Medical Procedures on High Risk Patients

A Report by the Health and Disability Commissioner
(09HDC02015, 6 May 2010)

On 4 November 2009 the Health and Disability Commissioner (HDC) received a complaint from the Coroner about the services provided by a District Health Board's Oral Health Service, and another District Health Board (Hospital 2) to Mr A over three days in May 2009.

Overview
Mr A was a Jehovah's Witness and suffered from advanced liver cancer, chronic hepatitis B, and chronic renal failure.

In May 2009, Mr A (aged 53 years) had two teeth extracted by a District Health Board's Oral Health Service (Hospital 1). He was admitted to the Emergency Department at another DHB (Hospital 2) at 4am the following day, complaining of bleeding from the extraction sockets. Mr A was treated, but his condition continued to deteriorate. He refused blood and blood products owing to his beliefs, and died a short time later.

Summary of events

1. On 19 March 2009, Mr A presented to Hospital 2's Emergency Department (ED) complaining of a three-week history of itchy skin. He was noted to have deranged liver function tests (LFTs) and was discharged the following day with a primary diagnosis of chronic renal impairment.

2. Mr A presented to Hospital 2's ED again on 28 April 2009 giving a history of generalised itching, with bleeding pruritic sores over his body. Mr A was admitted to hospital overnight under the care of the gastroenterology team. The medical notes indicate that the bleeding from these sores was difficult to control[1] and required treatment using compression bandages, glue and tranexamic acid. A secondary diagnosis of advanced hepatocellular carcinoma with tumour thrombosis affecting the portal vein,[2] chronic hepatitis B, and chronic renal impairment were recorded in the discharge summary.

3. In May 2009 Mr A presented at the outpatient Pain Service[3] based at Hospital 2 requesting extraction of all his teeth as they were causing him pain and discomfort.

4. On arrival at the Pain Service Mr A was asked to fill out Hospital 1's registration form and Hospital 1's pre-assessment health questionnaire. The registration form is an administrative document for collecting and updating

[1] The liver is a source of blood clotting factors and, when the liver is diseased (as Mr A's was), it may fail to produce these factors, resulting in bleeding problems.
[2] Formation of a blood clot in the portal vein.
[3] The Pain Service provides emergency and essential dental services for low income patients presenting with acute toothache. It is just one of the many dental services provided by the Oral Health Service.

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patient demographics. It is generally not used by clinical staff. The pre-assessment questionnaire is an assessment tool used by clinicians to aid clinical decision-making.

5. On the registration form Mr A disclosed that he was a Jehovah's Witness (there was no question seeking patients' views on receiving blood products). Mr A failed to fully disclose aspects of his medical history when completing the pre-assessment health questionnaire. By circling the words "YES" or "NO", he disclosed that he did not have any cultural/religious needs; that he did not suffer from, or had ever suffered from [a list of conditions]; and that he did not have any known allergies. All other sections were either answered "NO" or left blank, including a question about whether he had previously been admitted to hospital (blank) and a question about whether he was currently taking any medications (blank).

6. The attending dental officer, Dr B, reviewed Mr A's completed pre-assessment health questionnaire but not the registration form. She was unaware that Mr A was a Jehovah's Witness. She asked Mr A if he was currently taking any medications. Mr A confirmed verbally that he was not. Dr B questioned Mr A further regarding his past medical history and previous treatments. Mr A admitted that he had suffered from liver cancer in the past, but said that this had been successfully treated in 2008.

7. Dr B reviewed Mr A's medical record, which detailed Mr A's admissions to Hospital 2 on 19 March 2009 and 28 April 2009 with pruritis, and that he had advanced hepatocellular carcinoma, chronic hepatitis B and chronic renal impairment.

8. Dr B noted that Mr A's blood test results from 28 April 2009 identified an abnormal liver function with an INR[4] of 1.7[5] (normal range 0.8–1.2). She also noted that Mr A had had five teeth extracted on 14 April 2009 at Hospital 2's Pain Service with no complications.

9. Dr B examined Mr A and decided to remove the two teeth that were causing the most pain. It was agreed that any further tooth extractions would be done over a series of Pain Service sessions. After removing the two teeth, Dr B applied a normal pressure pack, and Mr A was provided with routine follow-up information, with a written copy in his first language, before being discharged home.

