A Public Hospital /

General Surgeon, Dr B

A Report by the

Health and Disability Commissioner

(Case 00HDC00834)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Parties involved

Mr A	Consumer
Dr B	Provider / General Surgeon
Mr C	Complainant / Consumer's father
Dr E	Medical Director of the public hospital
Mrs F	Complainant / Consumer's mother
Ms G	Nurse in Charge, Orthopaedic Theatre at the public hospital
Ms H	Theatre Manager at the public hospital
Mr I	Chief Executive Officer of the public hospital

Complaint

On 6 December 1999 the Commissioner received a report from Advocacy Network Services, under section 30(k) of the Health and Disability Commissioner Act 1994, about the services provided to the consumer, Mr A, by the provider, Dr B. Mr C made a complaint on behalf of his son, Mr A. The complaint is that:

- *In February 1997 Dr B corrected Mr A's pectus excavatum by lifting and inserting a rod under the sternum. Dr B saw Mr A twice before the surgery but he did not measure Mr A's chest. Dr B inserted a 20cm rod instead of a 28cm rod.*
- *Four days after the surgery the smaller rod had slipped and needed replacement. During the insertion of the replacement rod, Dr B punctured Mr A's lung.*
- *Mr A received inadequate pain control following his discharge from hospital. Mr A received pain medication from a PCA pump while in hospital but this was changed to Panadol when he went home. Dr B did not believe that Mr A was unable to move properly because of pain while he was on Panadol.*
- *Mr A developed a post-operative infection, which required surgical drainage by another surgeon at a later date.*

An investigation was commenced on 8 February 2000.

Information reviewed

- Mr A's medical records from the public hospital
- Mr A's ACC report
- Mr A's general practitioner's records
- Steinman pin 28cm

- Steinman pin 22.5cm
- Theatre set-up card system for the public hospital
- Report from independent cardiothoracic surgeon, Dr Dard Bunton.

Information gathered during investigation

At the time of these events Mr A was a 17-year-old schoolboy referred by his general practitioner, Dr D, to the public hospital for an opinion on the correction of his pectus excavatum. Pectus excavatum is a rare deformity of the rib cartilages and sternum, which affects the central portion of the chest and gives a "caved in" appearance to the chest. At the hospital Mr A was seen by general surgeon Dr B.

Dr E, Medical Director of the public hospital, advised me that when patients are referred to the hospital they are assigned to surgeons more or less on a sequential basis. Dr E advised me that, in provincial areas, general surgeons occasionally perform uncommon procedures, as referral to a specialist surgeon is not always practical. There was no cardiothoracic surgeon at the hospital at the time but Mr A could have been referred to a cardiothoracic surgeon in another hospital if Dr B considered it was necessary.

In 1997 the hospital did not have a formal credentialling programme operating. Credentialling is the process of assigning specific clinical responsibilities (scope of practice) to health professionals on the basis of training, qualifications, experience and current practice.

Number of pectus excavatum operations performed by Dr B
Dr B advised me that pectus excavatum is an uncommon deformity and the opportunity to perform this type of correction seldom occurs. Dr B advised me that, from memory, he had performed four pectus corrections in the preceding decade. All had been performed successfully. Dr E consulted the hospital's database, which has been recording data since 1993, and advised me that Dr B had performed two operations in the nature of pectus excavatum at the hospital. The first operation was on 10 December 1996, described as pectus carinatum using a Kirschner wire, and Mr A's operation was on 11 February 1997.

Pre-operative discussions
Dr B saw Mr A with his mother, Mrs F, on 20 May 1996. They discussed the operation for correcting Mr A's pectus excavatum. Dr B advised Mr A and his mother that the operation required the insertion of a pin across Mr A's chest, which would need to stay in for four to six weeks to get a good result. Dr B advised that the operation was particularly painful and good quality post-operative pain management was essential. He explained that Mr A would require observation in an intensive care unit immediately after the operation and excellent post-operative nursing and physiotherapy care. For these reasons they decided that the operation should be performed at the hospital rather than a private hospital. Mrs F advised me that Dr B led them to believe that he was competent to perform this operation. Mrs F

was concerned that Dr B did not measure Mr A's chest. Dr B advised me that the problem was not one of failing to measure Mr A's chest but the availability of the correct equipment.

