General Practitioner, Dr B /

An Accident and Medical Clinic

A Report by the

Health and Disability Commissioner

(Case 01HDC02275)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Parties involved

Mr A	Complainant / Consumer
Dr B	Provider / General Practitioner
Ms C	General Manager of the Clinic
Dr D	Radiologist

Complaint

The Commissioner received a complaint from Mr A regarding the care he received from Dr B at an Accident and Medical Clinic ("the Clinic"). The complaint is summarised as follows:

- *On 10 October 2000 Mr A went to the Clinic with a broken left wrist where he was examined by Dr B. Dr B arranged for Mr A to have a plaster cast put on without "pulling" on his arm when the x-ray taken indicated the angle of the fracture was greater than 15 degrees.*
- *On 20 October 2000, when Mr A presented at a public hospital, he discovered that the angle of his fracture was at 20 degrees. By that stage the angle of the fracture could not be corrected by "pulling" because the bones "started to glue up". As a result Mr A now faces the prospect of corrective surgery.*
- *Dr B and Ms C, the manager of the Clinic, did not adequately address Mr A's concerns when he met with them on 3 November 2000.*

The complaint was received on 26 February 2001 and an investigation was commenced on 21 June 2001.

Information reviewed

- Records supplied by Mr A, Health Advocates Trust, the Clinic, the public hospital and ACC
- Independent expert advice from a general practitioner with emergency clinic experience, Dr Steve Searle

Information gathered during investigation

On 10 October 2000 Mr A fell off a deck at home and injured his left wrist. He went to the Clinic where he was seen by Dr B. Dr B was Medical Director of the Clinic.

When Dr B examined Mr A's wrist, there was an indication of a probable fracture of the distal radius (a bone on the thumb side of the wrist / forearm). Dr B requested Mr A be given a Tramal injection for pain and arranged an x-ray.

The x-ray revealed a comminuted[1] fracture of the distal radius. The radiology report completed by Dr D, radiologist, states: "There is a slightly comminuted fracture of the distal radial metaphysis[2] with moderate dorsal angulation[3] of the distal radial articular surface.[4]"

Dr B made no note of the degree of angulation in his notes because his assessment indicated the angle of the fracture was less than 15º and this was within "acceptable limits".[5] The fracture was therefore not reduced.[6] A plaster cast was applied and Mr A was instructed to return the following day for a plaster check. An appointment was also made for Mr A to return for a follow-up x-ray 10 days later (on 20 October).

On 12 October 2000 Mr A returned to the Clinic for a plaster check. No problems with the cast or his neuro-vascular status (colour, warmth and sensation) were noted.

One of Dr B's duties as the Medical Director of the Clinic was to review all the radiology reports and compare them with the various attending doctors' assessments. During the four years that he was employed at the Clinic, Dr B reviewed some 8,000 radiology reports. From that experience he developed an understanding of the terms used by the radiologists. Thus, when he received and reviewed Dr D's x-ray report on 12 October 2000, he accepted the term "moderate dorsal angulation" to mean "within acceptable limits". Dr B considered that there was no indication in Dr D's report that any further specialist input was required or that the degree of angulation was unacceptable.

Dr D advised me that the anatomical (normal) angulation of the distal radial articular surface was in the range of 5–15º. He would describe a few degrees of angulation beyond this as "mild"; beyond this, up to about 20º–25º, as "moderate"; and beyond, as "severe".

On 20 October 2000 Mr A returned to the Clinic for a scheduled follow-up and plaster change. The cast was removed and an x-ray requested, to ensure that there had been no deterioration in the angulation of the fracture. Dr B stated that had there been

[1] Broken or crushed into small pieces.
[2] The wider part at the end of the shaft of a long bone.
[3] Towards the back surface of the hand angled beyond the neutral position.
[4] A surface of a joint.
[5] Dr B advised me that at the consultation on 10 October 2000 he did not use a protractor to accurately measure the angle of the fracture but used his clinical judgement to estimate whether the angle was of such severity as to require manipulation.
[6] The displaced fracture was not restored to its normal position by manipulation.

deterioration, it would still have been possible to reduce the fracture. If there had been no deterioration, and the swelling had decreased sufficiently, a more permanent cast would have been applied. However, when informed of the cost of the x-ray, Mr A declined to have one done and decided to go to the public hospital for further management, taking the previous (10 October) x-rays with him.

On 20 October 2000 Mr A presented at the public hospital's Emergency Department. He recalled that he was informed by medical staff that the angulation of his fracture was 20°, that normally fracture angulation equal to or greater than 15° is reduced, and that he should have had his fracture reduced initially. Mr A was told that "they could try to pull [reduce] it but that they could not guarantee anything as the bone had already started to glue". He said an attempt was made to reduce the fracture but was abandoned because he could not bear the pain.

The public hospital's notes do not record angulation of Mr A's fracture when he presented at the Emergency Department on 20 October 2000, other than that it was "significant". The notes do record that following a consultation with an orthopaedic consultant, the decision was made to "improve the position". A reduction under Bier block[7] achieved a "satisfactory" alignment. Following the reduction, dorsal angulation was improved by 5–10° but slight angulation was still present. The radiology report noted "slight dorsal angulation". The orthopaedic registrar deemed the position to be "acceptable" and a plaster cast was applied.

On 27 October 2000 Mr A was seen at the public hospital's Orthopaedic Department by an orthopaedic registrar. X-rays taken showed satisfactory alignment. Mr A was to remain in the cast for six weeks from the time the cast was applied (20 October).

