

Consultant Physician, Dr B
Nelson Marlborough District Health Board

A Report by the
Health and Disability Commissioner

(Case 08HDC00248)



Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Overview

This case relates to the care provided to a woman after she presented at Nelson Hospital with a debilitating headache early in the morning in mid 2007. Over the course of the day, her level of consciousness deteriorated. Hospital staff attributed this to the medication she had received. The following day, Mrs A's condition deteriorated further, and she required resuscitation. Despite transfer to the intensive care unit, Mrs A's condition continued to worsen, and she was pronounced brain dead at midday the following day.

This report considers the appropriateness of the care provided by Mrs A's admitting consultant, Dr B, and of the systems in place at Nelson Hospital.

Parties involved

Mrs A (dec)	Consumer
Ms A	Complainant/Consumer's daughter
Mr A	Consumer's husband
Dr B	Provider/Consultant physician
Dr C	Duty house officer
Nelson Marlborough DHB	Provider/Employer
Hospital 2	A public hospital in a main centre

Complaint and investigation

On 18 December 2007, the Health and Disability Commissioner (HDC) received a complaint from Ms A about the services provided to her mother, Mrs A, by Dr B and Nelson Marlborough DHB over a period of three days in mid 2007. The following issues were identified for investigation:

- *The appropriateness of the care provided by Dr B to Mrs A.*
- *The appropriateness of the care provided by Nelson Marlborough District Health Board to Mrs A.*

An investigation was commenced on 7 February 2008. Information was obtained from Ms A, Mr A, Dr B, Nelson Marlborough District Health Board, Mrs A's general practitioner, the Coroner, and the Accident Compensation Corporation. Independent expert advice was obtained from physician Dr Kingsley Logan. The emergency department aspects of this case were reviewed by Dr Peter Freeman, emergency

medicine specialist and chair of the New Zealand Faculty of the Australasian College of Emergency Medicine.

Information gathered during investigation

Background

Mrs A (aged 49) had a long history of migraine headaches. In June 2006, Mrs A underwent neurosurgery at Hospital 2 to remove a colloid cyst.¹ There was no evidence of malignancy, and the operation was successful in alleviating Mrs A's headaches.

On 16 March 2007, Mrs A fell down the stairs at home and hit her head. Over the next 10 days, she experienced minor intermittent headaches. Her symptoms worsened, and on 26 March 2007 Mrs A presented to her general practitioner who referred her for a CT scan at Nelson Hospital.

On assessment at Nelson Hospital Emergency Department (ED), it was decided that Mrs A's symptoms were related to her migraine headaches rather than any brain pathology. A CT scan was not performed. At the time of discharging Mrs A, the ED house officer telephoned Mrs A's general practitioner's colleague² to inform him of Mrs A's presentation at ED and advise that Mrs A should return to her GP or to hospital if her headaches did not settle. Apart from this telephone call, Nelson Hospital did not send a discharge summary to the Health Centre about the ED review.³ Nor was Mrs A given (or sent) a copy of a discharge summary. The house officer documented in Mrs A's notes the need to adopt a "low threshold for CT head if [the headache was] ongoing".

Thursday/Friday

A few weeks later, on a Thursday, Mrs A experienced a bad headache that was not relieved by taking various analgesics. The following day Mrs A went to see her GP, and she was assessed by a locum GP.

Following his assessment, the locum diagnosed sinus congestion and prescribed an otrivine nasal spray. He did not consider that Mrs A's headache was related to her

¹ A colloid cyst is a cyst containing gelatinous material in the brain, usually found in the third ventricle.

² Mrs A's GP had finished for the day when the ED house officer telephoned the Health Centre.

³ Dr B explained that it is "the usual practice" for Nelson Hospital to send a discharge letter to the patient's GP and to copy this to the patient when a patient is discharged. This usually occurs with outpatient assessment letters as well. Dr B has incorporated this in his own practice for about 10 years. He notes that "the patient copy ensures that accurate information on diagnosis and plan is communicated and that the patient has an opportunity to feed back if something important has been missed".

previous colloid cyst but advised her to go to hospital over the weekend if her symptoms worsened.

Saturday

Overnight, Mrs A experienced increasing headaches. In the early hours of Saturday she was taken by her husband to Nelson Hospital ED. (He left to attend to family business shortly after arrival and returned to hospital later that morning.)

The triage assessment (at 5.36am) recorded that Mrs A had been reviewed in ED “approximately ‘6 weeks ago’ with GP advised to come to hospital yesterday. Decision to stay at home but headache is getting worse overnight, now vomiting and sore between scapula/lower neck”. Mrs A’s pain was described as 9 out of 10, indicating severe pain. It was also recorded that she had received treatment for a brain tumour in the past. Mrs A was assessed as triage category 24 using the Australasian Triage Scale. She was placed in a bed within ED that was visible from the staff station.

An intravenous (IV) injection of morphine was administered at 5.55am. Mrs A was monitored closely, and her baseline observations were recorded every hour between 5.36am and 7.30am. Her GCS⁵ was 15/15 on each occasion.

At approximately 8am, Mrs A was reviewed by an ED house surgeon who did not find any hard neurological signs. She queried whether there was a recurrence of the colloid cyst and contacted the on-call consultant physician, Dr B, to discuss Mrs A’s case. The house surgeon queried the need for a CT head scan, and Dr B agreed that it was probably warranted. (However, a CT scan was not ordered until the next day.) Dr B decided to review Mrs A ahead of other patients that morning, as “she was unwell, uncomfortable and did not have a clear diagnosis”.

When Dr B arrived in ED, he reviewed Mrs A’s medical notes. They did not include the records of her attendance at ED on 26 March 2007. (The March 2007 notes were subsequently found in the Medical Records Department in June 2007, awaiting filing.)

No family member was present during Dr B’s assessment of Mrs A. Dr B noted that she had experienced about six mild headaches and “a couple” of bad headaches since her operation at Hospital 2. However, he was unaware of her fall and attendance at ED in March 2007. Like the house surgeon, Dr B did not find any “hard neurological signs”. Although he considered “an intracranial pathology”, Dr B decided to prescribe

⁴ Patients in this category are described as having an “imminently life threatening” condition or requiring “important time-critical treatment” and must be assessed and treated within 10 minutes of presentation.

⁵ 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 indicates a coma.

sumatriptan, a drug given to treat migraines. At 9.30am, 6mg sumatriptan was given by injection, with a plan to review Mrs A in an hour's time.

When Dr B saw Mrs A at 10.30am, he noted that she felt "much relieved", and her response to sumatriptan supported his diagnosis of migraine. This was significant since such a response is usually confirmatory of migraine. A decision was made to discharge Mrs A once she was "comfortable", and Mr A was contacted to take his wife home. However, when he arrived, he found his wife in pain and nauseous. Mrs A also told her husband that she felt worse than she had after her neurosurgery. Mr A was unwilling to take his wife home given her condition. After discussion with ED staff, it was agreed that Mrs A could remain in hospital. Mr A was accompanied by his son who asked staff if his mother could have a brain scan. (Mr A and his son subsequently left the hospital, with Mr A returning later that afternoon.)

Around midday, an ED senior medical officer telephoned Dr B to advise that Mrs A was "rather sleepy and still had a headache". In accordance with the Nelson Marlborough DHB guidelines for the treatment of migraine, chlorpromazine 25mg was administered at 12.30pm. Dr B did not review Mrs A again before returning home that afternoon as he "was not unduly concerned about her" at that time.

At 3.15pm, the ED senior medical officer telephoned Dr B again to report that Mrs A still had a headache. Dr B advised the ED senior medical officer to give Mrs A a further dose of sumatriptan and chlorpromazine, and to admit her to the medical ward to "sleep off" the effects of her medication. Neurological observations were performed at 3.15pm, and Mrs A had a GCS of 14/15.

At 3.30pm, Mrs A was given a further dose of 6mg sumatriptan. As she was still "quite drowsy" from the chlorpromazine administered at midday, a further dose of chlorpromazine was not given.