The first operation
Mr A was admitted to the hospital on 10 February 1997. The surgery was performed on 11 February. Dr B said that one of the standard pieces of equipment he uses in such an operation is a 28cm Steinman pin. He explained Mr A's operation as follows:

> "…
>
> This procedure is always time consuming and tedious, and this was very much the case during [Mr A's] procedure. This was because of the dense adherence of the pericondrium [tissue surrounding the sternum] to the cartilage, making excision of the cartilage difficult. During the procedure, bit by bit, I painstakingly made multiple small transverse cuts in the cartilage, taking care to achieve the best possible result for [Mr A]. Although somewhat of a test of endurance, I was pleased with the result in this respect. Unfortunately and unexpectedly, when I called for the Steinman pin, which had to be inserted, I made the unwelcome discovery that there was no pin of a suitable length available.
>
> I asked for the longest pin that was available and completed the procedure by inserting the longest available pin and leaving the right end sticking out through the skin, but there was insufficient length to get it to protrude out to the other side. Although I appreciate it sounds unpleasant to have part of a pin protruding, this is not uncommon in some procedures. This aside, I acknowledge fully, and deeply regret, that what I had to do was a compromise I was not happy with. It was my hope and expectation that I have allowed sufficient length and purchase in order to enable the pin to be removed in four weeks."

Dr B's record of the operation stated:

> "After doing all this [freeing the sternum] it was then possible to have an anterior chest wall malleable enough to fix in a much more acceptable position with a single transfixing transverse Steinman wire which was inserted per-cutaneously through the left chest wall under the sternum and out through the right chest wall and skin. Unfortunately the pins were not really long enough so we left the right end sticking out through the skin and allowed the left end to recede. This should however allow us enough length and purchase to remove the pin in four weeks time when the healing of the costal cartilages should be firm enough to allow for maintenance of the corrected pectus excavatum."

Dr B said that, after completing the operation, he checked for the presence of a pneumothorax (breach of the lung surface or chest wall, which allows air to enter the pleural cavity, and can cause the lung to collapse). This is standard practice because pneumothorax is a known complication of this operation. He found no evidence of a pneumothorax and therefore did not place an underwater drainage tube in Mr A's chest before completing the surgery.

Dr B stated that immediately after he completed the surgery he made inquiries about why the proper equipment was not available. He stated that it was then that he learned of a management policy to limit surgical stocks. He advised me that he had not been aware of this policy, which he would strongly have opposed.

Theatre equipment
Dr B explained that Steinman pins are a standard piece of orthopaedic surgical equipment, which come in varying lengths. He said that on previous occasions when he performed this correction, 28cm pins were available to him. For this reason he did not consider that he had to specifically request a pin of that length.

Dr B recalled that the first time he performed the operation at the hospital he went through the equipment with the nurse who was in charge at the time and there were plenty of pins of the longer size. (Dr B has worked at the hospital for about 25 years. It is not clear when this event – exploring the stock drawer – with the nurse occurred, but it could have been ten years earlier.)

Dr B admitted that orthopaedic surgeons could have used up supplies of longer Steinman pins over the years and they may not have been replaced. Furthermore, Steinman pins were originally used to hold fractured bones in traction. The pin was placed externally through the fractured bone to hold it in place while the bone mended. Dr B admitted that with good surgical practice it was possible to place a nail or pin internally down the shaft of a broken bone to hold it in place. The change in technique meant that pins were not used as frequently as they had been and large stocks of pins were not needed for orthopaedic surgery.

Ms G told me that she had been the nurse in orthopaedic theatre since 1992 and was appointed as charge nurse in 1993. She was therefore in charge of orthopaedic equipment. Ms G advised me that in that time the stocks of Steinman pins had remained unaltered. She said that, for as long as she has worked in the orthopaedic theatre, there have been no long pins in the stock drawer. Ms G explained that all Steinman pins held by the hospital are nine inches long (about 22.5cm) and vary only in diameter. She did not know of any orthopaedic surgeon who would use pins longer than nine inches. It has been her experience that even nine inch pins are too long for orthopaedic use and are shortened by orthopaedic surgeons.

Theatre set-up
Ms H, Theatre Manager at the hospital, advised me that the equipment needed for each operation was written on a card. The card listed general equipment needed for the particular operation and any special instructions from individual surgeons. The card for surgical correction of a pectus excavatum was very old. The current card (obtained during this investigation) was rewritten on 10 December 1996. The equipment needed for the correction of pectus excavatum is, in part:

> "…
>
> Lap (laparotomy) tray

General bundle

Rib set

Curved osteotomes

Narrow bone nibblers

Small langenbecks

Steinman pin set … ”

The card does not specify the length of the pin needed by Dr B.

Ms G explained that when theatre equipment is prepared for an operation the particular equipment required is prepared and sterilised in bundles. Where Steinman pins are required for the operation a set of pins of varying diameters is included in the bundle. During surgery the surgeon selects the appropriately sized pin. When the equipment is reassembled a replacement pin of the same size is used to complete the set. Steinman pins are not re-used. Ms G advised me that she has never had an order for a 28cm Steinman pin before.