Meeting

At his consultation at the public hospital on 20 October 2000, a nurse advised Mr A to contact a health advocate to discuss his concerns. Mr A did so on that day and met with the advocate on 23 October. During that week, on the advice of the advocate, Mr A telephoned the Clinic and made arrangements with Ms C to meet and discuss his concerns.

Dr B first became aware of Mr A's dissatisfaction when informed by Ms C that Mr A had organised a meeting with her, and that he was bringing a health advocate with him. The meeting took place on 3 November 2000 and was attended by Mr A, an advocate from the Health Advocates Trust, Dr B and Ms C.

At the meeting, Dr B explained the x-rays to Mr A, the angle of the fracture and the reasons behind the treatment given. Mr A was informed that the angulation of the fracture was within acceptable limits and that it did not require reduction. Towards the end of the meeting Dr B was called away to an emergency. He was not present when Mr A and the advocate left. However, Dr B had the impression that the health advocate was satisfied

[7] Regional anaesthesia by intravenous injection maintained by a pneumatic tourniquet. Sometimes also referred to as a nerve block.

with his explanation and that he had adequately addressed Mr A's concerns. Dr B recalled that he was later informed by Ms C that both the advocate and Mr A were satisfied with the explanations given and that the matter seemed to have been resolved. Ms C had the same impression. The advocate could not be contacted during this investigation as he had left the employment of the Health Advocates Trust.

On 4 December 2000, having had no further communication from Mr A, Ms C sent him a letter enclosing a voucher for a free consultation at the Clinic as a gesture of goodwill. In his letter of complaint, Mr A stated that he never received the letter. However, in a telephone contact with my Office on 14 June 2001 Mr A said that he received a letter of apology from Ms C in January 2001 but that the voucher was not enclosed.

Ongoing treatment

Mr A continued to be seen at the public hospital's Orthopaedic Department. A radiology report dated 3 November 2000 states that there was "no evidence of any significant angulation" and the reports of 14 and 24 November 2000 state that the fracture alignment was "near anatomical". Mr A's notes of 26 January 2001 record that he had almost full range of movement in his wrist with some pain at the extremes of movement. This pain was thought to be due to the shortening of the radius caused by the fracture.

Hospital notes of 26 January 2001 record that, as part of his employment, Mr A had been lifting "quite heavy weights … ever since he was in the original cast". Mr A advised me that he did not, and could not, work during this period because his arm was in plaster.

When seen at the public hospital on 23 March 2001 Mr A complained of continuing pain on the ulnar side of the wrist and over the radioulnar joint, and said that he was still unable to lift any heavy weight. He had 30° of wrist extension and 45° of wrist flexion. A radiology report dated 23 March 2001 states that the fracture had united "with minimum deformity" but that some degenerative changes in the joint were suspected.

At a consultation on 25 May 2001 with an orthopaedic registrar, it was noted that pain continued to be a problem and that the x-ray showed "a significant post-fracture deformity involving 14° of dorsal angulation past neutral and significant loss of the radial inclination of the distal radius". The radiology report dated 25 May 2001 states that there was "a little persistent dorsal angulation".

On 5 November 2001, Mr A was seen at the public hospital by a hand surgeon, who noted the ongoing problem of wrist pain. The surgeon noted that the range of motion Mr A had in his wrist was 70° dorsiflexion (backward bending of the hand), 30° palmar flexion (bending towards the palm of the hand) and full rotation. He placed Mr A on an inpatient waiting list for "dorsal opening wedge osteotomy with bone grafting and plating".

Independent advice to Commissioner

Dr Steve Searle, an independent general practitioner with emergency clinic experience, provided the following expert advice:

"**Report on complaint file 01/02275 – [Mr A]**

This report has been done by Dr S J Searle, MB ChB, DipComEmMed, FRNZCGP under the usual conditions applying to expert reports prepared for the Health and Disability Commissioner.

Documents and records reviewed:

- Health and Disability Commissioner covering letter and summary titled 'Medical/Professional Expert Advice – 01/02275' concerning [Mr A's] standard of care
- Letter of complaint from [Mr A] dated 26/2/01 marked 'A' – along with copies of a clinic note from 18/7/01 & x-ray report from film taken 20/10/00
- Record of a telephone conversation between the Commissioner's office and [Mr A] from 14/6/01 marked 'B'
- Letter of response from [Dr B] to the Commissioner dated 4/7/01 & associated documentation marked 'C'
- The letters from [Ms C] general manager of [the Clinic] – marked 'D'
- The records from the Health Advocates Trust marked 'E'
- The letter from the radiologist [Dr D] 5 Oct 01 to the Commissioner – marked 'F'
- The clinical notes from [the public hospital] and [a] Superclinic – marked 'G'
- X-rays from [the public hospital] marked 'H' – x-rays in plaster dated 20 Oct 2000 – an AP and a lateral on one film taken at 1117am, and a lateral projection on one film dated 20 Oct 2000 timed as at 14:35h (this film has lines drawn on it to indicate a key angle of the fracture – they have been drawn erroneously in such a way as to make the angle slightly worse than it really is) and an AP projection on another film dated 20 Oct 2000 time 14:30.
- An x-ray with an AP and a lateral projection dated 10/10/2000 (this film also has lines drawn on it to indicate a key angle of the fracture – they have been drawn erroneously in such a way as to make the angle slightly worse than it really is).