Transfer to medical ward

Mrs A was transferred by an orderly to the medical ward at 4pm. During handover, the ED nurse informed the ward nurse on afternoon duty of Mrs A's history of migraines, and the expectation of clinical staff that Mrs A would be discharged from hospital once she had slept off the effects of her medication. An observation chart was commenced in the medical ward. It did not include neurological observations as the ward nurse was told by the house officer "not to worry about doing neurological observations". (Observations of blood pressure, pulse, and oxygen saturations were performed at 4pm and 9pm.)

On Mr A's return to hospital that afternoon, he found his wife on the ward. He stated:

"I couldn't wake her. I was holding her hand and there was no response. She was on her own in a room. I don't remember her having a drip. I sat talking with her, I was shaking her hand but she wasn't responding.

I told a nurse that she wasn't responding and she said 'She does if you yell at her loudly'. I was shocked and surprised by what the nurse said. She said she was sleeping off the medication and that she had had a lot of medication.

... I think I possibly asked the nurse if she could have a scan. I was told that their intention was to keep her overnight but she appeared to be unconscious."

Over the course of the evening, Mrs A remained in a "heavily sedated" condition. The ward nurse expressed her concerns to the duty house officer, Dr C, and requested him to see her.

At 9.15pm, Dr C reviewed Mrs A and confirmed that she was "drowsy". He recorded that Mrs A "barely" responded to his voice, and "doesn't really arouse". He noted that a further dose of chlorpromazine was charted to be administered, but that it was not required at that time as she remained in a "sedated" state. There is no record of the measurement of GCS. Dr C stated:

"... My understanding was that there had been no deterioration since [Mrs A's] arrival on the ward but there had been no clear progress. I was unable to take a history due to this sedated presentation. I made note of her observations, which were acceptable and gave no indication of cardiorespiratory compromise. I advised no further medication to be given to avoid prolonging any possible sedating effects. I told the nursing staff of my difficulties in assessing her and charted intravenous fluids. My plan was to come back and review the patient later."

At 10pm, the ward nurse described Mrs A as "appears to be heavily sedated still", and recorded that the GCS was 9/15. The ward nurse also noted that Mrs A had not eaten or drunk anything, nor passed urine, since admission to the ward "due to sedation".

At 10.30pm, Mrs A was reviewed again by Dr C, who recorded her GCS as 9/15. He contacted Dr B as he was concerned that she was "surprisingly drowsy".

In the absence of any abnormal neurological signs, Dr B attributed Mrs A's condition to the chlorpromazine and advised Dr C that it "can have a particularly prolonged sedating effect". At the time, Dr B believed that Mrs A had received a second dose of chlorpromazine. In fact this was the first time Mrs A had been given chlorpromazine.⁶

⁶ Dr B now accepts that, in retrospect, he should not have attributed Mrs A's deepening sedation to the chlorpromazine, but notes that in his experience "chlorpromazine can have a profound effect"; "it takes several days for even a single dose of chlorpromazine to clear out of [one's] body". Its half-life is 16 to 30 hours meaning that after a dose of chlorpromazine, half of the drug is still present in the patient's body 16 to 30 hours later.

Dr B ordered regular neurological observations to be done overnight, and said that he would review Mrs A in the morning. Dr B recalls thinking that he would arrange for an urgent CT scan in the morning, irrespective of Mrs A's condition.

Dr B subsequently explained his thinking:

“It was the weekend and [Mrs A's] most rapid deterioration in consciousness occurred in the late evening and night. If [Mrs A] had presented to hospital on a weekday then I would probably have routinely reviewed her directly in the late afternoon or evening before going home. Instead, I was at home, on call, on the Saturday evening. My usual practice during evenings on call is to phone the on-call house surgeon between 9.30 and 10.30pm to review any difficult patients. Otherwise I rely on other staff to call me if there is any deterioration in one of my patients. Although this occurred in [Mrs A's] case, I think I would have appreciated the severity of [Mrs A's] drowsiness better if I had seen her directly myself. If I had routinely checked on her Saturday evening then I may also have met her family and picked up useful additional information. However, it is the usual and expected practice of specialists on call to be at home when on-call rather than on-site at the hospital, except when we are directly assessing patients. There is also a subtle reluctance to order CT scans in the weekend or after-hours compared with during a weekday. This is because it requires calling in two staff members from home. Although the CT service is available 24/7 when needed, the requesting doctor has to justify the urgency of the scan more than during the normal working week. This factor alone would not have changed my mind about request[ing] a CT head scan on [Mrs A] on Saturday but was one of numerous (above) factors [that] contributed to my decision.”

Following his discussion with Dr B, Dr C performed a neurological examination that confirmed there was no focal neurological deficit. He stated:

“... I asked the nurse from that shift ... to assist me with assessing and confirming pupillary reactions. We were in agreement that pupils were equal and reactive to light, and I noted that the swing flashlight response was normal and symmetrical. I documented my findings and assessment (with the time of making the entry recorded as 2230hrs). No focal neurological findings were forthcoming. Consequently, the plan was for 2 hourly neurological observations and any concerns or changes in pupillary reactions were to trigger an immediate call to [Dr B] and a CT of her head. The plan was formulated based on the advice I had received from [Dr B] and was dependent on the fact that there was no focal neurological deficits. ...”

Sunday

Overnight, clinical observations were performed on Mrs A, with the GCS from 12.30am to 6am varying between 9 and 11.

At 6.40am, the nurse recorded that Mrs A's condition had not improved overnight and she remained "heavily sedated". She had also been incontinent twice, and remained on IV fluids.

At 7.40am, Mrs A's condition deteriorated, and her breathing became "noisy" and faster. The on-call house surgeon assessed her GCS as 6/15, and contacted Dr B. He drove into hospital "immediately" to review Mrs A and confirmed that there was pupil dilatation and that she was in a "semi-conscious state". Dr B queried whether Mrs A had suffered a serious intracranial event and ordered an urgent CT scan. According to Mr A, Dr B ordered the CT scan only after Mr A "pleaded" for it.

Pending the results of the CT scan, Dr B contacted the Intensive Care Unit (ICU) to discuss transferring Mrs A for mechanical ventilation if the CT scan showed no pathology. No treatment for intracranial pressure was given in the interim.

Later that morning, around the time the CT scan results became available, Mrs A suffered a respiratory arrest. She was intubated and transferred to ICU. The CT scan showed swelling of the brain and irreparable brain damage. Dr B consulted various neurosurgeons in other centres, who advised that Mrs A's prognosis was poor and surgery would not be viable.

That afternoon, Dr B held a meeting with Mrs A's family to explain the results of the CT scan and her prognosis. Mrs A's family conveyed their wishes to continue the ventilation, and for clinical staff to reassess her condition the next day.

Mrs A was monitored closely over the remainder of the day. Various clinical staff noted that her condition remained "critical" and her pupils were unresponsive to light.

Monday

On Monday morning, Dr B reviewed Mrs A and noted that she was "still unconscious despite [the absence of] sedatives". He discussed her case with an intensivist, who agreed to share her care. Two series of tests conducted that morning confirmed an absence of brain function. The results were discussed with Mrs A's family. The issue of organ donation was also discussed, and Mrs A's family confirmed their agreement to donating several of her organs.

At 12 noon, Mrs A was certified brain dead. Her death was reported to the Coroner. Mrs A underwent an organ retrieval operation that evening.

Post-mortem examination

Two days later, a post-mortem examination was performed. On 17 August 2007, Mrs A's cause of death was reported as "raised intra-cranial pressure with coning" resulting from "obstructive hydrocephalus as a very rare complication of previous neurosurgery". The pathologist commented:

“With the benefit of hindsight, it was reasonable to assume that [Mrs A’s] terminal headache was from the outset a manifestation of this obstructed hydrocephalus.⁷ Once tentorial⁸ herniation⁹ had commenced the situation was effectively irretrievable, but at least hypothetically, it might have been relieved prior to that by direct shunt drainage from the ventriculotomy¹⁰ site. I cannot reliably give a time course to the ‘window of opportunity’ for this potential intervention which may have been as short as a few minutes or as long as several hours.”