Ms H confirmed that commonly used equipment is automatically replaced. Where equipment is used rarely, or by a particular surgeon, it would need to be specifically ordered and may take some time to obtain. Because the repair of pectus excavatum operation was rarely performed, the theatre card for this operation was very old and out of date. Ms H said that there are cards for most operations but, where this is not the case, the nurse in charge of the particular operation simply asks the surgeon if he needs specific equipment. Ms G said that as Dr B was the only surgeon to use extra long pins, the nurse setting up the theatre needed to be aware of this because it was not documented on the theatre set-up instruction card. She said that it is possible that, as staff changed, Dr B became the only person who knew he needed this equipment.

Dr B knew the card system and, in his opinion, had no need to check it on a day-to-day basis. Because of his past experience and his expectation that this was a piece of standard orthopaedic equipment, he had not anticipated the 28cm pin would not be available to him “as it had been in the past”. Dr B believed that the equipment was not available because the hospital’s management policy was to reduce the stock of equipment to reduce expenditure. Ms H stated that there was a management policy regarding stock replacement. She, and the other charge nurses in theatre, were asked by hospital management to assess old stock levels because the charge nurses knew the type and quality of equipment needed in theatre and were the most experienced personnel to do the task. However, it was not management policy to allow stocks to reach a level that placed patient safety at risk.

Following surgery

Following surgery Mr A was taken from theatre to the intensive care unit. Dr B saw Mr C and Mrs F after the operation and told them that the pin was too short but that he did not anticipate any problems.

A chest x-ray taken later that evening found a small pneumothorax, which slowly resolved over subsequent days and did not require a chest tube.

Dr B saw Mr A on 12 February and transferred him to the surgical ward, Ward 3.

Second procedure
On 13 February (second post-operative day) Dr B noted that the pin appeared to be moving. Dr B explained the events following Mr A's surgery, which led to his requiring a second procedure:

> "…
>
> The unavailability of this standard Steinman pin caused the scene to be set for the complications subsequently suffered by [Mr A]. On 18 February it was necessary to take Mr A back into theatre because one end of the pin had become dislodged. By this time I had been able to secure the correct Steinman pins at [the hospital], so when the pin was reinserted I was able to use a pin of the appropriate length. This procedure was carried out without incident and at the conclusion I checked for any evidence of pneumothorax. No such evidence was found, and the wound was closed.
>
> Approximately 24 hours later I was greatly disappointed to learn that [Mr A] had developed a [right] pneumothorax [discovered during a post-operative x-ray]. The pleura, i.e. the lining of the lung, must have developed a delayed puncture causing [Mr A's] lung to collapse. It was necessary to re-expand the lung using an underwater seal drain [inserted by Dr I, surgical registrar]. As previously noted in this report, pneumothorax is a known complication of this procedure either during surgery or delayed as was the case with [Mr A]. This potential and recognised risk was one of the reasons that [the hospital] was chosen over [the private hospital] and why procedures were put in place to ensure [Mr A] was monitored closely in the intensive care unit. His observations included daily chest x-rays."

Dr B saw Mr A the following morning and removed the tube that Dr I had inserted the previous evening.

Inpatient pain control – first operation
In the early post-operative periods Mr A's pain was managed by the pain team at the hospital. The doctors who prescribed pain relief were Dr J, Dr K and Dr L, anaesthetist. Dr B advised me that he did consult the local pain specialist, Dr L, about Mr A's pain management on more than one occasion, although this is not documented in any of Mr A's records.

Following Mr A's first operation on 11 February his pain was controlled with the aid of a PCA (Patient-Controlled Analgesia) pump. The PCA pump was set to enable Mr A to self-administer monitored doses of morphine at the rate of 1mg every five minutes if needed. The prescribing doctor was Dr J. Each 30ml syringe held in the pump contained 60mg of

morphine. A review of Mr A's records showed that he used approximately 120mg morphine a day between 11 and 14 February.

Mr A was also prescribed paracetamol (1 gram 4-6 hourly) and Tilcotil (20mg daily). Mr A had paracetamol regularly but there is no record that he had Tilcotil. The order for Tilcotil was cancelled on 12 February. By 16 February Mr A's pain was mainly controlled with paracetamol. The PCA pump was disconnected on 17 February.

Inpatient pain control – second operation
On 18 February Dr B reinserted the pin under Mr A's sternum. Mr A's pain was controlled in a similar way as after the first operation. The PCA pump was recommenced with 1mg/5 minutes. Mr A was also prescribed paracetamol and Tilcotil (40mg daily). On 19 February, during the morning ward round, Dr B and Dr K increased the morphine concentration to 2mg/5 minutes, because Mr A's pain was not well controlled. Once the pain was under control it was reduced back to 1mg/5 minutes. Mr A's records indicate that he had approximately 240mg of morphine on 18 February and 700mg on 19/20 February. The PCA pump was disconnected on 21 February. For the remainder of his stay in hospital Mr A's pain was controlled with paracetamol and Tilcotil, and he was discharged on this medication on 24 February.