Possible missing information

It states within 'G' above on page 3 of 4 of the [public hospital's] Orthopaedic notes that '[Mr A] has been lifting quite heavy weights as that is part of his employment, and he has been doing so ever since he was in the original cast' – It would be helpful to know what advice on working with or without restrictions or advice on not working that [Mr A] received from various doctors and what certificates were issued, and what work [Mr A] was actually doing for the few weeks immediately after his injury – then an opinion could be obtained as to if this contributed to the ultimate position of his fracture healing or not.

Page 4 of 4 of the [the public hospital's] Orthopaedic notes contained within 'G' above is missing – this post dates [Dr B's] care of [Mr A] and is not likely to change my findings with respect to the complaint against [Dr B].

It has been mentioned in one of the clinic manager's letters about the meeting between the manager, [Dr B] and [Mr A], that [Dr B] obtained a supporting text – however it is not stated what that text was. It may have been useful to see if [Dr B's] management was within the suggested standard of care suggested in this text – however even if it was, reliance on a text that is either incorrect, out of date, or out of step with currently accepted clinical practice would not excuse incorrect management and as such my not knowing what this text was in my opinion is unlikely to affect the findings of my report.

Quality of provider's records or lack of them

[Dr B] stated that 'I made no note of the degree of angulation which indicates that my assessment was that the angle of the fracture was within acceptable limits'. The documentation of this angle is important in the key management decision as to if manipulation of the fracture is needed and I consider this omission from the records is not acceptable practice. The documentation need not contain an exact measurement but should contain a reasonable description of the fracture – the notes did not contain any such description – this is discussed in more detail later – but a comment such as 'normal angulation', dorsal angulation back to zero degrees, or dorsal angulation beyond zero degrees (with further comment such as mild, moderate, severely, or an actual measure of the angle being optional) is sufficient to document these fractures in terms of the angle into categories that reflect the need for either no manipulation, possibly needs manipulation, or almost certainly needs manipulation.

The rest of his note on the 10/10/01 from the initial visit could have been better – a more detailed description of the mechanism of injury is useful, and of the symptoms since the injury, a past injury and medical history (even if just to say 'nil'), medications and allergies are usually worth recording – I note the clinic has a space for this on its note form but that these were left blank in this case – I think it is important that something is written in each of these boxes to avoid errors – whilst no apparent errors relevant to this occurred in this particular case, being thorough and recording this information is likely to give a better standard of care and help avoid errors. Also the management of fractures can depend on other factors and it is good practice to record an occupational history and a hobbies/sports history, and to note the dominance of the limb (are they right or left handed?)

The initial visit note whilst stating the clinical finding as '?'(query) '#'(fracture(d)) 'distal radius' did not state why this was so – a comment on deformity, swelling, and/or tenderness, and the location of these would be useful – often obvious clinical deformity might be suggestive of the need for manipulation almost regardless of the X-ray appearance.

At the plaster check on 12/10/00 a note was made that the cast and neurovascular status was 'OK' – this is good practice – however this should also have occurred at the first

visit – I could not see a note that distal complications to the fracture were checked for at the original visit before the dorsal slab was applied on the 10/10/00.

The management plan seemed to be a dorsal slab cast, a plaster check the following day, and a follow up x-ray at 10 days. This is all reasonable practice if the fracture was in a good position (which was the provisional (albeit incorrect) diagnosis) although it is not clear if verbal and written advice on his plaster cast was given or not – this should normally occur.

Describe the care as documented and describe the standard of care that should apply in the circumstances
This is mostly covered in other parts of this report (especially in my comments on the 'Quality of provider's records or lack of them' (see above) and I will not comment on this in detail here to avoid repetition. But to summarise it might be helpful to try and outline the standard of care that should apply.

Safety (not needed to be commented on in this case)
Is the patient now in a safe environment (safe from further injury) and is it safe for the provider?
(the environment is usually safe in most medical clinics and hospitals)

Any Serious Injury? (if the mechanism of injury is well documented and is likely to exclude serious injury this could be omitted).
Is there any life threatening injury – classically 'ABCs' (airway breathing and circulation) are checked for & then 'D' for disability or neurological function. It is important for example in this case to check that there was not an injury to another part of the body when he fell.

Taking a full history (previously commented on above) – to include mechanism of injury, current symptoms (e.g. pain, numbness, loss of use), past history of injuries to the same area, past medical history including medications and allergies, work, hobbies, sports, dominance of limb.

Do an appropriate full examination
This should include distal complications (check on sensation and circulation (or neurovascular status) and to describe the visible appearance of the injury, further examination before taking an x-ray would be more optional but could include documenting any tenderness either directly or indirectly, and active and passive movement are often omitted or done with care to avoid further injury, occasional crepitus is accidentally incurred and if present should be noted.

Order appropriate investigation – e.g. x-rays with full and adequate views – some people would say that the elbow joint should have been included in the initial x-ray views as sometimes proximal radial and ulnar fractures or dislocations can be missed – but this is another issue that I would rather not get into in this report.

Decide on appropriate management and implement this or seek advice and/or refer on for such management.

Give the patient appropriate advice on follow up, and any complications to watch out for that might need earlier follow up.

Have appropriate systems in place to reduce errors

This is where there is great potential to improve the management for all patients. Doctors are human and errors can occur – however they can be minimised and/or the effects of these errors reduced or mitigated by having systems in place to check for errors and if possible to take action to prevent harm or to prevent sub-optimal outcomes for patients.

