hospital Emergency Department on 21 May 2003, and was seen by [another doctor] at 0420 hrs. His main complaint was of epigastric abdominal pain. This resolved with simple treatment and Mr [A] was advised to stop the diclofenac and take omeprazole and Mylanta. Orphenadrine was prescribed, in addition to the other medications, for his back. Mr [A] was discharged at 0730 hrs.

Mr [A] was subsequently admitted to [a ward] on 22 May 2003 under the care of [an] orthopaedic surgeon. It is unclear to me how this admission came about but evidently there was a telephone discussion between a number of individuals, including [the

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orthopaedic surgeon], about Mr [A's] condition. A CT scan of the fracture area was performed on 23 May, 2003 which confirmed a compression fracture of T12 and an intact posterior margin. I am uncertain how much the vertebral body was compressed and I have not seen the x-rays personally.

Mr [A] was fitted with a back brace and remained an inpatient from 22–29 May, 2003. He was followed up on 29 July and 26 August in [the orthopaedic surgeon's] Fracture Clinic as an outpatient. He was then discharged from Outpatient follow up.

Questions:

On the evidence available, was Dr. [B's] examination of Mr [A's] condition adequate?

Dr. [B] assessed Mr [A] on 10 May, 2003. She took a history of the presenting complaint, noting the height of the dive and that he had fallen onto his back when impacting water. The history also included whether lower limb symptoms were present or not. Past medical history, medication history and allergies were also documented.

Examination of Mr [A] then proceeded. As noted in the computerised records, this examination was thorough. No specific comment has been made about neurological abnormalities but Mr [A] was walking and he denied lower limb symptoms. Dr. [B] also arranged for urine dipstick testing to check for indicators of renal injury.

I believe Dr. [B's] examination of Mr [A] was adequate. It would be advisable, when examining an individual after a fall from such a height who presents with back pain, that a more detailed neurological examination is performed. Nevertheless, Dr. [B] clearly had an appreciation that neurological injury needed consideration. She observed his ability to walk unaided and Mr [A] denied lower limb symptoms.

2. Was Dr. [B's] decision not to refer Mr [A] for an x-ray appropriate in the circumstances?

This question is more difficult to answer and requires some further explanation. Clinical decision rules have been developed in Emergency Medicine over several years which aid doctors [to] determine whether an x-ray is necessary or not. An example is the Ottawa ankle rules, which use certain clinical criteria to determine the need to perform an x-ray after an ankle injury. There are also rules for knee injury and neck injury. The clinical decision rules developed for neck injury required the enrolment of some 40,000 patients in a prospective research study. The clinical decision rule developed (NEXUS guidelines) are well supported and validated by this research.

Unfortunately, there is no such validated guideline to help us in determining the need to perform x-rays of the thoracolumbar spine after blunt trauma. There is research in the international literature but much is retrospective or prospective studies with small numbers recruited. I enclose a recent article on this topic (Hsu, Joseph, Ellis). The

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authors have developed a proposed guideline which best sums the evidence available to date. They recommend imaging of the thoracolumbar spine if the individual suffers a high force mechanism and any of a number of factors are present including back pain and/or midline spinal tenderness. A high force mechanism is defined as a fall greater than or equal to 3 metres, a motor vehicle or motorbike crash of at least medium velocity and pedestrian motor vehicle crash at any velocity.

Whilst the surface onto which an individual falls is not clarified in this research, it is clear that an individual falling 10 metres onto a hard surface as compared to water will have quite different injuries. It is not clear to me whether Mr [A's] fall constitutes such a high force mechanism of injury. Clinical experience would suggest to me that such a fall could result in spinal bony injury. However, Dr. [B] was clearly influenced by an ambulant patient, lack of bony midline tenderness, and lack of lower limb symptoms. I note that Dr. [B] has written in a letter since that in future she would x-ray an individual after such an injury. I also note that whilst there was a fracture of T12 vertebra, this was treated non-operatively with external back bracing and analgesia.

