Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Medication Safety and Hospital Referrals

A Report by the Health and Disability Commissioner

In November 2005 the Health and Disability Commissioner received a complaint from Mr A[1] about the services provided at Auckland City Hospital to his friend Mr B in August 2004.

Summary of events

1. Mr B was 82 years old with peripheral vascular disease, bilateral lower limb amputations and diet-controlled type II diabetes. Because of concerns about his ability to cope at home, and an ulcerated painful right stump, he was referred to the hospital by his GP on 10 August 2004.

2. Mr B's referral consisted of a one-page letter, which his GP faxed to the hospital's central referral depot.

3. The central referral depot also received another referral by fax, which related to a different patient ("Patient C") and consisted of three pages relating to medications and lab results, with no patient identification on them, followed by a referral letter from Patient C's GP.

4. The two referrals were faxed at the same time by the central referral depot to the referral and admissions co-ordinator in Older People's Health. Mr B's one-page referral letter was followed by three pages of medication and lab details for Patient C, with no patient identification, then the referral letter for Patient C.

5. The referral co-ordinator in Older People's Health assumed that the three pages of medication and lab data related to Mr B's referral, and that Patient C's referral consisted only of the letter from the patient's GP. The co-ordinator therefore attached Mr B's referral letter to the subsequent three pages relating to Patient C and sent them for triage. As was standard procedure, a paper-clip was used to keep the referral documentation together until after triage.

6. The Department's standard procedure was to staple all referral documentation together and then affix labels to each page. Therefore, following triage, Mr B's referral letter was stapled to the three incorrect pages, and labels were attached to all four pages, including those pages relating to Patient C.

   The two referrals were from different doctors, but the staple obscured the letterheads on the referral documentation.

[1] Names (other than Auckland District Health Board, Auckland City Hospital, and the Commissioner's expert advisors) have been removed to protect privacy. Identifying letters are assigned in alphabetical order and bear no relationship to the person's actual name.

7. The documentation was then forwarded to the ward where Mr B was to be admitted.

8. Patient C's referral was also triaged and it was noted that the attachments referred to in the doctor's letter were not included. Patient C's doctor was asked to fax them again. No one checked to see whether the original attachments for Patient C had gone with another referral letter, nor were they recognised as being the same as those attached to Mr B's referral when they were re-faxed by Patient C's GP.

9. Mr B was admitted to the ward on 12 August 2004. The house surgeon admitting him assessed Mr B's mental capacity and did not consider that he was competent to advise him of his current medications. Mr B had been asked to bring with him to the hospital his blister pack of current medications, and had done so, but he was never asked to produce it.

10. The house surgeon therefore relied on the patient records. Both referrals listed similar health complaints and identified poor blood glucose control. The house surgeon incorrectly assumed that the drug regime included in Mr B's referral letter and in Patient C's referral documentation applied to the same patient, one being an updated version of the other. The house surgeon relied on this information and prescribed oral diabetic medications that were not part of Mr B's usual drug regime.

11. Mr B also received a comprehensive nursing assessment on his admission but the medications part of the form was not completed. Although his medications were noted later in the form, the incorrect documentation was still not identified at this stage.

12. Mr B was given the medication charted by the house surgeon and became unstable overnight. The following day the house surgeon tried to contact Mr B's GP to ascertain whether Mr B had had similar episodes previously, and the mistake was then discovered. Attempts were made to stabilise Mr B's condition, but they were unsuccessful and he died on 14 August 2004.

13. The Auckland Coroner found that Mr B died of complications from the administration, in error, of metformin and glipizide at Auckland City Hospital.

Actions taken by the District Health Board as a result of this incident

As a result of this incident, the District Health Board undertook a root cause analysis. The scope of this was limited to the referral system and specifically excluded any investigation into the clinical events of the case. The findings of the review were that a root cause of the incident was the acceptance by the central referral depot of three pages of notes not containing a clear patient identifier.

The root cause analysis included an audit of GP referrals, which discovered significant problems with the referral process:

1. Referrals to the hospital rarely came with a covering letter stating how many pages were attached, patient-identifying information did not generally appear on every page, and the pages were often not numbered (i.e. page X of Y).

2. It was also identified that many GPs had computerised their practices, including their referrals. Referral information was selected by the GP from the computer record and then this was faxed directly using the practice software. The computer software was not at that time set up to number pages, put a patient identifier on each page or generate a cover sheet. Further, the referral document was not printed out so that it could be manually numbered and then faxed with a cover sheet.