Dr B advised that:

> "…
>
> During [Mr A's] post-operative care, I noted that he was receiving excellent nursing and physiotherapy attention along with good pain relief. [Mr A] did have some pneumonic consolidation of his lung bases and as a consequence he became very miserable and unhappy. [Mr A] constantly complained of pain despite the pain relief given, and commented also on the discomfort of the Steinman pin. On examination [the date of this examination is not recorded], I noted some infection around the pin sites because the wires were inserted transversely across the chest percutaneously, lying underneath the sternum, this being the means of effectively levering the sternum and its attachments into the desired position."

Inpatient wound care
Mr A had three sets of wounds: midline chest wound (surgery) which had two pin sites; drain site wound (draining surgical site); and chest tube wound (pneumothorax). Whether Dr B examined Mr A's wounds is not recorded. Dr B asked the nurse to remove the underwater seal drain and Redivac drain, and prescribed Augmentin. Mr A commenced the antibiotic Augmentin (1500mg a day) on 19 February (last dose 6.00am 24 February).

On 20 February Mr A complained that his chest felt uncomfortable, with sharp pains at the site of the pin. On 21 February Mr A's dressings were changed. The nurse who changed the dressings reported that his drain sites appeared infected and took swabs from each site to send for laboratory examination. The house surgeon, Dr M, also examined the wounds and reported that the chest drain wound had "some pus" but "nil pus" at pin ends. (One microbiology result from a swab taken on 21 February of the right side of Mr A's chest

wound was in his notes. No organisms were isolated from that swab. The hospital was unable to find any other results.)

Post discharge care
Mr A was discharged on 24 February. The pin was still in place. His temperature was normal and his white blood count was normal. A chest x-ray taken before his discharge revealed that Mr A had a small pneumothorax at the top of his lung and pleural effusion (fluid in the pleural space) on the right side of his chest. Dr B was concerned that Mr A's pleural effusion might increase and, as he had been discharged, Dr B asked Dr N, house surgeon, to telephone Mr A to ask him to return to Ward 3 at 10.15am on 27 February to see Dr B. Dr N listed Mr A's discharge medication as Panadol and Tilcotil but did not refer to Augmentin or penicillin.

Mr A was referred to the district nursing service for wound care on 24 February. The assessment by the district nurse on 25 February listed Augmentin (1000mg twice a day) and penicillin (1000mg twice a day) as post-operative medication. There is no record of when these antibiotics were prescribed or by whom. At some time these antibiotics were cancelled but there is no record of who cancelled them.

On 25 and 26 February the district nurse assessed Mr A's wounds and redressed them with dry dressings. There is no report about the state of his wound from either of these two assessments. Mr A was very uncomfortable because the pin protruded three inches either side of the wound. He had pain mainly in his back and across his shoulders. On 26 February Mrs F telephoned Dr B about Mr A's pain but Dr B did not prescribe any additional analgesia. Mr A's pain continued and was not controlled with the paracetamol and Tilcotol he had been prescribed.

On 27 February Mr A returned to the ward at the hospital to have a chest x-ray and his pneumothorax assessed. Dr I saw him and prescribed codeine for pain (dose not recorded) and gave him an outpatient appointment for the following Monday. Mr A's pneumothorax slowly resolved without further treatment.

On 28 February Mr A was in severe pain and consulted his general practitioner, Dr D. Dr D also prescribed codeine phosphate (60mg four times a day). Mr A's pain persisted and later that evening he was admitted to the hospital. His pain was relieved with intravenous morphine. Dr I examined him and reported that Mr A's wounds were not infected. However, a blood test taken that day showed an elevated white cell count of 14.8 x 10^3, with a neutrophilia and toxic vacuolation, which implied the presence of an infective process. Mr A's temperature was not elevated and he had no outward signs of infection.

Removal of pin and subsequent infection
Dr B saw Mr A the following day, on 1 March, and removed the pin. Dr B advised me that:

> "…
>
> [Mr A] and his mother had been told that the pin would have to stay in for four weeks prior to them consenting to the procedure. [Mr A] was urged to put up with

> the discomfort in order to get a good result. However, [Mr A] constantly complained and expressed anxiety about the infected pin sites. Despite the encouragement of all involved in his care to persevere a little longer so that all he had suffered would not be in vain, [Mr A] eventually insisted that the pin was removed. As a result our resolve to carry on was weakened and we agreed to remove the pin, this procedure being carried out on 1 March.
>
> Immediately after the removal of the pin [Mr A] said he immediately felt much better and there was a marked improvement in the pin track infections. The procedure was carried out without incident, although very much against my better judgement and advice.
>
> Unfortunately, but somewhat predictably, [Mr A's] chest had not developed enough rigidity to maintain its good position. [Mr A] also suffered from Scheuermann's disease, a disease which causes chronic back pain. The chronic back pain compromised [Mr A's] ability to maintain a good posture and also compromised the maintenance of a good position in the chest. There was deterioration of the good result that had been achieved by surgery, which was very noticeable by 13 March, when I saw [Mr A] for follow-up. While my notes record that the position was still reasonably good at that time, he was having notable trouble with intractable back pain and this is recorded in my notes. [Dr B's notes were not located during this investigation.]"