Subsequent events

On 9 June 2007, the family met with Dr B and Nelson Marlborough DHB’s Chief Medical Advisor to discuss Mrs A’s care. Dr B explained that he was unaware (on the day she was admitted) that Mrs A had presented to ED in March 2007. He outlined in detail the care he provided to Mrs A and acknowledged that he should have ordered a CT scan earlier. The Chief Medical Advisor informed the family that a sentinel event investigation would be conducted, and they would be advised of the findings.

On 12 July 2007, the Chief Medical Advisor wrote to Mr A regarding the findings of the sentinel event investigation. He stated:

“We scrutinised the patient record and interviewed the staff involved, including staff who cared for [Mrs A] on 26th March 2007. Our finding indicates that errors were made in the care given to [Mrs A]. Care given by the consultant on [Saturday] was not of an acceptable standard ... We also found that during the admission on [Saturday], the notes from [Mrs A’s] visit in March had not yet been filed in the patient record. Had this been available, it is almost certain that a CT scan would have been performed that morning.

On behalf of Nelson Marlborough District Health Board we sincerely apologise for the systemic error of not having the complete notes available. We also apologise for the care which was not of an acceptable standard.”

The Chief Medical Advisor outlined in his letter several recommendations proposed by Nelson Marlborough DHB to prevent a similar occurrence. These included reviewing the filing of ED notes, reviewing the period for decision to admit patients to the ward from ED, and developing and implementing an education plan regarding patients’ decreased level of consciousness, and recognition and resuscitation of a neurological emergency.

⁷ An abnormal increase in the amount of cerebrospinal fluid (fluid surrounding the brain and spinal cord) within the ventricles of the brain.

⁸ Curved infolded sheet of dura mater that dips inwards from the skull and separates the cerebellum below from the occipital lobes of the cerebral hemispheres above.

⁹ Bulging of tissue through an opening in the membrane.

¹⁰ Incision into a ventricle to surgically correct an abnormality.

The Chief Medical Advisor concluded:

“We are truly sorry that these errors have occurred although we understand that nothing will reverse this tragic incident, we are determined to make the necessary improvements in order to avoid repetition of a similar event.”

On 18 July 2007, Dr B wrote to Mr A. He stated:

“I am writing to apologise for not doing everything I should have to save [Mrs A’s] life.

... [W]hen I was phoned late on [Saturday night] about [Mrs A’s] drowsiness, I should have ordered a CT head scan but did not. As you know, I had attributed her drowsiness to the medication [Mrs A] was given. In retrospect, I accept that [Mrs A] was more drowsy than the medication would have made her. I had also been reassured by the three examinations of [Mrs A] (including my own) that had not shown any sign of brain disease; in retrospect, I also accept that this should not have distracted me from getting a CT head scan when it was needed. Instead of planning to scan [Mrs A’s] head in the morning, I should have ordered it immediately.

Another conclusion of the ... sentinel event investigation was that I had not intubated, ventilated and given mannitol fast enough on [Sunday morning] to reduce the pressure in [Mrs A’s] head. Instead, I focussed on getting the CT head scan and trying to find a neurosurgeon to operate on her. I accept that I should have managed this situation better ...

I have managed other cases, similar to [Mrs A’s] without any problems in the past. ... [T]here were some circumstances in her case that made it difficult for me to diagnose her raised brain pressure problem. But I also accept that I should have managed her better.

There is not a day I have not thought about [Mrs A’s] case since I met you in May. I know you must all be devastated to lose someone you love, so suddenly and at such a young age. It has also been gutting for me as a doctor. I have never before been found to have made a serious error of judgement in my 18 years of work as a doctor. ...

...

As a result of what happened to [Mrs A], I’m going to have a lower threshold for ordering CT head scans during the night and at weekends in the future. ... I am also going to do a course in intensive care management of medical diseases to update my knowledge of caring for patients who are critically ill.

... I realise that nothing will compensate for your loss of a wife and for my part in this I will forever feel sadness and regret. Once again ... I'm very sorry that [Mrs A] had this brain disease, that she has died and that I could have done more in caring for her."

ACC

On 9 August 2007, Dr B completed a treatment injury claim on behalf of the family. The injury was stated as "death because of raised intracerebral pressure from blockage of flow out of the right lateral ventricle" and under the section titled "treatment claimed to have caused the injury", Dr B wrote "failure to diagnose the problem before it was too late". A clinical summary was enclosed with the claim. On 4 September 2007, ACC accepted the claim for a treatment injury.

Coroner

Mrs A's death was reported to the Coroner. On 25 July 2008, an inquest was held. The Coroner's findings have not yet been reported.

Independent advice to Commissioner

Independent expert advice was obtained from physician Dr Kingsley Logan and is attached as Appendix A. The emergency department aspects of this case were reviewed by Dr Peter Freeman, emergency medicine specialist and Chair of the New Zealand Faculty of the Australasian College of Emergency Medicine. Dr Freeman's comments are attached as Appendix B.

Responses to provisional opinion

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

Dr B

Dr B commented on the care Mrs A received at Nelson Hospital ED on Saturday:

"I don't necessarily think it is a bad thing that someone spent 10 hours in the ED. She was not waiting to be seen all that time, she was being actively managed and observed. Nelson Hospital does not have an Admitting Ward like many other hospitals do. This means that there potentially can be a drop in level of care from the ED to the Ward (unless the patient is sent to the ICU or they are given a one-to-one nurse on transition to the ward). For example, in the ED the patients' beds are mostly in easy view of the staff station, there is a high ratio of nurses and

doctors to patients, equipment for making observations and taking tests is available, patients are reassessed frequently, it is close to the Radiology department in case follow-up X-rays are needed, there is an efficient system for rapidly viewing blood test results, specialists come through ED repeatedly during the day so there are plenty of opportunities for reviewing the patient and urgent medical help is immediately on hand. At Nelson Hospital, therefore, it is the practice for patients to stay in the ED until their diagnosis has been made, treatment initialised and condition stabilised. This is an efficient and safe system. I supervise all the junior doctors in our hospital and we regularly discuss this issue and are pushing for patients to stay in the ED longer. I agree that it is very unusual for a patient to stay in the ED for 10 hours, but in [Mrs A's] case she arrived early in the morning, we were waiting for her treatment to work, then we were planning to send her home and waited for her family to come in, then her condition kept changing and our plans kept having to change. I don't think her care in the ED was any worse than it would have been elsewhere in the hospital And in her case if we had sent her to ICU or another ward earlier then different staff might have 'rung the alarm bells' earlier about her deteriorating condition."

Dr B outlined the actions he has taken since these events:

"Since this incident occurred, I have not only apologised ... to the [family] but have undertaken some other actions to ensure this kind of event does not occur again:

- a. I have lowered my threshold for ordering CT scans after hours;
- b. I have done personal study on raised intracranial pressure, presented this topic at a Nelson Hospital Physicians audit meeting and written my own management notes on raised intracranial pressure, which I carry in my work bag with me when on-call;
- c. I attended and successfully passed an intensive care course at [another] Hospital from March 5 to 7 [2008], which included emergency management of raised intracranial pressure;
- d. I prepared a teaching package for junior doctors on raised intracranial pressure and gave this to a group of doctors in Australia in August 2007 and for the first time to a group of junior doctors in Nelson Hospital on 14 August 2008. I plan to run an annual teaching workshop on this topic, together with [another doctor], for Nelson Hospital junior doctors."