3. The practice of the central referral depot faxing multiple referrals to the referral co-ordinator in the Department created further opportunity for mistakes involving poorly identified documentation.

As a result of these findings the District Health Board took the following actions:

1. *Referral system*

   a) A memorandum was sent to all GPs in the District Health Board catchment area asking that each page of a referral be patient identified and numbered, and the total number of pages be stated. Follow-up audits in early 2005 and early 2007 showed marked improvement in patient identification on referrals, but pagination was still variable.

   b) The problem of inadequate software has been brought to the attention of catchment area GPs and the Royal New Zealand College of General Practitioners by correspondence. Contact has also been made with the software companies involved to resolve this issue; however, this has received a poor response. A working group has been established involving the College, ACC and software providers, with the aim of addressing safety issues, including this one.

      The referral problem is also being addressed by a regional project involving Auckland District Health Board and other District Health Boards in the Auckland area. This project involves the development of electronic referrals from community providers and requires the development of new systems and software. It is estimated that the electronic referral system will be implemented in 2008.

   c) The District Health Board's practice has changed, ensuring that incomplete referrals are addressed at the point of receipt and referrals are forwarded individually and not in batches.

2. Nursing assessment

The nursing assessment form in place when Mr B was admitted required that the admitting nurse record medications that the patient was taking on admission to the ward. The District Health Board has been unable to ascertain why this was not done in Mr B's case.

The assessment form has been revised following this incident. It has been replaced with an "Inpatient Interdisciplinary Initial Assessment Form". Those parts of the form requiring the nurse to record medications that the patient was taking on admission have been deleted, as this was not seen as a nursing responsibility, and medical staff now attend to this on admission.

The nursing assessment now requires the nurse to ascertain whether patients have brought medication with them, whether it has been sighted by the admitting doctor, and whether it has been stored at the hospital or sent home with a family member.

ACC's medical misadventure investigation
Mr A lodged a medical misadventure claim with ACC on behalf of Mr B's estate. After considering the case and gaining advice from several independent experts, ACC accepted the claim as medical error.

In its report, ACC stated that although Mr B had significant co-morbidities, it was satisfied that his death was hastened by the administration of incorrect medication.

In its consideration, the Medical Misadventure Panel stated that, while it was the unanimous view of the panel that medical error could not be attributed to any one single practitioner, in failing to ensure that relevant policies and procedures were in place to ensure that the referral process was safe, the District Health Board failed to observe the standard of care and skill reasonably to be expected in the circumstances.

The claim was therefore accepted as an organisational error on the part of the District Health Board.

Independent advice
Expert advice was sought from Dr Mary Seddon, a physician with expertise in quality improvement and hospital systems. The purpose of Dr Seddon's advice was to enable the Commissioner to determine whether, on the information available, the action taken by the District Health Board in response to this matter was adequate, or if there was anything further that could be done to prevent the same thing happening again.

Dr Seddon expressed the view that Mr B's death was the "end result of a chain of errors" and as such reflected systemic weaknesses in the referral and prescribing processes at the District Health Board. In her advice, Dr Seddon states that she believes that the root cause analysis conducted by the District Health Board effectively identified the vulnerabilities of the referral system, but that due to its limited scope it did not examine the vulnerabilities inherent in its medication processes. Had it done this, it would have become apparent that the issues identified with the referral system would not have caused problems if the District Health Board, and more specifically the geriatric ward, had had a proper system for ensuring that the medications a patient takes in primary care are the same ones that he or she is prescribed in hospital — a process called medication reconciliation.

In summary, Dr Seddon considered that although the District Health Board did a reasonable job of investigating this incident, the terms of reference of the root cause analysis were too narrow in focus. This prevented other deficiencies in the system being investigated. Further, the initial recommendation (to ask GPs to be more careful

with their referrals) was doomed to failure, as it assumed that GPs were not already being careful and it did not get to the true root cause of the referral problem — that GP software was not configured with patient safety in mind.

Dr Seddon does not believe it was appropriate for the District Health Board to remove that part of the admission document requiring nurses to record medications that a patient is taking on admission to the ward. Dr Seddon considers that nurses, who are responsible for administering a patient's medication, should also have some responsibility for one of the most important aspects of a patient's management, obtaining information about that patient's previous medications.