Of particular note receiving a radiologist's report on the x-ray taken within a few days of it being taken is good practice and helps to reduce errors (e.g. if the doctor who first looked at the x-ray missed something) and this did occur. The interpretation of this report by [Dr B] however demonstrated that he did not appreciate that dorsal angulation in this type of fracture to any degree is potentially problematic. It may well be better that the doctor who reviews these x-ray reports is a different doctor to the one who saw them and/or if it is the same doctor that another opinion is sought on the management – this is important as management of these fractures can be difficult – not only has the position of the fracture to be considered but also some fractures can be unstable and hard to keep in place regardless of any manipulation required or not required. Getting the patient back for follow-up in 10 days (usual practice 7 to 10 days) after injury was good and it is quite possible that if the fracture had been manipulated and set well at this point in time things may still have gone well. The fact that the patient was referred to another provider when he declined to pay for another x-ray is good practice.

Describe in what ways if any the provider's management deviated from appropriate standards and to what degree

I have already commented in my comments above in what way the provider's management deviated from appropriate standards of care – but I would like to now focus on what has been seen as some key issues.

The key management issue that has been highlighted is that of the angle of the fracture on the initial x-ray.

- The measurement of this angle with an instrument such as a protractor or goniometer has been discussed in the various items of correspondence – [Dr B] implies in his letter of 4 July 2001 that he routinely uses a goniometer (and hence almost certainly did in this case). '… as I use a goniometer for measuring angles on x-rays.' – but in his later letter of 20/9/01 admits that he did not do so but then discusses further the use of clinical judgement to estimate this angle.

- I think the focusing on the use (or non-use) of an instrument to measure the angle is unhelpful. Even with instruments it is possible to incorrectly measure the angle of the fracture if for example incorrect landmarks are used (of note someone has drawn

lines incorrectly on the x-rays provided), or if it is hard to establish the correct landmarks about the fracture.

- Rather than measuring the angle a key area of understanding in this case is to know the normal angle at the end of the radius. Often the angle of the fracture is incorrectly thought about in terms of angle between the fracture and a right angle to the long shaft of the bone – this position is sometimes called neutral but as compared to the normal anatomical position the 'neutral' position would already be dorsally angulated 5 to 15 degrees compared to normal. This angle is used to judge a satisfactory position or not and it is forgotten that the normal volar angle should be added to the 'neutral' position to give the total angulation away from the normal position – as noted by the radiologist in his letter the distal radial articular surface is anatomically (or normally) in a position of 5 to 15 degrees of volar angulation. Any dorsal angulation by definition is already 5 to 15 degrees dorsally angulated past the normal anatomical position.

- The standard text (ref. 2), with respect to this type of fracture, in answer to the question 'Does the fracture require manipulation?' states:

1) If the fracture is grossly displaced, it obviously should be reduced. If undisplaced, no manipulation is needed. Between these two extremes the following additional factors may be considered: I[f] there [is] a readily appreciated naked eye deformity manipulation should be carried out (but distinguish between swelling and deformity).

2) If there is displacement of the ulnar styloid this indicates serious disruption of the interior radio-ulnar joint. An attempt at correction should be made irrespective of other appearances.

3) If the joint line in the lateral projection is tilted 10 degrees or more posteriorly rather than anteriorly, the fracture should be manipulated: but in the very old, frail patient somewhat greater degrees of deformity may be accepted.

Thus under these criteria we could say we do not have enough information under 1) above to make judgement and under 3) above the decision is debatable based on the measuring of the angle but that it is likely to need manipulation as the angle is either at or beyond 10 degrees on the initial x-ray depending on how it is measured (as commented on elsewhere in this report there are already incorrectly drawn lines on the initial x-ray) – I measured the angle as 10 degrees.

- On asking a number of doctors with expertise in this area (ref. 3) I had a response that ranged from only accepting an anatomical position (i.e. no abnormal angulation at all) to concurring with my own opinion as below.

- Simple categorisation of it as being in normal volar angulation, slightly angulated up to neutral, or dorsally angulated beyond neutral is useful. This categorisation enables management decisions to be made based on the angle (assuming other aspects of the fracture are acceptable) – with dorsal angulation beyond neutral not

being acceptable, angulation up to and including neutral being possibly acceptable – but really either worth manipulating or getting a second opinion, and with undisplaced or in the normal position as being acceptable.

- Other sources (representative of handbooks to guide doctors not yet sub-specialising or specialising in various forms of primary care) state 'if it is undisplaced no manipulation is needed and if it is displaced it should be manipulated' (ref. 4), and 'if there is much displacement reduction will be needed, particularly if there is backward and proximal shift of the distal fragment' (ref. 5). 'In general, reduction in a young person should be perfect, but in an elderly person up to 5 degrees of residual dorsal angulation can be accepted' (ref. 6).

- Perhaps the best description of the standard that virtually everyone would agree on points out that there is a range of opinion and a certain amount of judgement needed, with a one rule fits all policy not being appropriate – the description from ref. 7 is as follows. **'The initial decision is whether or not the fracture requires reduction and the principal factors involved are the age of the patient, whether his dominant hand is involved, his occupation and his interests, as well as the degree of displacement. A 30-year-old pianist will require a perfect anatomical position, which may not be the case for an 85-year-old woman. The most important angle is that between the shaft of the radius and its distal cup. This angle should normally be about 10 degrees ventrally. In general, an angle of 0 degrees is just about acceptable but would certainly not be accepted by a young patient. An 'angle of negative' (i.e. dorsal angulation) '5 degrees might be satisfactory in an (old person with few requirements. <u>Each case must be considered on its merits: nowhere is this more true</u>.'**

- Other sources can be vague – if it is displaced reduction is required (ref. 8).