Nelson Marlborough District Health Board

The Chief Medical Advisor responded on behalf of Nelson Marlborough DHB. He confirmed that the DHB accepted my provisional decision, including my proposed recommendation to develop an electronic system of recording patient information. The Chief Medical Advisor stated:

“Whereas some DHBs have implemented parts of an electronic medical record, this is a long and arduous process and no DHB has a full developed system. NMDHB has for some time reported some aspects of patient information electronically such as laboratory and radiology results. We have now embarked upon implementing a comprehensive clinical intranet which includes diagnostic results as well as other aspects of the record available on a single interface and log-on. We are now testing the system and plan to commence implementation of phase one on 15 September 2008.¹¹ This phase will enable electronic discharge summaries sent to GPs. Further development of the electronic patient record will follow and we expect to have made substantial progress by next year. Implementation is accompanied by substantial change management requirements as there are potential clinical risks during the switchover period from paper to electronic format.”

Ms A

Ms A confirmed that the information gathered in the report is accurate, and that no amendments were necessary.

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.

¹¹ The Chief Medical Advisor confirmed that to date, Phase One has been implemented, which involves Resident Medical Officers issuing discharge summaries electronically. This will be extended to include Senior Medical Officers by 2 February 2009 (the next phase of implementing the electronic record-keeping system).

Other relevant standards

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

“Good clinical care must include:

...

- providing or arranging investigations or treatment when necessary
 - taking suitable and prompt action when necessary ...”
-

Opinion: Breach — Dr B

Care on Saturday morning

Mrs A presented to Nelson Hospital in the early hours of Saturday with a debilitating headache. My expert physician, Dr Kingsley Logan, advised that Dr B “followed a careful and reasoned assessment” in his review of Mrs A. Dr B was “at a particular disadvantage” when he assessed Mrs A that morning as none of her family were present, and Dr B did not have access to Mrs A’s ED notes of March 2007 (discussed below). This made his assessment more difficult as Mrs A’s medical history was “imprecise” at this point. It also meant that Dr B was unaware that ED medical staff had documented the need for a low threshold for ordering a CT scan to investigate Mrs A’s headache.

Given the symptoms Mrs A presented with along with the absence of any “localising neurological signs”, it was reasonable for Dr B to diagnose Mrs A with migraine. Although in retrospect the diagnosis was incorrect, there was no reason at the time for Dr B to suspect a neurological emergency since Mrs A responded well initially to the sumatriptan she was given.

In my view, Dr B’s care and his management decisions on Saturday morning were appropriate in the circumstances.

Lack of consultant review on Saturday night

After he was contacted by the house officer at 10.30pm on Saturday, Dr B did not return to Nelson Hospital to assess Mrs A and missed “the window of opportunity” to intervene and correct matters. It was clear from the information relayed by the house officer that there had been no improvement in Mrs A’s condition since Dr B last saw her. Dr B wrongly attributed Mrs A’s sedation to the chlorpromazine, thinking that she had received two doses when she had received only one (at 12.30pm). As noted by Dr Logan, there were definite changes in Mrs A’s observations at 9.15pm and more

specifically at 10.30pm. Dr B accepts that, in retrospect, he should not have attributed Mrs A's deepening sedation to the chlorpromazine.

Dr B's decision not to return to Nelson Hospital that night meant that he did not have a complete picture of Mrs A's actual clinical situation, and was reliant on second-hand information from the after-hours team. This is acceptable when a patient is in a stable condition. Mrs A was not — she showed signs of deterioration that evening and had a reduced GCS of 9/15. Dr B has since acknowledged that had he returned to hospital that night, he “would have appreciated the severity of [Mrs A's] drowsiness better” and may have picked up useful additional information if he had met her family.

Delay in ordering CT scan

Dr B admits that he delayed ordering a CT scan for Mrs A on the Saturday night. He explained that there is a “subtle reluctance [amongst clinicians] to order CT scans in the weekend or after-hours compared to during a weekday” as this entails calling in two radiology staff from home. In other words, “the requesting doctor has to justify the urgency of the scan more” during weekends and after-hours compared to during the normal working week.

The lack of radiology services on the weekend was beyond Dr B's control. Dr Logan commented that the reluctance by clinicians to obtain definitive radiological investigations after hours is often based on practice and hospital culture (discussed below). But patients rely on their doctors initiating necessary investigations regardless of the day of the week when they are admitted to hospital.

Instead of ordering regular neurological observations overnight and scanning Mrs A's head the next morning (Sunday), Dr B should have requested a CT scan when the house officer telephoned him that night. Mrs A's GCS score had reduced significantly since it was last recorded as 14/15 at 3.15pm, and it should have been clear that a GCS of 9/15 warranted further investigation regardless of the envisaged pathology. Dr Logan advised that CT scan “is usually the test of choice for the initial evaluation of a coma patient” as “it is very sensitive for structural causes of coma”.

Care on Sunday morning

A further issue is the management of Mrs A's care when she deteriorated further on Sunday morning. It appears that Dr B should have intubated, ventilated and administered mannitol earlier instead of arranging a CT head scan and trying to find a neurosurgeon to operate on Mrs A. Dr Logan advised that “the window of opportunity to correct matters occurred some time before [that morning]”, and further intervention was futile by that stage.

Conclusion

Although there were significant extenuating circumstances, Dr B did not provide Mrs A with an appropriate standard of care on Saturday night and Sunday morning. It follows that Dr B breached Right 4(1) of the Code. I note that these shortcomings were also identified and discussed in Nelson Marlborough DHB's sentinel event

investigation, the findings of which Dr B has accepted. He has also apologised verbally and formally to Mr A. I commend Dr B on his sincere and unreserved admission of responsibility.

Opinion: Breach — Nelson Marlborough District Health Board

Clearly, as Dr Logan identified, there were several systemic problems in Nelson Hospital that contributed to Mrs A's tragic outcome. They were highlighted in the Board's own sentinel event investigation. I consider that Nelson Marlborough DHB did not provide Mrs A an appropriate standard of care, and breached Right 4(1) of the Code, for the following reasons:

Lack of discharge summary to GP or patient

No discharge summary was given to Mrs A when she left the ED after her first presentation on 26 March 2007, nor was a discharge letter sent to her referring GP (or copied to Mrs A).

Sadly, it is all too common for a discharge summary not to be sent from secondary to primary care when patients are discharged from an emergency department.¹² Sending an electronic discharge summary to a patient's GP (where known, as it was here) is a very sensible practice. It is a good idea also to print and give a copy to the patient. In this case, neither Mrs A's referring GP, nor Mrs A herself, received a discharge summary after her assessment at Nelson Hospital ED on 26 March 2007. This was a missed opportunity to record her initial presentation, which could have provided a vital clue when she re-presented two months later (since Mrs A could then have brought a copy of the discharge summary with her to the ED).

The discharge summary should also form the basis of the permanent ED record (discussed below).

Absence of ED notes

The absence of Mrs A's March 2007 ED notes when she returned to Nelson Hospital was a major factor that compromised her care. As noted by Dr Peter Freeman, emergency medicine specialist, "the purpose of the clinical record is to document contemporaneous clinical information and to be a reference for future visits".

There was a natural expectation on the part of the locum GP who saw Mrs A on Friday that her March 2007 notes would be available within the ED. The fact that they

¹² See, for example, case 05HDC14141, 28 February 2007, and case 07HDC07977, 28 May 2008.

were not, significantly disadvantaged Dr B when he assessed Mrs A on Saturday morning.

Mrs A and clinical staff were let down by the lack of access to the patient's past clinical records, which is essential for continuity of care. This is a not uncommon situation within a fragmented health system that too often relies on paper records, but it is a completely unacceptable state of affairs. It points to an urgent need to put in place an electronic system that integrates patients' records. As noted by Dr Logan:

“... Many steps have been taken to address the issue that arose but need to include access to specialised investigations after hours and full electronic records of emergency department attendances. This is not available at the front door of the hospital viz in the emergency department and in my opinion the health boards will continue to expose patients to these risks as long as emergency department presentations are not available and shared electronically between the hospital and their primary providers.”