10. After returning home, Mr A continued to bleed from the sockets where the two teeth had been extracted. He became nauseated and dizzy and vomited blood clots. When the bleeding worsened overnight and into the early hours of the morning, he called for an ambulance. The ambulance transported him to Hospital 2, arriving at 3.54am the next day.

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[4] International Normalised Ratio. This test evaluates the ability of the blood to clot properly. An elevated INR means that blood is taking too long to form a clot.

[5] The Oral Health Service noted in its internal investigation report that patients with an INR of up to 1.7 are "often seen and extractions performed without complications".

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11. Mr A was attended to by an ED nurse on arrival. The nurse noted that Mr A was not bleeding from the tooth sockets at that time, but he was bleeding from a "mole" on his lower abdomen. Mr A had blood tests, and the plan was to observe and arrange review by a registrar.

12. At 6.50am Mr A was reviewed by an ED registrar. The registrar noted that Mr A had an elevated INR (2.7), acute on chronic renal failure[6] due to dehydration, and symptomatic anaemia due to ongoing bleeding from the dental extractions. The plan was to give Mr A intravenous vitamin K 5mg, pack the tooth cavities and give intravenous saline, and for the maxillofacial registrar to review him at 8.30am. It was also noted for the first time in Mr A's clinical notes that he was a Jehovah's Witness and was not for blood transfusion.

13. At 7.50am the ED registrar noted that Mr A's haemoglobin[7] was 85, which was life-threatening. It was noted that this was discussed with Mr A and his family but they refused to accept blood product.

14. At 9.30am, Mr A was reviewed by the maxillofacial house officer and registrar. Mr A was noted to have oozing from the tooth sockets and unformed blood clots in his mouth. The registrar removed the partially formed blood clots from Mr A's mouth and packed and sutured the sockets. Mr A was also given a pressure pack, and the bleeding was stopped.

15. Mr A was reviewed by the maxillofacial house officer at 11.50am. He was noted to appear stable and had "improved dramatically from this morning". There had been no further complaints about bleeding. The plan was to continue with the ED plan and, if further bleeding occurred, the maxillofacial house officer or registrar was to be contacted as soon as possible.

16. Mr A was reviewed by a consultant gastroenterologist soon after the maxillofacial house officer's review. The gastroenterologist noted that, given that Mr A's deterioration was "intervention related", it was "appropriate to try & restore Mr A to pre-intervention health status". However, the options were limited as he was a Jehovah's Witness. The gastroenterologist noted that the maxillofacial consultant had been advised and that the gastroenterology registrar had had a long discussion with Mr A's wife and daughter. Mr A was "NFR" (not for resuscitation), and his family was aware of this.

17. In his statement to the Oral Health Service following Mr A's death, the maxillofacial consultant advised that he had received a telephone call from the gastroenterologist, who was "gravely concerned" for Mr A, particularly with regard to his acute on chronic renal failure from bleeding. The maxillofacial consultant advised that he went to ED to review Mr A. At 4.30pm he recorded in Mr A's clinical notes that there was no bleeding at that time, but if there was further bleeding overnight, the dental house officer should be contacted in the first instance.

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[6] An acute kidney injury, in addition to chronic kidney disease.

[7] Haemoglobin carries oxygen to the blood. Normal haemoglobin range for a man is 135–180 g/l.

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The maxillofacial consultant further advised in his statement to the Oral Health Service that he telephoned the gastroenterologist and told her that he would discuss the situation with the Clinical Director of Oral Health, and review management in relation to dental extractions.

18. It is recorded in Mr A's clinical notes that he was moved to Ward one at approximately 4.30pm. His renal function continued to deteriorate despite treatment. Notes from the gastroenterology registrar at 5.30pm state that the team had considered Terlipressin[8] and renal replacement but, given Mr A's "comorbidity and background these would likely not alter the clinical [outcome?]". The plan was to recheck bloods at 8pm that night and in the morning.