- Specialised Emergency Department texts tend to concur with the above as well (ref. 9) – '… require prompt anatomic reduction in the ED' (Emergency Department), 'with full restoration of radial length and correction the dorsal angulation either to a neutral position or ideally to the normal volar tilt position'.

The next key issue was if at 10 days after injury on 20 October 2000, was it possible to manipulate the fracture. I think it should have been possible to manipulate the fracture at this time – my ref. 7 would support this 'Check x-rays are taken at about 10 days; the position is very unlikely to change after this time, whereas if it has already moved, remanipulation is still possible'.

In this case:

- The patient's report 'A' states that the attempt to 'pull' the arm was abandoned because he could not bear the pain – the hospital record from this day does not comment on the adequacy of analgesia but states that the angle was improved some 5 to 10 degrees and that the orthopaedic registrar considered the position satisfactory.

- I think that the position obtained after the manipulation was still not satisfactory and that at this stage further management should have been considered and discussed with the patient and an orthopaedic consultant – however the Commissioner may wish to consider an orthopaedic surgeon's opinion on this as the management at this stage had entered a different specialist area (orthopaedics) rather than being under 'accident and medical clinic' or 'primary care'.
- I would further note that it is not clear if at any stage that it was possible to reduce the fracture by simple means and have it held in a satisfactory position in a simple plaster – whilst the angle of the fracture is one issue another issue of the stability of the fracture has not really been discussed (and I do not think an extensive discussion of this issue will substantially change my report) and it may well be that the outcome would not have been any different even with primary manipulation – however the need for primary manipulation and the pro's and con's of accepting the position of the fracture at various stages versus the risks of further intervention (e.g. if internal fixation requiring surgery under general anaesthesia with all its attendant (albeit small) risks such as infection and even potentially life threatening complications) should have been discussed with the patient at each stage.

Answering Questions put to me by the Commissioner's office

Was the service provided by [Dr B] of reasonable care and skill?
Certain areas of questioning and examination were either not done or not documented as previously commented on and in this way the care did fall short of what could be reasonably expected. An appropriate follow plan and timing did occur. The skill issue of judging if the fracture was initially in a satisfactory position however did demonstrate that an error occurred both in the reading of the initial x-ray by himself and in his interpretation of the radiologist's report, or that he was lacking knowledge as to what was acceptable.

What specific professional and other relevant standards apply? And did [Dr B] follow them?
The standards that would apply have already been described in the section 'Describe the care as documented and describe the standard of care that should apply in the circumstances'. The documentation of the relevant findings – both the salient positive and negative findings – did not fully occur. The documentation performed by [Dr B] fell short of these standards.

The issue of the interpretation of the x-ray itself and the subsequent x-ray report suggests that the appreciation of both the normal anatomy and the typical angulation that occurs in this type of fracture and what is acceptable without manipulation was not within [Dr B's] knowledge or skill at that time or that he misread the x-ray. It is for example possible to misread the x-ray as having the fracture in a good position if it is held upside down when looking at the lateral view.

Was the specific treatment provided by [Dr B] on the 10 October 2000 appropriate?
The treatment of applying a dorsal slab was appropriate given that he decided not to manipulate the fracture – however the advice that manipulation was not required was not appropriate. In my opinion for this patient, who is somewhat reliant on using his arm for his work, that if there was any doubt as to the adequacy of the position that a specialist opinion should have been obtained within a day or two.

Should [Dr B] have measured the angle?
Simple categorisation of it as being in normal volar angulation, slightly angulated up to neutral, or dorsally angulated beyond neutral would probably have been enough. This categorisation would enable management decisions to be made based on the angle (assuming other aspects of the fracture are acceptable) – with dorsal angulation beyond neutral not being acceptable, angulation up to and including neutral being possibly acceptable – but really either worth manipulating or getting a second opinion, and with undisplaced or in the normal position as being acceptable. There is a danger in making actual measurements of saying that for example 9 degree is acceptable and 11 degrees is not and it also does not allow for the fact that it is hard to measure the angle that accurately in the first place, and also it is better to note that if the management is that debatable down to measuring the angle precisely then in that situation specialist care is likely to be needed. Thus I conclude that it is not necessary to measure the angle but in this type of fracture noting the direction of the angle is critical and it should be documented (and the amount of the angle either estimated or measured or a comment such as 'normal volar angulation, slightly angulated up to neutral, or dorsally angulated beyond neutral' would be sufficient) this documentation is needed especially if there is a decision not to refer the patient on for specialist care.

Was it reasonable for [Dr B] to assume from the radiology report that 'moderate angulation' meant the degree was within acceptable limits?
As has already been discussed the fact that there was dorsal angulation should have been a warning that the position was unsatisfactory.

Was it within the expertise of [Dr B] to assess the angulation of the fracture?
Possibly only [Dr B] can tell us that given his expertise at the time. I am not sure of his qualifications at the time – I note he is doing a Diploma in Accident and Community Emergency Medicine but I am unsure how far through this Diploma he was at the time of the event in question. However if [Dr B] felt it was not within his expertise then obviously the patient should have been referred on or further advice sought. As already stated it is possible that the initial x-ray was misread in which case a genuine error occurred and the management plan of getting a follow up x-ray report within a few days and then re-x-raying at 10 days should have picked up the problem. However if this was the case then the significance of the x-ray report stating there was dorsal angulation was missed.