Nelson Marlborough DHB has apologised for its deficiency and undertaken to review the filing of ED notes. The DHB is developing an electronic system of record-keeping and integrating past records. It will involve implementing a programme in ED whereby the patient's notes go straight on to an electronic record and are available immediately once a patient has been reviewed by a doctor. The clinician will also be able to access previous records electronically, including laboratory and radiology results. The measures initiated by Nelson Marlborough DHB are sensible and overdue. They are consistent with Dr Freeman's comments about the ideal record-keeping system being a shared in-patient and ED electronic clinical record that is available to any clinician involved from any location.

Length of time in ED

Mrs A presented to Nelson Hospital's ED at 5.36am on Saturday, and was transferred to the medical ward at 4pm. In total, she spent over 10 hours in ED. Dr Logan considered this a “prolonged stay” and noted that it was another factor that compromised the care that Mrs A received. As a result of the length of time she was in ED, “further therapeutic options were lost” and the “subsequent change in [Mrs A's] GCS was not appreciated sufficiently by Dr B or any members of the on-call team”.

I acknowledge that Mrs A was monitored closely by clinical staff whilst at ED, in what Dr B described as “an efficient and safe system”. Dr Freeman commented that in that situation, 10 hours “is not uncommon or unreasonable”. However, it was less than ideal and exceeded the six hours maximum length of stay target agreed between the New Zealand Faculty of the Australasian College of Emergency Medicine and all district health boards.

Nelson Marlborough DHB accepts that Mrs A spent too long in ED, and has reviewed the decision-making period for transferring ED patients. An education plan has been implemented for recognising a decreased level of consciousness in patients and the

need for prompt resuscitation in a neurological emergency. The DHB has also reviewed its guidelines and introduced a practice whereby sedated patients must be escorted by medical or nursing staff when they are transferred between different parts of the hospital. These are sensible changes.

Availability and accessibility of CT scans after-hours

The reduced radiology services after-hours was another factor that compromised Mrs A's care, and influenced Dr B's decision not to order a CT scan that Saturday night. Reduced services and staffing after hours across all sections of a hospital, although a very common practice, is of concern. Patients get sick 24 hours a day. Patients who present after hours with demanding or undifferentiated symptoms need access to definitive investigations. I endorse Dr Logan's suggestion that Nelson Marlborough DHB "assess the threshold or perceived barriers that seem to be in place" in relation to accessing specialised investigations after hours.

Actions taken

Both Dr B and Nelson Marlborough DHB have reflected extensively on the care provided to Mrs A since the events in question occurred. In particular, I note Dr B's comment (in his written apology to Mr A) that "there is not a day [since then that he has] not thought about [Mrs A's] case". I acknowledge the impact of Mrs A's care on various clinical staff, and the changes they have since made to their practice.

Recommendations

I recommend that Nelson Marlborough DHB:

- confirm to HDC that it has implemented an electronic patient record to a stage including doctors' correspondence, by 27 February 2009
 - review its system for providing an ED discharge summary to a patient's primary care provider (where known) and to the patient, and advise HDC of the outcome of the review, by 27 February 2009.
-

Follow-up actions

- A copy of this report will be sent to the Medical Council of New Zealand, the Coroner, and the Royal Australasian College of Physicians.
- A copy of this report with details identifying the parties removed, except the experts who advised on this case and Nelson Marlborough DHB, will be sent to the Internal Medicine Society of Australia and New Zealand, the New Zealand Faculty of the Australasian College of Emergency Medicine, the Royal New Zealand College of General Practitioners, the Quality Improvement Committee, and all district health boards, and will be placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix A

Independent advice to Commissioner — Physician

The following expert advice was obtained from Dr Kingsley Logan, a physician:

Initial advice

“I am a general physician and medical director at Taupo Hospital and have been asked to provide medical opinion following the death of [Mrs A].

Supporting Information

- Copy of complaint dated 18 December 2007 to HDC with a supporting Police statement from [Mr A], marked ‘A’ (Pages 1 to 22).
- Copy of HDC’s notification letter to [Dr B] dated 7 February 2008 marked ‘B’ (Pages 23 to 25).
- Information from [Dr B] marked ‘C’ (Pages 26 to 35).
- Copy of HDC’s notification letter to Nelson Marlborough DHB dated 7 February 2008, marked ‘D’ (Pages 36 to 38).
- Information from Nelson Marlborough DHB, marked ‘E’ (Pages 39 to 51).
- Copy of [Mrs A’s] clinical records from her GP, marked ‘F’ (Pages 52 to 72).
- Copies of [Mrs A’s] hospital records in 2006 marked ‘G’ (Pages 73 to 85).
- Copies of [Mrs A’s] clinical records in March 2007 from Nelson Marlborough DHB marked ‘H’ (Pages 86 to 92).
- Copies of [Mrs A’s] clinical records in [mid] 2007 from Nelson Marlborough DHB marked ‘I’ (Pages 93 to 199).
- Copy of [Mrs A’s] autopsy report, marked ‘J’ (Pages 200 to 205).
- [Mrs A’s] radiographical films on 28 March 2006 (8 films) with enclosed radiology report (page 206) and [Sunday] (3 films) with enclosed radiology report (page 207) in a separate packet labelled ‘K’.

I have been asked to comment on the care by [Dr B] as well as the care by Nelson/Marlborough Hospital and will preface my comments initially by consideration of the pathology.

[Mrs A] had symptoms of migraine involvement over many years but during routine investigation in 2006 she was found to have a colloid cyst. There was no evidence to suggest she had developed obstructive symptoms and there was no evidence of hydrocephalus at that time. Whilst the colloid cyst was felt to

be an incidental finding, given the size and the propensity these have to obstruct, she was advised to have surgery. The tumours however, are known to cause intermittent obstruction, and it appears that following surgery the pattern of headache had improved.

[Mrs A] had a rare tumour affecting 3 individuals per 1,000,000 per year. The tumour was completely excised and there was no reason to suspect that she would have a recurrence and indeed this was not found to be the case at post mortem. She developed a very rare complication of surgery and despite extensive literature searches, I was unable to find published evidence of this complication.

She had been formally discharged from the Neurosurgical clinic at [Hospital 2] but presented again on the 26 of March 2007 to her general practitioner's office and was referred onto the Emergency Department at Nelson Hospital.

The issues were discussed with the [on call physician] who also indicated he would discuss matters in turn with [the] Consultant Neurologist. She was known to [the Consultant Neurologist] who had made the initial diagnosis in April 2006.

There is some issue as to whether her symptoms continued following her ED presentation. Whilst intermittent obstruction is possible, it is very unlikely she would have had progressive obstruction given the time period.

She presented again on the [Friday] complaining of bi-frontal headache and nausea and was seen by a locum GP who gave her symptomatic measures, but advised her to go to the hospital without directly contacting the hospital.

Her symptoms deteriorated such that in the early hours [on Saturday] morning she presented to the Emergency Department and was seen within a matter of hours by [Dr B]. [Mrs A] was unaccompanied by her family when assessed by [Dr B].

Given her background history of migraine involvement and headache characteristics typical of migrainous involvement, that is pounding diffusely situated and associated with nausea and vomiting, her symptoms were regarded as being migrainous. In addition there was a symptomatic response to Sumatriptan, which is invariably only seen with migrainous involvement and is often used as a diagnostic tool.

[Dr B] followed standard hospital policies in management of patients with migraine. Although he is an infectious disease specialist, it is not unusual for small hospitals to involve their physicians in setting up guidelines and protocols and is therefore not unusual that he co-authored the evaluation of headache protocol in their hospital. He was seeing a patient who had a normal

scan in the past and did not have a history of trauma or signs to suggest a compressive lesion. He did not have access to the recent evaluation in the Emergency Department and having read through the hospital file, he considered that her symptoms related to migraine. [Mrs A] had already been given morphine and in this setting of raised intracranial pressure, the history would also have been affected. She was given Sumatriptan and initially responded to this.

Her symptoms of headache however returned together with drowsiness. This was attributed to her drugs and having spent some 11 hours in the Emergency Department, she was transferred to the medical ward.