19. At 9pm the nursing notes state that Mr A was found by a colleague to be "bleeding from a gauze strapped to abdomen". A registered nurse recorded that she called the maxillofacial house officer straight away, but once it became apparent that the bleeding was not as bad as first thought, she sent the maxillofacial house officer a text page advising him of this. The registered nurse recorded that the maxillofacial house officer "will review when able".

20. The maxillofacial house officer reviewed Mr A at 9.20pm. He noted that a compression dressing reinforcement had been applied "as instructed over the phone". He also noted that Mr A's haemoglobin was 75, which was a "slight drop from 82 this [morning] … but [patient is] Jehovah's Witness". The maxillofacial house officer charted OxyNorm[9] to relieve Mr A's abdominal pain, which was worsening. His plan was to recheck bloods in the morning.

21. At 10pm the registered nurse noted that an incident report was to be written as no handover was received about Mr A's wound, and that this, "combined with bleeding tendencies has meant he has lost more blood than necessary".

22. Mr A continued to deteriorate overnight. The following morning his haemoglobin was 64, he was tachycardic (fast heart rate), tachypnoeic (fast respiratory rate), and febrile (38°C). He was noted to be agitated and was not tolerating oxygen. He was charted morphine and was noted to be for "comfort cares".

23. At approximately 11am the following day Mr A became very short of breath and anxious, he stopped breathing, and no pulse could be found. He was confirmed dead at 11am (as he was not for resuscitation).

24. Mr A's death was referred to the Coroner. The autopsy report found the direct cause of Mr A's death to be "bleeding following tooth extraction". Antecedent causes were "cirrhosis/hepatocellular carcinoma". "Hepatitis B infection" was listed as an underlying condition.

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[8] A drug that has been found to improve renal function.
[9] A drug used to treat moderate to severe pain.

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25. The forensic pathologist who carried out the autopsy noted that "cirrhosis is a known contributory factor to bleeding as the liver is a source of production of clotting factors and when the liver is diseased due to scarring (cirrhosis) the synthesis of clotting factors may be impaired".

26. In light of the issues raised, the Coroner decided to put her inquiry on hold and refer Mr A's case to HDC.

Actions taken by the Oral Health Service

The Oral Health Service carried out an internal investigation into Mr A's death. It identified the following as root causes of Mr A's death:

1. Mr A knowingly withheld vital information relating to his past medical and surgical history contributing to the clinical decision-making process.

2. Mr A's LFT and INR results were slightly abnormal, which could indicate an abnormal clotting time.

3. The pre-assessment health questionnaire does not record when a patient does not wish to receive specific interventions, eg, blood transfusions, antibiotics or particular modes of treatment.

As a result of these findings, the Oral Health Service took the following actions:

Communication of vital information

All verbal interactions with patients are to be documented. This will be measured through an annual documentation audit.

Abnormal LFT and INR results

A repeat blood test should be taken to confirm viability and safety for extraction. If the patient is likely to decline a possible blood transfusion as part of emergency management following an extraction or any soft tissue intervention, sutures are to be placed as part of routine procedure.

Any patient with impaired liver function and raised INR are routinely to receive wound packing and sutures following extractions.

These instructions will be communicated to all relevant clinical staff via a memo.

Pre-assessment health questionnaire

The pre-assessment health questionnaire will be amended to ask patients if there are any specific interventions or modes of treatment they do not wish to receive (eg, blood transfusion, antibiotics, etc).

If a patient indicates that he or she does not wish to have specific interventions or particular modes of treatment, then a red flag alert will be put in the patient's electronic dental record.

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Independent Advice

Independent expert advice was obtained from Dr Donald Schwass, a dentist with 17 years of general dental practice experience. The purpose of Dr Schwass's advice was to enable the Commissioner to determine whether, from the information available, there were concerns about the care provided by the Oral Health Service to Mr A that required formal investigation.

Root cause analysis

Dr Schwass agreed with root causes 2 (abnormal LFT and INR results) and 3 (pre-assessment health questionnaire) identified by the Oral Health Service, and considered the actions taken by the Oral Health Service to address these points to be adequate.