Mr C and Mrs F advised me that they knew the pin would have to remain in place for four to six weeks but could not recall Dr B urging Mr A to try to tolerate the pin. There was never any discussion with them or Mr A about the possible consequences of removing the pin too early. When Dr B removed the pin he took a swab of the left pin site as it was oozing a purulent looking discharge. Mr A was discharged on 3 March 1997 but was not prescribed antibiotics.

The results of the swab taken on 1 March became available on 6 March. The laboratory report indicated growth of a Pseudomonas species, sensitive to the antibiotics gentamicin, ticarcillin and tobramycin. The report stated that the organism had lost viability and the laboratory was unable to complete its analysis.

Mr A stated that he felt more comfortable after the pin was removed. Before he went home Dr I discussed Mr A's pain control with Dr O of the pain team. He was discharged on paracetamol, Tilcotil and DHC [morphine based analgesia] (60mg up to twice a day).

On 4 March the district nurse noted that Mr A's left pin site wound was infected and by the following day both right and left pin sites were discharging. On 7 March the district nurse told Mr A that he needed antibiotics and she contacted Dr D. Dr D commenced Mr A on Rulide. Mr A's wounds, especially the left pin site, continued to discharge. On 13 March Mr A saw Dr I in the outpatients department. Dr I noted the discharge from the left pin site and recorded that Mr A had a low-grade infection. There is no indication that Dr I was aware of the swab culture result from 1 March.

Dr B also saw Mr A on 13 March. Dr B wrote to Dr D advising that he had seen Mr A that day and he looked "pretty miserable". In Dr B's opinion Mr A's problems were:

- A minor pin track infection for which he had been prescribed Augmentin by the general practitioner (Dr D's records show that he did not see Mr A between 28 February and 14 March. This investigation has been unable to establish who prescribed these antibiotics.) Dr B thought Mr A was developing a sensitivity to the antibiotics and stopped them.

- Intractable back pain, which in his opinion was not related to his operation (he was to be referred to Dr P, orthopaedic and spinal surgeon, for the back pain, as Mr A had a previous diagnosis of Scheuermann's disease which could be troubling him).

- The overuse of analgesia. Dr B noted that Mrs F was concerned about the amount of analgesia Mr A required. Dr B prescribed Panadol and Voltaren but no other analgesia. Dr B also recommended a progressive exercise programme for Mr A.

Dr B said that it was agreed that Mrs F would contact him later in the week with a report on Mr A's progress. There is no indication that Dr B noted the result of the chest wound swab taken on 1 March, which grew Pseudomonas, or the antibiotics this organism was sensitive to.

On 14 March Mr A consulted Dr D. In his opinion Mr A had a streptococcal infection of his left chest and he prescribed a 28-day course of penicillin. On 16 March the district nurse recorded "moderate to heavy pus" from the left pin site. She sent a wound swab to the laboratory, noting that Mr A had an appointment with Dr B that day. Dr B advised me that he did not see Mr A after the 13 March appointment.

Mr C and Mrs F were very distressed about Dr B's attitude to Mr A's pain and his lack of progress. On 19 March they consulted Dr D for a referral to another general surgeon, Dr Q. Dr D documented that Mr A had a red area developing on the right side of his wound and that the swabs taken by the district nurse on 16 March grew Pseudomonas. Dr D commenced Mr A on Augmentin on 19 March. Later that day Dr D received a phone call from the district nurse because Mr A was so distressed with pain. Dr D prescribed morphine 5mg injections to be given each evening for the next five nights.

Dr Q saw Mr A the next day, on 20 March. In his 24 March follow-up letter to Dr D, Dr Q said:

> "Thank you for asking me to see [Mr A] who I initially saw last Thursday. He had a correction of a pectus excavatum in [the hospital] in February and now is having severe back pain as well as a discharging wound to the left of the midline and an infected area in the central sternal wound. I note he was seen at follow-up at the beginning of the week and he was given a very short sharp shift with little understanding of his current symptoms of pain.

His pain has been primarily central in the back and I note that he has been diagnosed as having Scheuermann's osteochondritis in the past but this was in the lower thoracic area whereas his current pain is in the mid-thoracic zone. He has been on Augmentin and Penicillin as well as Acupan and Morphine for his pain and also Voltaren.

Examination
He is obviously an ill lad who looked extremely miserable at the time. He certainly looked pale and did not appear to have a temperature. The wound on the left chest was discharging and a swab of this from the hospital has grown Pseudomonas species. There is an area medial to that which is erythematous [red and swollen] but the skin is intact and the central sternal wound was obviously infected and I have opened that up and sent a swab for culture.