[Mrs A] was seen by a number of doctors during her final illness. There was of course an expectation that all of the notes referable to her previous evaluation at the hospital, as well as her general practitioner's notes should be available with her re-presentation to the hospital on [Saturday]. This was inferred by the locum practitioner suggesting that if there was any deterioration that she should represent to the hospital. There was however no formal referral or contact with the hospital expressing his disquiet/concern.

She was kept in the Emergency Department for a prolonged period, her family were not able to discuss matters directly with the doctors concerned and her neurological deterioration was not appreciated.

The cause of death has been related to debris blocking off the interventricular septum causing acute hydrocephalus and coning. This would have occurred within a matter of minutes or hours. There is very little evidence that early intervention with mannitol or hyperventilation would have altered matters. The situation of acute obstruction requires immediate drainage and does not follow the usual principles of cerebral oedema that is seen in other situations.

Expert Advice Required

1. Comment generally on the standard of care provided to [Mrs A] by: (a) [Dr B];

Reviewing the initial Emergency Department notes, the assumption was that [Mrs A] would have a scan.

[Dr B's] initial comments to the RMO was that [Mrs A] would need to have a scan, but having examined and assessed the patient, he did not feel this was necessary. She had been given morphine on arrival and she was further given sedation.

[Dr B] followed a careful and reasoned assessment of the patient and with her response to sumatriptan regarded this as a migraine involvement.

[Dr B] was at a particular disadvantage in not being able to communicate with any other members of the family and the family's expectations were not evident to him. He did not access to the notes that should have been available from [Mrs A's] earlier visit. [Mrs A] was obviously very symptomatic and must have had evidence of raised intracranial pressure and the history would have been imprecise in this situation. There were no lateralising neurological signs in a patient who within the last year had a normal scan.

There was no reason to believe this was a neurosurgical emergency.

Her depressed level of consciousness was attributed to the effects of drugs and migraine involvement. Migraine result in significant sedation and nausea and it is quite common for patients to spend some hours sleeping after an acute attack.

[Dr B] has expressed his profound remorse for not having initiated the scan at an earlier stage and his very open disclosure to the patient's family is evident. He is very clear that he should have arranged the scan at an earlier stage. With the deterioration in the GCS, given as figures rather than a description or definition of the deterioration, the scan should have been done. This has been acknowledged by [Dr B] and the review finding.

Given the sequence of events, it is very clear there had been significant deterioration in [Mrs A's] condition and a scan was ordered. The difficult situation faced by [Dr B] on Sunday morning with a patient who was coning, was compounded by having to communicate with various specialties and intensivists.

It is accepted that all her symptoms related to obstructed hydrocephalus, with acute obstruction and coning. The window of opportunity to correct matters occurred for some time before this, [Dr B] has accepted that this occurred during [Saturday].

Once it became apparent that [Mrs A] had developed this major complication and impending death, collegial support should have been obtained by [Dr B]. This would create distance between the doctors looking after the patient and those who would be considering organ transplantation.

1. Comment generally on the standard of care provided to [Mrs A] by:

(b) Nelson Marlborough DHB.

There are a number of systemic issues which relate to Nelson Hospital. Many of these have been highlighted in the reports from [the CMO] and became evident from their review process.

Carcinogenic effects of repeated scans

[Mrs A] had a scan at the time of diagnosis and then a follow up scan as part of her post operative evaluation.

There does seem to be some education required as to the potential dangers of CT scans. In this era an uncontrasted scan contributes very little significant radiation exposure and if this really is of concern, MRI technology can be done without any X-ray exposure.

The supposed carcinogenic effects of repeated scans need to be addressed and further education is required. It would be very unusual in this situation where the patient had only had two scans to consider a carcinogenic risk.

Availability and accessibility of CT scans after hours at Nelson Hospital

The reluctance shown by the clinicians, to obtain definitive radiological investigations after hours, is often based on practice and hospital culture. Patients presenting after hours with demanding or undifferentiated symptoms need definitive investigations. The DHB need to assess the threshold or perceived barriers that seem to be in place. The experience from many emergency departments is that increasing numbers of patients are presenting after hours and therefore staff availability and services need to be in place to meet this need.

Emergency Department Records and follow-up arrangements

The notes from the general practitioner are in an electronic format. These are then presumably printed and sent with the patient to the Emergency Department. The hospital notes from the emergency department all appear to be in handwritten and therefore the hospital system is dependent on timely and appropriate hand filing.

There are electronic systems readily available which allow for electronic recording and storage of all of these notes. These should be available for ongoing assessment and management of these patients. This does emphasise the need for these to be introduced in the hospital emergency department.

The patient was well assessed in March, the issues were considered and direct contact was made with the general practitioner. The need for a follow-up appointment was left in the hands of the patient and whilst this is acceptable practice, a follow-up appointment either at Outpatients or via her general practitioner would have confirmed whether there were ongoing symptoms.

Clinical observations and interpretation of a GCS of 9

The clinical review process raised other deficiencies in the management of [Mrs A], which include lack of nursing escort to the ward and then to the CT scan but also a number of nursing observations that were made, most crucial of which demonstrated the fall in the Glasgow Coma Scale at 10.00pm.

[Mrs A] was unconscious and continued to deteriorate. The CT showed signs of markedly raised intracranial pressure and coning. It became apparent she had developed irretrievable changes and she was taken off life support on [Monday].

If not covered above, please answer the following questions and include reasons for your view:

2. Please comment on the adequacy of the clinical observations performed on [Saturday and Sunday].

The observations were adequate but were not interpreted, there was no planned management eg a GCS of 9 would normally require a CT no matter what the envisaged pathology.

3. Please comment on the assessments at 9.15pm and 10.30pm that [Mrs A] was 'sedated'. Was it appropriate to assign [Mrs A's] condition at 9.15pm and 10.30m as 'sedated' given the drugs she had been administered?

Communication was such that [Dr B] felt an additional dose of sedatives had been given to [Mrs A]. It should have been clear to all those involved that at 10.30pm the effects of the drugs was negligible.

4. [Mrs A's] GCS was measured at 9/15 from 10pm on [Saturday]. Please comment on the appropriateness of the care in light of the GCS measurements.

Covered above.

5. Please comment on the management decisions made following [Mrs A's] medical assessment at 10.30pm on [Saturday]. Should [Dr B] have returned to hospital to assess [Mrs A] at this point?

[Dr B] should have returned to assess matters at 10.30pm. He had however seen the patient in detail that morning and had returned to review matters in the emergency department and with the information to hand considered that her state was still in keeping with the diagnosis of migraine headache.

6. Should a CT scan have been performed at an earlier stage? If so, when, and for what reasons?

Yes a GCS of 9 warrants a CT scan.

Computed tomography allows for quick assessment of intracranial structural changes and is usually the test of choice for the initial evaluation of a coma patient. Except for focal brainstem lesions, it is very sensitive for structural causes of coma, including subarachnoid haemorrhage (95 percent in early presentation), other intracranial haemorrhage (essentially 100 percent), acute hydrocephalus, tumours, marked cerebral oedema, and large ischemic strokes.

7. Should [Mrs A's] clinical condition have prompted transfer to an intensive care environment at an earlier stage? If so, when, and for what reasons?

The CT showed evidence of significant distension of the lateral ventricles particularly on the right with accompanying midline shift. There was significant mass effect and features of foramen of Munro obstruction.

Once this was done it was apparent that further intervention was futile with transtentorial herniation already evident on scan.

8. Please comment on the absence of the ED notes of March 2007 when [Mrs A] was admitted to hospital on [Saturday].

This was a major factor. There were a number of missed opportunities and include the lack of communication between the primary provider and Hospital. The advice given to the patient to return to the hospital was given with every expectation that relevant notes would be available and accessible.

9. Please comment on the standard of documentation in relation to:

(a) [Dr B]

[Dr B's] assessment diagnosis and management of migraine was adequate and precise.

(b) Nelson Hospital's clinical staff

Documentation was orderly and adequate but was not in electronic format and is again the issues that need to be faced by Nelson Hospital as they face the consequences of their documentation/lack of electronic record /interface with their primary providers.