With regard to root cause number 1 (that Mr A knowingly withheld vital information relating to his past medical and surgical history), Dr Schwass accepts that Mr A did not fully disclose aspects of his medical history, but notes that the clinician did eventually elicit the necessary information through further questioning of Mr A and a review of his medical records. Armed with all the relevant medical information, the clinician decided to proceed with the treatment. It is therefore inappropriate to include this as a root cause leading to Mr A's death.

Dr Schwass added that patients may choose not to disclose information for a number of reasons (eg, quicker service, a belief that medical matters are not relevant to dentistry matters, fear of discrimination, language barriers, etc) and therefore, "An important part of any dental clinician's training is to develop effective communication skills and the ability to recognize clues leading to the conclusion that there may be more to the situation than what the patient may be necessarily telling them."[10]

Fourth possible cause?

Together with the three root causes already identified by the Oral Health Service, Dr Schwass identified a possible fourth root cause. While admitting that he was unable to fully evaluate the appropriateness of the decision to extract Mr A's teeth (as dental radiographs were not taken to provide "a more complete clinical picture"), he was concerned by the apparent failure to consider other treatment options, given Mr A's advanced stage of liver cancer (and consequent bleeding tendencies).

In response to this concern, Hospital 1 advised HDC that it was considering implementing a new consent policy. The new policy confirms that clinical staff must disclose to patients any alternative treatment options, the risks of each option, and what is likely to happen if no treatment is undertaken.

Hospital 1 has also held education sessions for its staff on the issue of alternative treatment options for patients like Mr A.

Postoperative care

Dr Schwass was also concerned by two aspects of care provided to Mr A by Hospital 2 postoperatively. These related to:

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[10] In this case, Dr B successfully recognised the clues and therefore explored Mr A's medical history further.

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1. A three-hour delay in ED between arriving and being seen by a medical officer (Mr A was attended to by the ED nurse on arrival). Dr Schwass considers this to be an inappropriate length of time given Mr A's presenting complaint of bleeding, and his refusal to accept blood products.

2. The failure to hand over pertinent patient information (that Mr A had a bleeding wound on his abdomen) to nursing staff during shift change.

In response to these concerns, Hospital 2 advised that it has reflected on the points raised by the expert. It advised that it has a number of projects underway to reduce delays in the ED, and it is reminding ED staff about the importance of finding out a patient's views on blood transfusions when dealing with patients who are bleeding.

Hospital 2 also acknowledged that in this case, Mr A's bleeding mole "was not noted as significant in ED but as time went by it appears to have become worse as a result of Mr A's deteriorating INR". As a result, the DHB will be reminding its staff about the importance of being as detailed as possible when providing handovers to other staff.

Commissioner's findings
Having reviewed all the available information, I have reached the following conclusions:

1. Mr A's case highlights the importance of having robust systems to ensure all relevant information about a patient is easily accessible by the assessing clinician, and that clinical decisions are based on the patient's *current* health status.

2. The Oral Health Service has, for the most part, adequately identified and addressed the factors that contributed to Mr A's death. I agree with Dr Schwass, however, that the failure by Mr A to disclose relevant information about his medical and surgical history was not a root cause, as this information was eventually elicited by the treating clinician prior to treating Mr A.

   The only outstanding issue relating to the Oral Health Service is an apparent failure to consider alternative treatment options. This has been addressed by Hospital 1 through education sessions for its staff on alternative treatment options for patients like Mr A. I have written to the DHB asking it to provide me with details of these alternative treatment options.

3. My other concerns relate to care provided to Mr A postoperatively by Hospital 2, in particular the three-hour delay in ED between arriving and being seen by a medical officer. I agree with Dr Schwass that, given Mr A's presenting complaint of bleeding, and his refusal to accept blood products, this appears to have been an inappropriate length of time. Also concerning is the failure to hand over pertinent patient information (that Mr A had a bleeding wound on his abdomen) to nursing staff during the shift change.

   As noted above, these issues are being addressed by Hospital 2.

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Commissioner's decision

In light of the thorough investigation already undertaken into this incident by the Oral Health Service and the Coroner, and the steps taken to minimise the risk of such events recurring, an investigation by HDC is unlikely to elicit any additional useful information.

However, I do consider there is a need to highlight these issues to other district health boards, as these events have the potential to occur at other clinics and hospitals.

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