Should [Dr B] have recorded the angle of the fracture in his notes?
This has already been discussed.

Did [Dr B] provide appropriate follow-up care on the 12 and 20 October?
On the 20 October – yes – the patient declined follow up with [Dr B] and was apparently referred to and was certainly seen by an alternative provider on the 20 October, 2000.

On the 12 October 2000 the clinic note and management of the patient when seen appears satisfactory – however the review of the x-ray report which occurred at some stage after the 10 October as has already been stated appears to have been unsatisfactory in that once again the lack of the appreciation of the abnormal dorsal angulation occurred.

Did [Mr A] develop any avoidable complication as a result of the treatment provided by [Dr B]?
Possibly not in that the initial injury may not have been stable after manipulation and if an initial manipulation by a specialist had failed he may have been advised to accept the less than ideal position in that the risks of other management options may have outweighed, at that time, possible risks of leaving the fracture to heal in the best position obtained by simple manipulation.

I would note that one of the principles of giving advice to the Health and Disability Commissioner is that the 'outcome of the care is irrelevant' – it may be that there was no departure from the accepted standards but the care still resulted in an adverse outcome for the consumer. Conversely there may have been no adverse outcome for the consumer but the care may have been substandard.

Are there any other issues that arise from [Dr B's] response and other information provided?
I think I have already covered these but I would also draw attention to my suggested recommendations.

Conclusion:
This man, [Mr A], had his initial and subsequent management up to and including 10 days after his fracture of a less than ideal standard. It is possible that if it was manipulated either initially or 10 days later that he might have had a better outcome – but not necessarily in that it may not have been possible to better manipulate the fracture and have it stay in a good position.

Either [Dr B] misread the initial x-ray and made another error in interpreting the radiologist's report or he had a different understanding of what is an acceptable position for the fracture. Only [Dr B] can tell us that. Either way his management decisions in part contributed to this man's outcome, but it should be remembered that [Dr B] is only one part of the management of this man's fracture and all aspects of the care of his fracture including the systems the clinic has in place, the way x-rays are reported, and the subsequent management in hospital all had the potential to improve the outcome for this man but unfortunately did not.

I think that my findings need to be brought to [Dr B's] attention and he should discuss the case with either an orthopaedic surgeon or a senior emergency department doctor. Also I consider that the extent of [Dr B's] documentation falls short of what is a good standard and he should review this.

…

Recommendations:

To GPs or Medical Officers working in Accident and Medical Clinics
They should have a good routine for filling out notes. The clinic form having a space for past history and medications and allergies is an example of how to assist doctors with this.

The examining of x-rays and documenting the significant positive and negative findings including angulation and or displacement of any fractures is important. I would suggest that the clinic has a separate x-ray report form with prompts on it to help doctors describe fractures – this is of valuable assistance if the doctor is to seek phone advice – having this written down before ringing a specialist allows a rapid yet more precise opinion to be obtained – headings for example could include (ref. 1)

Notation of Fracture
- Site
- Type of fracture (comminuted/transverse/oblique)
- Displacement Angulation
- Rotation (often clinical observation)
- Open (compound) or closed
- Intra-articular or periarticular
- Salter Harris classification (if appropriate)

Complications which often indicate need for referral
- clinical deformity/angulation
- any compound fracture
- neurovascular impairment
- compartment syndrome
- angulation (including rotational change) > 10 degrees
- intra-articular fracture displaced more than 2mm
- joint disruption (loss of congruity)

To Clinics
Having good methods of documentation that prompt doctors to record salient positive and negative information is useful. As I have already suggested a separate form for reporting fractures could be useful if it prompts doctors to accurately describe the fracture.

A regular audit of medical records can help quality control and potentially help reduce errors.

Having a second doctor review the initial x-ray report and/or the management of patients that fall with areas of practice that are prone to error is useful as often once an initial (possibly incorrect judgement) is made by one doctor it is likely that the judgement is either not likely to be reviewed fully by the same doctor and/or psychological reasons would make the doctor unlikely to change their mind (who among us can easily say 'I made a mistake here and now I need to …').

To Radiologists

They should report that either the position of the fracture is satisfactory, that they are uncertain if it is satisfactory or that it appears unsatisfactory – rather than just describing what they see. Reports that include terms that are somewhat ambiguous such as 'moderate angulation' can be unhelpful. Also stressing the fact that the 'dorsal' angulation (as opposed to the normal volar angulation) is abnormal or unsatisfactory in some/most situations would be helpful. If they expect to see a post reduction film and they do not have such a film to report on this should be noted in their report of the initial film.

This is an area where consultation between radiologists and primary care doctors and orthopaedic specialists could lead to considerable improvement in patient management in the sense of being able to reduce errors – however this would need considerable development to avoid pitfalls such an over reliance on x-ray reports – radiologic appearances can never alone guarantee a good outcome and the x-ray should always be interpreted in the context of the clinical situation.

This suggestion of mine that x-rays be reported in the above way will be controversial and could be problematic (e.g. an over reliance on the radiologist's opinion could start to occur and cause another source of error) and I would suggest that it should be discussed between radiologists, GPs, A&M doctors, and orthopaedic surgeons before any definite recommendation is made – but it is in my opinion worth asking the radiologists to consider this.

To orthopaedic house surgeons and registrars

That management of this sort of fracture 7 to 10 days after the event needs to be excellent as there may not be a chance to further later re-manipulate the fracture – if there is ANY doubt at this point in time as to the adequacy of reduction a consultant orthopaedic surgeon's opinion should be obtained. This is more important than with an initial manipulation on the day of the injury as time is running out.