10. Are there any systemic issues of concern that contributed to the outcome of [Mrs A's] care?

Many of these have been raised above including access to specialised investigation, interpretation of coma and deteriorating level of consciousness particularly in non traumatic presentations.

This has been addressed and ongoing education programs instituted. Whilst the tumour presentation let alone the complication is very rare it is not uncommon to face GCS of these levels in traumatic brain injury.

The protocol for management of headache will need to be revised including the use of narcotic analgesics prior to diagnosis.

11. Please comment on the changes [Dr B] and Nelson Marlborough District Health Board have made since the events in question. In your view, have the concerns about [Mrs A's] care been adequately addressed?

[Dr B] and the Health Board have discussed the issues with the family; disclosure has been transparent and open. Many steps have been taken to address the issue that arose but need to include access to specialised investigations after hours and full electronic records of emergency department attendances. This is not available at the front door of the hospital viz in the emergency department and in my opinion the health boards will continue to expose patients to these risks as long as emergency department presentations are not available and shared electronically between the hospital and their primary providers.

Training and further education has been provided and understandably the staff has been traumatised by these events. [Mrs A] suffered a rare complication. There is no evidence to suggest this was as a result of neglect or poor care but rather a sequence of misinterpretations and missed opportunities that tragically was reversible.

If, in answering any of the above questions, you believe that [Dr B] and Nelson Marlborough District Health Board did not provide an appropriate standard of care, please indicate the severity of their departure from that standard.

[Mrs A's] care was compromised by a number of factors and include:

1. After-hours presentation.
2. No referral letter.
3. No access to notes from recent ED presentation and decisions made.
4. Symptomatic patient and a complication that may [have] been ongoing for weeks that was not addressed formally by any planned clinic or GP follow up.
5. Seen by a number of medical practitioners / no integrated notes.
6. Incomplete History in a patient already sedated and with a rare complication of surgery that was causing an obstructive hydrocephalus.
7. Family members who were not available when the patient was seen by the physician.
8. Plausible alternative diagnosis known to have migraine and response to sumatriptan.
9. Reluctance to obtain specialised investigation after hours.

10. The prolonged ED stay and subsequent change in GCS was not appreciated sufficiently by [Dr B] or any members of the on call team.

The triggers or features to suggest urgent intervention did not occur and whilst the GCS has been routinely applied in intensive care units and emergency pre-hospital settings and provides a good basis for assessing the depth of consciousness and coma, it was developed as a means for grading patients with traumatic brain injury and for predicting their chances of neurological recovery.

It does not appear that any of the information received during the observation on [Saturday] was interpreted correctly; cognitive errors were made when the results of the GCS were made available. [Dr B] has indicated he should have reviewed matters. The fact he did not review a patient he felt he had fully assessed and had plausible cause for the condition described clearly had a major impact and [Dr B] has accepted responsibility for this.

[Dr B's] actions are not seen as a departure from the standard but that of the incorrect diagnosis in the setting of a rapidly/sudden deterioration of a patient who had a rare complication of surgery. He had assessed the patient in a timely manner, had considered the diagnosis to be migraine and with the information to hand felt the clinical features were in keeping with his original diagnosis. He has readily admitted he should have reviewed the patient and arranged the scan and is now very obvious given the tragic sequence of events.

Are there any aspects of the care provided by [Dr B] and Nelson Marlborough District Health Board that you consider warrant additional comment?

The systemic issues highlighted, that is effective communication between the primary and secondary providers would include full electronic records of emergency department presentations. Advice to attend the hospital for further evaluation should be done formally so that effective handover of care can be done.

There needs to be recognition of the increasing numbers of patients presenting after hours and the perceived limit/access to specialised investigations after hours.

This is a tragic situation where missed opportunities followed a combination of events. Each of these need to be addressed and whilst the concerns raised by the family have been addressed it is not simply a question of blame. Responsibility for care at many hospitals in New Zealand does not include electronic sharing of emergency department presentations and after hours there is limited staff and access to specialised investigations.

Further therapeutic options were lost with the prolonged stay in the emergency department, the shared care between departments where evaluation and interpretation of the GCS of 9, effectively an unconscious patient was lost between the various observers. This was not appreciated by those concerned and all have voiced their severe remorse and have made changes to their practices.

The sequence of events that followed the scan would have been facilitated by collegial support and does emphasise the need for back-up and support in a situation that was extra-traumatic for all concerned.”

Further expert advice

Dr Logan provided the following additional advice:

“I do not believe this is a case where single individuals’ conduct can be approached from a standards point of view; there were a number of missed opportunities given the systems failures. This has been highlighted in a recent article in the New England Journal of Medicine and I have enclosed some of the relevant details:¹³

‘The weekday hospital has a full administrative team, department chairs and service chiefs, experienced nurse managers, and a full complement of professional staff. The off-hours hospital, on the other hand, rarely, if ever, has senior managers present. Nurse-to-patient ratios are significantly lower. Even the number of residents is considerably lower — because of mandated work-hour restrictions.

... This discrepancy in provider care between daytime and night time inpatient services is a matter of growing concern to health care professionals, because people get sick 24 hours a day. In fact, 50 to 70% of patients are admitted to the hospital at night or on the weekend. (1,2).

The consequences of service deficiencies during off-hours include higher mortality and readmission rates (3) more surgical complications, (4) and more medical errors. (5) Given the health care industry’s

¹³ David J. Shulkin. Like Night and Day — Shedding Light on Off-Hours Care. Volume 358:2091–2093 May 15, 2008 Number 20, accessible at www.nejm.org.

renewed focus on ensuring patient safety and providing high-quality medical care, why hasn't the situation changed at the 'other hospital'¹⁴?

... Instituting longer hours for care providers is not a reasonable solution to the problem, since medical professionals who work for too long at a stretch become fatigued and make more errors. Another major obstacle is the nursing shortage. More-experienced nurses understandably choose desirable day shifts. As a result, night and weekend shifts are filled with a greater percentage of temporary or agency nursing staff, many of whom have less training and less familiarity with the hospital.

... System improvements, such as the deployment of rapid-response teams, are becoming more common, making lifesaving interventions accessible throughout a hospital. In addition, technological advances have led to improved outcomes and reductions in medical errors. Electronically monitored intensive care units and other strategies for remote monitoring create safety nets and permit better medical supervision, even when attending physicians are not present. Many hospitals have begun using digital and Internet-based methods to have imaging studies read during off-hours by radiologists in different time zones, and experienced physicians can now provide their medical-imaging expertise from home.

... [W]e should be establishing equal standards for staffing and service and striving for acceptable outcomes for every hour of the week. Public policymakers, insurance companies, patient-advocacy groups, and nursing and medical educators must work together with hospital leaders to support this broader goal.'

...

- (1) Luyt CE, Combes A, Aegerter P, et al. Mortality among patients admitted to intensive care units during weekday day shifts compared with 'off' hours. *Crit Care Med* 2007;35:3–11. [CrossRef][ISI][Medline]
- (2) Arabi Y, Alshimemeri A, Taher S. Weekend and weeknight admissions have the same outcome of weekday admissions to an intensive care unit with onsite intensivist coverage. *Crit Care Med* 2006;34:605–611. [ISI][Medline]

¹⁴ "The other hospital" refers to the hospital that operates during the night and on weekends. Dr Shulkin commented that although the daytime and night-time facilities "appear to be one and the same, they in fact represent two very different medical environments".