A copy of Dr Seddon's advice was provided to the District Health Board. In response, it acknowledged that the focus of the root cause analysis could have been wider, to explore a broader range of issues. The Board also advised:

1. The software company providing software to GPs in the catchment area developed a patch to allow for pagination of computer-generated faxes. The DHB's recent audit showed that patient identification on all pages of referrals had improved significantly, but pagination was still variable. It is not clear the extent to which the software patch has addressed the problem.

2. A new electronic referrals system is also being developed for implementation in 2008. In the meantime, referral processes have been reviewed to minimise risk both at the point of receipt and during internal transfer of information.

3. While the Board's "Admission to Discharge Planner" requires admitting clinicians to take a medication history, it does not prescribe the process for doing so, nor how medication reconciliation should be achieved. The Board recognises that this is an area requiring further attention and is prepared to discuss the options for medication reconciliation further.

Commissioner's findings

Having reviewed all the available information, I have reached the following conclusions:

1. Mr B's case highlights the risks associated with a hospital's failure to reconcile the medications for a given patient. There needs to be a comprehensive system for medication reconciliation.

   Hospital staff need to ensure that a complete and accurate list of a patient's current medication is compiled, checked and reconciled to ensure that the patient is prescribed appropriate medication at the appropriate dose, in secondary care.

2. Although this case related to the handover of a patient from primary to secondary care, the risks are the same when a patient is transferred between hospital wards or discharged from hospital back to primary care.

3. As the average length of stay of a patient in hospital reduces, there is very little time for physicians, nurses or pharmacists to become involved in medication

counselling, and so any process for reconciliation needs to be streamlined and effective.

This requires a structured approach to medication reconciliation. The different options for medication reconciliation are discussed below.

4. The series of events that led to Mr B's death could occur at other hospitals. There is therefore a need to highlight these systemic weaknesses to other District Health Boards and community health care providers.

5. The situation where various independent GP software systems have been developed without reference to the need for patient safety also needs to be addressed. I am advised by the Royal New Zealand College of General Practitioners that the particular problem with the MedTech32 software programme has been resolved in light of this case.

Different approaches to medication reconciliation

1. *Paper-based system*

In the short term, Dr Seddon points out that medication reconciliation can be a manual process involving:

a) discussions with patients
b) review of medications brought from home
c) discussions with the patient's GP
d) discussion with patient's community pharmacist.

The main barrier to this is a lack of trained staff to complete the necessary steps and level of detail. In Dr Seddon's opinion, this process could be delegated to a pharmacist but medical and nursing staff should also be competent in the process.

2. *Electronic solutions*

Various electronic options are under consideration to improve medication safety in New Zealand. These options are all relevant to the issue of medication reconciliation. The options include:

a) National co-ordinated approach to an electronic "medication card".
The National Safe and Quality Use of Medicines Group is looking at ways to improve medication reconciliation, including investigating the possibility of an electronic "medication card". This would be visible to the primary care and hospital doctors and the community pharmacist. The national Quality Improvement Committee (the National Health Epidemiology and Quality Assurance Advisory Committee, established under the New Zealand Public Health and Disability Act 2000) has identified this as a priority area.

The barriers to this approach succeeding are:

- the National Safe and Quality Use of Medicines Group has no dedicated funding to push this approach any further
- inconsistent backing from the other District Health Boards

- inability of District Health Boards to work together and with software companies to co-ordinate a national approach
- risk of overspending on the system
- possible cost to community pharmacists associated with accessing the Health IntraNet. There would therefore have to be some incentive for them to use the system
- privacy issues.

b) Electronic record
All medications dispensed would create an electronic record that different providers could view.

c) Bar-coding of medicines
The compulsory bar-coding of medicines has been accepted in other countries and should be considered here. It would, however, have a significant lead-time.

Commissioner's decision

In light of the significant investigation already undertaken into this incident by the District Health Board, ACC and this Office, together with the steps already taken by the Board to remedy the situation, further investigation is not warranted as it would be unlikely to elicit any further useful information.

I do, however, believe that there is a need for more work, at a national level, to develop a co-ordinated and consistent approach to medication reconciliation. I have brought this case to the attention of the Minister of Health with a recommendation that a national policy for medication reconciliation be developed and implemented and have recommend that the new Quality Improvement Committee and the National Safe and Quality Use of Medicines Group be charged with oversight of this task.