Pseudomonas is difficult to treat in a wound and so I am relying on dressings alone at the moment. I arranged for a chest x-ray and views of his thoracic spine. You will have had a copy of that report. He saw [Dr P] on Thursday evening who felt that the Scheuermann's disease was not related to his current pain. I therefore organised for a bone scan on Friday, which was normal in the region of the thoracic spine. His white count was elevated at 13.9; his haemoglobin 116.

I have spoken to his mother over the weekend because of [Mr A's] pain and did offer to admit him to [the hospital] to control this but he has been very reluctant. He is certainly having some quite good days and other days that are very bad.

I saw him today. The central wound on his chest has opened up and is quite deep. This will take some time to resolve. His pain is better today.

I have started him on Voltaren SR 75 mg twice a day. He will continue with the Acupan and Panadol and Morphine at night if necessary. I will review him again on Thursday."

On 27 March 1997 Dr Q commenced Mr A on a broad spectrum antibiotic, Ciproxin (250mg three tablets twice a day). Dr Q continued to see Mr A and advised Dr D as follows:

"4 April 1997

…

[Mr A] is making good progress. He is feeling much better, sleeping has improved and the pain reduced substantially. He seems to be responding well to the Ciproxin. I have redressed the wound today and continued him on Ciproxin 750mg b.d. and Voltaren SR 75mg b.d. I will see him again in ten days.

20 May 1997

…

> I saw [Mr A] today. The area on the chest wall has healed. He is just finishing off his course of Ciproxin as he was a bit slow in starting it. I have not made any further arrangements for follow-up but if he has problems with it he will contact me."

Mr A was discharged from the district nursing service on 14 April but continued to consult Dr Q until 20 May 1997. Dr B advised me that:

> "…
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> After this (13 March), I lost contact with [Mr A's] progress. I caught up with him at a much later date of 8 April [2000] when I saw him again. By this time there was much more marked deterioration in position, and we discussed his issues very fully and frankly. Included in that discussion was an offer of another repair done by myself or someone else. [Mr A] declined.
>
> Since this time, [a second public hospital] has developed a new method, which is achieving very good results. I would be very pleased to help facilitate [Mr A] accessing this procedure if he would like.
>
> As surgeon, I blame myself for what occurred. I regret this and unreservedly apologise to [Mr A]. It is important, however, to put this in context. As do all surgeons, I work as part of a team. We all need to rely upon each other in order to properly carry out our duties. We need to share responsibility for checking and cross-checking each other. There are many things, which I assume have been done by members of the team. For example, when the patient arrives at theatre it is not my practice to check that the patient has received nil by mouth. I assume that this standard direction has been adhered to. I also would not specifically enquire whether a scalpel is available. It always is, and everybody knows that a scalpel is necessary. These are obvious examples.
>
> In [Mr A's] case, because this is not a new procedure, I made an assumption that all the equipment I needed would be available.
>
> …"

Subsequent developments

On 29 February 2000, the former Commissioner informed the Medical Council of New Zealand that she had received a number of complaints about Dr B and recommended that the Council undertake a competency review.

Dr B's annual practising certificate expired on 28 February 2001 and has not been renewed. On 18 June 2001, Dr E informed my staff that Dr B had submitted his resignation, which had been accepted by the hospital.

Independent advice to Commissioner

It is my usual policy, when seeking expert medical advice, to obtain advice from a peer of the provider named in the complaint, who is prepared to be identified in my report. My staff found it difficult to obtain a peer review in this case. The first general surgeon my staff approached had never performed this type of surgery and suggested I obtain advice from a cardiothoracic surgeon. My staff approached a second general surgeon who examined the information gathered during the investigation and advised me that he was unable to answer my questions. He too recommended that I seek cardiothoracic advice. I have, therefore, obtained advice from an independent specialist cardiothoracic surgeon, Dr Dard Bunton, in forming my opinion.

Dr Bunton advised me as follows:

> "I have been asked to advise the Commissioner as to whether [Dr B] provided [Mr A] with services of appropriate care and skill and in particular, to note the following points
>
> 1. Whether [Dr B] should have advised theatre staff that he required a Steinman pin for [Mr A's] surgery.
> 2. Whether [Dr B] should have checked that all equipment was available before proceeding with the operation.
> 3. Whether [Dr B] should have continued with surgery, once he found out that the correct equipment was not available.
>
> The Commissioner has also asked to receive comments on
>
> 1. [Dr B's] approach to repair of Pectus Excavatum.
> 2. The incidence of lung puncture in this type of surgery.
> 3. Whether [Dr B] met his responsibilities to the patient in a case such as this.
> 4. Any other matter which, in my opinion, should be brought to the attention of the Commissioner.
>
> The clinical details of the case, both pre-operative assessment, intra-operative conduct, post operative/immediate operative care and long-term follow-up have been documented and I have been provided with supporting documentation regarding this. It is not my intention to reiterate the clinical details of the case except to support comments and opinion.
>
> The majority of issues related to this case revolve around the experience of the surgical team, in dealing with this condition. With the information that I have been provided, the evidence is somewhat conflicting as to what the actual experience was, and this will certainly influence any opinions given.
>
> I note that [Dr B] is employed by [the public hospital] as a General Surgeon. I have no knowledge of [Dr B's] interest or training in the repair of Pectus Excavatum. Repair of Pectus Excavatum would normally be in the domain of a Cardiothoracic