- (3) Saposnik G, Baibergenova A, Bayer N, Hachinski V. Weekends: a dangerous time for having a stroke? *Stroke* 2007;38:1211–1215. [Free Full Text]
- (4) Bendavid E, Kaganova Y, Needleman J, Gruenberg L, Weissman JS. Complication rates on weekends and weekdays in US hospitals. *Am J Med* 2007;120:422–428. [CrossRef][ISI][Medline]
- (5) Hendey GW, Barth BE, Soliz T. Overnight and postcall errors in medication orders. *Acad Emerg Med* 2005;12:629–634. [ISI][Medline]”

Subsequent expert advice

Following review of [Dr B’s] response, Dr Logan was asked to comment on the following:

Please comment on the assessments at 9.15pm and 10.30pm that [Mrs A] was ‘sedated’. Was it appropriate to assign [Mrs A’s] condition at 9.15pm and 10.30pm as ‘sedated’ given the drugs she had been administered?

“Communication was such that [Dr B] felt an additional dose of sedatives had been given to [Mrs A]. It should have been clear to all those involved that at 10.30 pm the effects of the drugs was negligible.

I do not usually prescribe chlorpromazine in this situation and my experience is limited. The drug was initially given intravenously, was noted to have a profound sedative effect but had little impact on her neurological observations. There was an assumption that this had been given again orally, which was responsible for the acceptance of her drowsy state. There was however a definite change in the observations at 9.15pm and more specifically at 10.30pm. The effect of the drugs administered previously provoking that change at that stage, should have been negligible.”

The use of the ED department as an admission ward.

“The ED department is often used as an overnight/ long term observation base by hospitals throughout New Zealand. It is a local issue and hospitals do create ‘work arounds’ when no admission ward or observation unit is available.

The prolonged ED stay and subsequent change in GCS was not appreciated sufficiently by [Dr B] or any members of the on call team. I cannot comment whether a transfer to the ward earlier would have facilitated matters.

Handover and change of teams remains a challenge and in many centres has been addressed by an admission ward.”

Appendix B

Independent advice to Commissioner — Emergency Medicine

Dr Peter Freeman, emergency department specialist and Chair of the New Zealand Faculty of the Australasian College of Emergency Medicine was asked to review the emergency department aspects of [Mrs A's] care at Nelson Hospital. Dr Freeman advised:

“Thank you for asking me to give advice from an ED perspective on the sad and unusual case described.

You have asked me to comment on two matters:

Questions

1. *Please comment on the record-keeping system at Nelson Hospital's ED at the time of these events. What systems should be in place to ensure fully integrated medical records in an ED?*

I am not familiar with the record-keeping system at Nelson Hospital's ED apart from what it has been described in the Background information as being in paper form.

There are two methods of documenting clinical information in EDs around New Zealand at this time — paper (hard copy) and electronic (digital). The purpose of the clinical record is to document contemporaneous clinical information and to be a reference for future visits. It is common practice for hard copy clinical records to be kept for 7 years but only recent notes are usually kept physically in ED. There is local variation as to how and where hard copy ED notes are stored. It would be commonly accepted practice for hard copy notes to be available on site for at least three months. Electronic notes are obviously easier to store and are available indefinitely. In some EDs, the practice is to use a combination of hard copy and electronic notes. This may allow some documentation to be hand written as well as using the digital format for clinical notes. The ideal record-keeping system is a shared in-patient and ED electronic clinical record which is available by any appropriate clinician from any location. Access to previous clinical notes (either hard copy or electronic) is essential for continuity of care — particularly when the patient is unable to give details of previously recorded clinical facts. It is not unusual for EDs to request previous clinical notes to be faxed from one DHB to another when there has been cross boundary flow. The ED clinical notes should preferably be part of an integrated record to allow in-patient teams to read ED notes and visa versa.

It was not ideal for the previous clinical record in this case to be unavailable to the reviewing Consultant, although at this time the patient was conscious and able to give information on request.

2. *Please comment on the length of time the patient spent at ED before she was transferred to the medical ward. What appropriate standard of care can a patient who presents to an Emergency Department expect in terms of length of stay?*

It would appear from the Background information provided that this patient remained in ED from 05.36 on [Saturday] until 4pm on the same day. This was over 10 hours. I am not clear whether Nelson ED has an Observation area in ED or a policy for formal observation of patients who are awaiting a decision to admit. If this patient was undergoing formal observation, then 10 hours is not uncommon or unreasonable — particularly if she was in a hospital bed.¹⁵ However if the patient was in ED on a trolley, 10 hours is unacceptable. Sadly unacceptable lengths of stay in ED has become all too familiar around the country with inefficient bed management processes or insufficient in-patient beds for workload. Currently the Ministry of Health is undergoing a review of NZ Emergency Department quality and is considering a six hour ED length of stay target. This is supported by the NZ Faculty of the Australasian College for Emergency Medicine (ACEM) as it has been shown that excessive ED length of stay is associated with poor outcomes for patients as well as denying them the privacy and comforts they should be able to expect. The NZ Faculty of ACEM has agreed and circulated a document to all DHBs defining the parameters for admission from ED and identifying 6 hours as the target maximum length of stay (attached [see Appendix C]).

Dr Peter Freeman.”

¹⁵ Dr B clarified that Mrs A was actively managed and observed during her stay at ED. She was in a bed within easy view from the staff station.

Appendix C

Australasian College for Emergency Medicine

DEFINITION OF ADMISSION AS APPLIED TO EMERGENCY DEPARTMENTS IN NEW ZEALAND¹⁶

AS AGREED AND SUPPORTED BY NZ FACULTY OF ACEM AND CLINICAL DIRECTORS OF 11 MAJOR EMERGENCY DEPARTMENTS*

A patient is considered **admitted** when they physically leave ED for an inpatient bed or designated short stay/observation bed.

This means that the **ED Length of Stay** (LOS) will be measured from first point of contact at Triage until admission or discharge from ED.

Admission rates for ED will use this definition of admission to calculate the percentage of total ED attendances who are admitted.

NZ Faculty of ACEM also recommends that Emergency Departments record the time a patient is seen by an inpatient specialty in order to measure the component of ED Length of Stay (LOS) under the care of specialties other than Emergency Medicine.

Bed Block is a major cause of **ED Overcrowding**.

NZ Faculty of ACEM has agreed to use the term **Bed Block** when there is a time delay from **decision to admit** (bed booked) to admission.

NZ Faculty of ACEM recommends that the Target for decision to admit to admission should be less than 1 hour. **Bed Block** is deemed to be present when this target is exceeded. When **ED LOS** is prolonged due to **Bed Block** delays to admission are outside the control of ED.

(Note that Bed Block is different to Access Block as defined Australasian College for Emergency Medicine)

Agreed terms for measured activities in ED (and variably measured by ED Patient Management Systems) are:

Triage time (first contact)

Seen by Nurse time (the nurse should be an Emergency Nurse Practitioner or be a nurse treating a patient on the basis of an agreed clinical protocol)

Seen by Doctor time

Referral to inpatient specialty time

Seen by inpatient specialty time

Decision to admit time (bed booked)

Admission / Discharge time

¹⁶ This document was circulated to all DHBs in January 2007 and is due for review in January 2009.

ED Waiting time (Triage to Seen by time)

ED Length of Stay (Triage time to admission/discharge)

Specialty assessment delay (SAD) (Referral to seen by specialty)

Bed block time (Decision to admit to admission time)

Key Performance Indicators:

The NZ Faculty of ACEM recommends ** the following **Targets**

>80% of patients will be seen by inpatient specialty within 2 hours of referral.

>80% of patients will be admitted within 1 hour of being seen by inpatient specialty.

>90% of all ED patients admitted will have an LOS of less than 6 hours.

*** 11 MAJOR EMERGENCY DEPARTMENTS CONSULTED**

Whangarei

North Shore — Auckland

Auckland City

Starship Childrens — Auckland

Middlemore — Auckland

Hamilton (Waikato)

Palmerston North

Hastings (Hawkes Bay)

Wellington

Christchurch

Dunedin

**** References**

The association between hospital overcrowding and mortality among patients admitted via Western Australian emergency departments.

Spirivulis PC et al. Med J Aust. 2006 Mar 6; 184(5): 208–12.

Increased in patient mortality at 10 days associated with emergency department overcrowding.

Richardson DB. Med J Aust. 2006 March 6; 184(5): 213–16.