Conclusion:

I believe it would have been advisable to x-ray Mr [A's] back on 10 May, 2003. However this opinion is strongly influenced by my own clinical experience. There is no research of sufficient power to give junior doctors clear guidelines in this area. As such, doctors rely on clinical assessment, mechanism of injury and available guidelines (enclosed) to guide them in their decision regarding the need for x-rays. We know that this process is fallible. Dr. [B] made a satisfactory assessment of Mr [A's] injury on 10 May, 2003 and in her clinical judgment x-rays were not required. Given her level of experience I believe this was a reasonable decision."

Response to Provisional Opinion

Mr A responded to my provisional opinion as follows:

"I would like to personally show my gratitude towards the progress of the inquiry into my complaint. It has been a year to the date, when I was first examined by medical personnel regarding my injury. After careful examination of the report, I would like to highlight two major areas of concern:

1. The impact of my fall into water from a height of 10 metres is quite high, as the surface tension of water had not been broken (usually there are air bubbles before diving). Therefore, even though it was landing into water, the height at which I fell would make it equivalent to me falling on concrete. This knowledge of physics seemed to be lacking in the report and I feel that it should be mentioned for future references.

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2. The varying degree of patients' pain threshold, may be a key factor overlooked by the report. I have been described to have a higher pain threshold and this may be one of the factors which could have influenced the decision of the examiner on the tenderness of the fracture.

However, as a medical trainee myself, I do understand the fact that most clinical judgements do get refined only by experience itself. I think in order to prevent any other similar clinical outcomes it would be highly helpful to make a protocol change at the emergency departments in the country to use X-rays as a diagnostic tool in all high impact injuries. Furthermore, the knowledge of falling into water from a considerable height as a high impact injury would also be fundamental."

Code of Health and Disability Services Consumers' Rights

The following Right in the Code of Health and Disability Services Consumers' Rights (the Code) is 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.

Opinion: No breach – Dr B

Examination
Dr Pearson commented that, though a more detailed neurological examination would have been advisable, Dr B's examination of Mr A was adequate. Dr B appeared to appreciate the potential for neurological injuries, and had observed that Mr A was ambulant and denied lower limb symptoms. I consider that Dr B's examination was adequate, and that she did not breach the Code in relation to her examination.

However, I draw Dr B's attention to paragraph 7, sentence 4, of the Public Hospital's response to Mr A, which reads:

> "Dr [C] believes that with the knowledge that a wedge fracture of the 12th thoracic vertebrae was present … it is possible that a more forceful examination technique would have elicited tenderness over this vertebra on the day."

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Decision not to refer for X-ray
Dr Pearson refers to an article about proposed guidelines for indicating when imaging of the thoracolumbar spine is appropriate.[1] He observes that the authors recommend imaging where an individual suffers a high force mechanism of injury and complains of back pain or spinal tenderness. Although a high force mechanism is defined as including a fall of over 3 metres, Dr Pearson observes that surfaces are not taken into account. In his view, surfaces are likely to affect the nature of injuries sustained by people who suffer falls. Consequently, Dr Pearson was unable to determine whether Mr A's fall, into water, constituted an injury resulting from a high force mechanism. Though I accept Dr Pearson's comments, I observe the clinical notes written by Dr B, which read "fell onto back on water with high impact".

Despite Dr Pearson's view that it would have been advisable for Dr B to have referred Mr A for an X-ray on 10 May 2003, he considers that her decision not to do so was reasonable. His judgement appears to be based on the level of clinical experience Dr B had at the time, as a registrar, in conjunction with the lack of clear, authoritative guidelines about imaging of the thoracolumbar spine. I acknowledge the mitigating factors raised by Dr Pearson, and accept his view that Dr B's decision not to refer Mr A for an X-ray on 10 May 2003 was reasonable. Consequently, I do not consider that Dr B breached the Code in this respect.

Follow-up actions

Medical Council of New Zealand
A copy of my final report will be sent to the Medical Council of New Zealand.

Education
A copy of my final report, with identifying details removed, will be sent to the Australasian College for Emergency Medicine and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

[1] Jeremy M. Hsu, Tony Joseph, Andrew M. Ellis, "Thoracolumbar fracture in blunt trauma patients: guidelines for diagnosis and imaging", *Injury, Int. J. Care Injured* 34 (2003) 426-433.

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