Surgeon, in that this is a major procedure on the chest wall, but if a General Surgeon was appropriately trained in this procedure, then it would not be inappropriate for him to deal with such conditions. I would have to say however, that this is not common practice.

I have no knowledge of [Dr B's] training in this procedure. This I think should be clarified as it is quite critical to the case.

I note that the patient was referred by [Dr D] to General Surgical Outpatients, at [the hospital]. The referral was not made directly to [Dr B] and again, I would need to know whether [Dr B] dealt with this referral either because he had an interest in the condition or he happened to be the General Surgeon taking the Outpatient Referrals for that particular period of time.

In the correspondence I note that [Dr B] claims to have performed four procedures over a decade, prior to the operation in question. This is somewhat at variance with the information provided by theatre staff. They claim that [Dr B], at [the hospital] had performed two procedures since 1993, with [Mr A's] being the first procedure performed then a second procedure soon after [Mr A's] operation. It may well be that [Dr B's] previous experience was at another hospital and this needs to be determined.

The theatre staff claim that [Mr A's] operation was the first, and I note that there was a card system in place outlining the equipment required and details of the procedure. This card was in existence in 1996 and was rewritten (10/12/1997) because it was so old. I find it curious that there was a card in existence outlining the equipment required, for quite some period of time (perhaps years), prior to what was claimed to be the first procedure done at this hospital. I note that the card was also modified after [Mr A's] operation with reference to making sure that the correct length of pin was available. I am concerned that the presence of a card prior to [Mr A's] operation, implies there had been previous procedures done, but this is at variance with the information given by theatre staff.

The question of the number of procedures done is critical, when giving an opinion in regards to whose responsibility it was to have the correct pin size available. If there had been a number of these procedures done prior to [Mr A's] operation and this was a routine procedure, then it would not be unreasonable for [Dr B] to expect the appropriate sized pin to be available, as this would be part of the normal operative requirement of the condition.

If this was indeed his first procedure at this hospital with this condition then I believe it is the Surgeon's responsibility to make sure that the appropriate equipment was available prior to proceeding. Also, if the operations were done relatively infrequently, then it would be prudent, although not an absolute requirement, for a Surgeon to check that various pieces of equipment are available.

The procedure performed by [Dr B] would not be considered standard although it does obey some of the principles regarded as essential, to correct a Pectus deformity. It would be common practice I believe, to leave a sub-sternal support, not necessarily a Steinman pin, in place for six months to a year. These are left subcutaneously and are removed after chest-wall rigidity has been achieved. In the procedure performed by [Dr B], it would appear that the length of pin was thought to be quite critical by him, and again it would not be unreasonable for him to make sure the correct pin size was available. If he believed however that there would be a selection of pins available and he had performed this procedure previously, it would not be an unreasonable expectation on his behalf that the correct pins would be available to him in theatre.

If this procedure was the first that [Dr B] had done, then clearly he may have been perceived to have misled the patient and subsequently the theatre staff. It is quite acceptable for a Surgeon to perform his first operation of any condition. Clearly, in any Surgeon's career this will happen as the range of procedures he/she performs expands. This is quite acceptable as long as they have had prior training under supervision and feel comfortable in doing the procedure. Also it is acceptable for Surgeons within their own field to perform new operations, which are usually variations on procedures done previously. This is done in one's own field of expertise. Cardiothoracic Surgeons receive training in treatment of conditions of the chest wall, including benign and malignant conditions. It would not therefore be unreasonable for a well trained Cardiothoracic Surgeon to embark upon a corrective operation. It would be uncommon however for General Surgeons to receive this training and unless [Dr B] had a specific interest and had received specific training I would not expect this procedure to be performed by a General Surgeon. There is a need to clarify his previous training and expertise in performing this operation.

I read [Dr B's] operation note and followed his technique carefully. The insertion at the site of the Steinman pin happens quite late on in the procedure. Certainly, by the time it was discovered he did not have the appropriate length of pin available, it was too late to stop the surgery and he had no option but to use the pin that was available.