To patients and doctors reviewing any evidence for a possible complaint

Of note was that several of the x-ray films had had lines drawn on them to indicate a key angle of the fracture – they have been drawn erroneously in such a way as to make the angle slightly worse than it really is – it is generally considered good medical practice not to draw on x-rays (for example critical details might be obscured or the x-ray damaged) and in my opinion it is even more important not to draw on them if there is the possibility of a complaint. In this case the lines were drawn through the darkest part of the dorsal part of the radial articular surface and not through the truly most dorsal part and this has the result of making the angle appear slightly worse than it actually is.

In my opinion this does not influence my findings in this particular case but it can be misleading as it is easy to fall in to the trap of assuming the line is drawn correctly.

References

1) Fracture and xray module taken from the 1999 course material for the Goodfellow Unit of the Department of General Practice The University of Auckland Dip ComEmMed paper 520.601SH.
2) Practical Fracture Treatment 3rd Edition – Ronald McRae, Churchill Livingstone, 1998, ISBN 0-443-04809-6.
3) Informal discussion with one Dunedin Accident and Medical Clinic (Dunedin Urgent Doctors and Accident Centre) doctor, emergency department doctors ranging from two junior registrars to one consultant, and with two orthopaedic registrars.
4) Oxford Handbook of Clinical Surgery (reprinted 1991) ISBN 0-19-261710-9.
5) Oxford Handbook of Clinical Specialities, 1987, ISBN 0-19-261621-8.
6) Accident and Emergency Diagnosis and Management – Anthony F.T. Brown, 1987, ISBN 0 433 00031 7.
7) Accidents and Emergencies, Sixth Edition, John Bache, 1994, ISBN 0-19-262434-2.
8) Outline of Fractures, Adams & Hamblen, Tenth Edition 1992 Churchill Livingstone.
9) Emergency Medicine – Concepts and Clinical Practice – Fourth Edition, Mosby, ISBN 0-8151-3774-5."

Code of Health and Disability Services Consumers' Rights

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

RIGHT 4
Right to Services of an Appropriate Standard

1) Every consumer has the right to have services provided with reasonable care and skill.

2) Every consumer has the right to have services provided that comply with legal, professional, ethical, and other relevant standards.

RIGHT 10
Right to Complain

3) Every provider must facilitate the fair, simple, speedy, and efficient resolution of complaints.

Opinion: No breach – Dr B and The Clinic

Response to complaint
Mr A complained that Dr B and Ms C did not adequately address his concerns when he met with them on 3 November 2000. He did not accept Dr B's description of the degree of the initial angulation (13° versus the 20° angulation he was informed of by doctors at the public hospital); he did not like Dr B's manner (that Dr B did not appear concerned about the matters he had raised); and the meeting was interrupted by Dr B's leaving to attend to other matters, including an emergency.

Mr A telephoned the Clinic during the week starting 23 October 2000 and arranged a meeting with Ms C for 3 November 2000. There was no undue delay between Mr A contacting the Clinic with his concerns and the meeting being arranged by Ms C.

Dr B first became aware of Mr A's dissatisfaction when he was informed by Ms C that Mr A had organised a meeting with her. Dr B attended that meeting and explained the x-rays to Mr A, the angle of the fracture and the reasons for his clinical decisions and treatment given. Following that meeting Dr B and Ms C were left with an impression that the matter was resolved to Mr A's satisfaction and that no further action was expected or required. They were also left with an impression that the advocate who attended the meeting with Mr A was satisfied with the explanations given and indicated that further action was unnecessary.

On 4 December 2000 Ms C wrote to Mr A intending to enclose a voucher for a free consultation at the Clinic as a gesture of goodwill. Mr A provided conflicting evidence as to whether he received Ms C's letter, and denied that he received the voucher. Mr A had no further contact with the Clinic. Dr B and Ms C became aware that the matter was not resolved for Mr A when notified by this Office of his complaint, on 21 June 2001.

In my opinion Dr B and Ms C responded appropriately to the concerns raised by Mr A and sought to facilitate the resolution of his complaint. Accordingly, Dr B and the Clinic did not breach Right 10 of the Code.

Opinion: Breach – Dr B

Manipulation of fracture
Dr B suspected that Mr A had sustained a fracture of the distal radius. This was confirmed by an x-ray. He assessed the angle of the fracture to be less than 15° and, because there was no visible deformity, he decided that the angulation was within acceptable limits. He elected to manage the fracture by putting it into a plaster cast (dorsal slab) without manipulating the fracture. He asked Mr A to return the following day for a plaster check and on 20 October 2000 for a further x-ray.

In the meantime, on 12 October 2000, Dr B received and considered the radiologist's report which stated "there is a slightly comminuted fracture of the distal radial metaphysis with

moderate dorsal angulation of the distal radial articular surface". On 20 October 2000, when Mr A presented for the scheduled follow-up appointment, Dr B requested another x-ray. Mr A declined to have it taken at the Clinic.

My advisor considered that the decision to apply the dorsal slab was appropriate, but the conclusion that manipulation was not required and the decision not to reduce the fracture, were not. Dr B's decision not to reduce the fracture was based either on an erroneous reading of the initial x-ray and misinterpretation of the radiologist's report, or on a failure to appreciate the significance of a dorsal angulation in this type of fracture. My advisor commented:

> "The issue of interpretation of the x-ray itself and the subsequent x-ray report suggests that the appreciation of both the normal anatomy and the typical angulation that occurs in this type of fracture and what is acceptable without manipulation was not within [Dr B's] knowledge or skill at that time or that he misread the x-ray."

My advisor stated that while Dr B may have misread the initial x-ray, he should not have missed the significance of the "dorsal angulation" noted in the radiologist's report. The reference to dorsal angulation should have alerted Dr B to the fact that the position of the fracture was unsatisfactory. As he had not reduced the fracture initially, he should have done so on receipt of the radiology report. Alternatively, Dr B should have requested a specialist review and referred Mr A for manipulation of the fracture.

I accept my expert advice. In my opinion, Dr B's initial and subsequent management of the fracture fell below an acceptable standard for a general practitioner at an Accident and Medical Centre. Accordingly, Dr B breached Right 4(1) of the Code.

Opinion: No breach – Dr B

Prospect of corrective surgery

Mr A claimed that by the time he presented at the public hospital on 20 October 2000, it was too late to correct the angulation of the fracture. He stated that the attempt to manipulate the fracture was abandoned because it was too painful and that as a result he now faces the prospect of corrective surgery. I have seen no evidence to support this claim.

My advisor noted that it was still possible to manipulate the fracture on 20 October. While I accept that Dr B may have misdiagnosed the degree of angulation on 10 October and misinterpreted the severity of the fracture from the radiologist's report on 12 October, he still had an opportunity on 20 October to reassess his earlier decision not to reduce the fracture, and assess whether the angle of the fracture had altered since the initial consultation and whether manipulation was required. By deciding to take himself to the public hospital, Mr A denied Dr B that opportunity.

Once Mr A presented at the public hospital, the management of his fracture effectively became the responsibility of the hospital. The public hospital notes record that on 20 October 2000 Mr A presented with a "significant dorsal angulation". After reduction, a "satisfactory" alignment was achieved. Satisfactory alignment was maintained through October and November 2000. There was no suggestion of any significant deformity in the public hospital notes until 25 May 2002.

Mr A stated that he did not, and could not, work after fracturing his wrist because his arm was in plaster, but the hospital notes record that as part of his employment, Mr A had been lifting heavy weights since placed in the original cast. It is therefore not possible to rule out that activities undertaken by Mr A did not cause or contribute to a condition necessitating surgery to the wrist.

Based on the information available, I am satisfied that any adverse outcome Mr A suffered, and the need for surgery, cannot be attributed to the treatment provided by Dr B on 10 October 2000 or any lack of action by him following receipt of the radiology report on 12 October 2000. Accordingly, Dr B did not breach the Code in relation to this matter.

Opinion: No breach – The Clinic

Vicarious liability
Employers are vicariously liable under section 72(2) of the Health and Disability Commissioner Act 1994 for ensuring that employees comply with the Code of Health and Disability Services Consumers' Rights. Under section 72(5) it is a defence for an employing authority to prove that it took such steps as were reasonably practicable to prevent the employee from doing or omitting to do the thing that breached the Code.

The Clinic employed Dr B as a Medical Director, and it was in this capacity that Dr B assessed and treated Mr A.

Although Dr B breached Right 4(1) of the Code by not reducing Mr A's fracture, and his initial and subsequent management of the fracture fell below an acceptable standard, these matters involved clinical decisions of an individual practitioner, and were not reasonably foreseeable or preventable by the Clinic.

The Clinic is therefore not vicariously liable for Dr B's breach of Right 4(1) of the Code.

Other comments

My advisor has made some adverse comments about Dr B's standard of documentation, raising the possibility that certain patient history taking and examination was either not done or was not recorded. The documentation fell short of a standard to be reasonably expected of a medical practitioner.

My advisor noted that at the initial consultation, on 10 October 2000, Dr B did not adequately record the history or the presenting signs and symptoms of the injury. In particular, Dr B did not document the appearance of the injury, any symptoms such as pain or tenderness (and their location), swelling, neuro-vascular status of the limb (colour, warmth and sensation), loss of movement, and the degree or the direction of the angle of the fracture.

My advisor also noted that Dr B did not adequately record Mr A's medical history, including any allergies, medications or past injuries to the same area. Documentation of the patient's current occupation and occupational history, involvement in hobbies or sports, and limb dominance (whether right- or left-handed) would have been good practice. Dr B did not record this information. While a provision for such information was made on the Clinic's forms, Dr B did not make use of it.

Although these matters have not been under investigation, I draw my advisor's comments to Dr B's attention.

Actions taken

In response to my provisional opinion, Dr B apologised to Mr A for his breach of the Code.

Dr B informed me that he has taken the following steps in light of this incident:

- Reviewed his practice with regard to fracture diagnosis and interpretation of radiologists' reports, especially with descriptors such as "mild", "moderate" or "severe".
- Ensured that he has a number of visiting specialists for second opinion or referral.
- Taken the necessary steps to implement the recommendations of my clinical advisor regarding the quality of his clinical notes.
- Successfully completed the Diploma in Community Accident and Medicine.

Dr B also advised me that he is awaiting full registration with the Accident and Medical Practitioners Association.

Further actions

- A copy of this report will be sent to the Medical Council of New Zealand.

- A copy of this report, with identifying features removed, will be sent to the Accident and Medical Practitioners Association, the Royal New Zealand College of General Practitioners, the Royal Australian and New Zealand College of Radiologists, and the Royal Australasian College of Surgeons, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.