By using a pin that was not of adequate length, there were difficulties in stabilisation and hence this started to migrate. This required the pin to be removed on the fourth postoperative day. Some three days following this, a second larger adequate pin was reinserted. This required reopening the operative field and placement of the second pin. After the second procedure the patient was noted to have a pneumothorax whilst in recovery and it was dealt with by the surgical registrar by the insertion of an intercostal drain. I note that [Dr B] was not notified of this at the time but was notified some later time and hence I think the reason for him claiming in correspondence that the pneumothorax happened 24 hours after the second operation. This would appear to be the time when [Dr B] was informed of its occurrence.

It had been assumed that the pneumothorax was due to a lung laceration by the reinsertion of the second pin. This would not necessarily be the case. It may well be that the parietal pleura was breached, allowing air to enter the pleural cavity and thus cause a pneumothorax. Breaching the pleura would not be uncommon during operations to repair Pectus Excavatum. This pneumothorax quickly resolved and there were no continuing air-leaks from the lung. This would at least suggest that this was not a significant laceration of the lung. The pneumothorax does not imply any inadequacy or fault in the surgical technique.

Inadequacy of pain control has clearly been a major issue. However it was acknowledged by [Mr A] and his parents that whilst in hospital the pain was well controlled, with what appears to have been a PCA pump. With the switch to oral Panadeine on discharge pain relief was inadequate. I note that patient was discharged on the 24th February and readmitted on the 28th February with what was claimed to be intractable pain. It was the opinion of [Dr B], that pain was related to the presence of the pin and therefore the pin was subsequently removed.

[Dr B] has claimed in correspondence that premature removal would result in a compromised result of surgery, which was discussed with the patient and his parents. It is claimed by [Mr A] and his parents that this discussion did not take place. It had been explained to the parents preoperatively that it was his technique to leave the pin in for at least six weeks. The pin was subsequently removed eighteen days following his original surgery.

There are a number of issues arising from this. It is my opinion that whether the pin was in for eighteen days, four weeks or even six weeks, this would not make any difference in this case. It is the experience of those who deal with this condition commonly that if one is to leave a metal support in, it stays in for six months to one year. The development of rigidity of the chest wall after this procedure is somewhat a slow process and it would be my belief that some form of support should stay in for a prolonged period of time.

It is also my experience that the presence of the metal bar (pin) is not a cause of pain. It is stabilising the chest wall and it would be my concern that the pain in [Mr A's] case was not related to the pin. I do note that when he was readmitted on the 28th February, blood tests showed he had a white cell count of 14.8×10^3, with a neutrophilia. The neutrophils showed toxic vacuolation, which implies the presence of an infective process. I do note however that [Mr A] was afebrile at this stage. It would be my concern that the pain was more likely to be related to an infection rather than the presence of a pin. The pain however could have truly been due to inadequacy of pain relief following what is a major surgical procedure.

[Dr B] attributed the pain to [Mr A] having had Scheuermann's disease. As far as one can tell from the opinions of the Orthopaedic Surgeon and a Back Specialist, that if [Mr A] had Scheuermann's disease then it was quite a mild case. It was certainly the opinion of one expert, that there was little evidence of him having

Scheuermann's disease in the first instance. It would be my opinion that the pain complained of by [Mr A] was not related to his Scheuermann's disease. It is important to note that these opinions regarding [Mr A's] back have been gained after the surgery in question.

It has been difficult to get 'a handle' on the question of the infection in [Mr A's] surgical wound. I note that on discharge from hospital (24/2/1997) [Mr A] was afebrile and his white blood count was normal. He was readmitted on the 28/2/1997 with severe pain. At this stage he had an elevated white cell count and as stipulated before, the neutrophils showed toxic vacuolation, which indicates the infective process.

In the material given to me there are wound surveillance sheets. They are a little difficult to interpret but it appears that the question of an infection, particularly in the left pin-site, was raised on the 4/3/1997. This was the day after [Mr A's] discharge from hospital after his second admission to hospital. It was noted that there was a moderate to heavy pus coming from the site and the swab grew a light growth of Pseudomonas. The swabs were repeated on the 16/3/1997 and gave the same result and again the wound surveillance sheet records moderate to heavy pus.

[Mr A] was reviewed by [Dr B] on the 13/3/1997, who noted that he had a minor-resolving pin tract infection and at this stage the antibiotics were stopped, due to what [Dr B] interpreted as being an allergy. The parents are at variance with [Dr B's] observations and they claim that there were signs of significant infection present, at this stage.

A swab (as stated above) on the 16/3/1997, grew a light growth of Pseudomonas. This was taken from the left chest. Subsequently and due to a direct request by the patient, he was reviewed by another surgeon on the 20/3/1997. On the 24/3/1997 a wound infection declared itself and this was drained by [Dr Q]. The central part of the sternal wound was drained, as was the left pin-site. [Dr Q] noted that there was erythema between the pin-site and the central chest wound. Subsequently, he re-reviewed [Mr A] on the 1/4/1997, which showed the central wound had opened to reveal quite a deep infection. It is interesting to note that with drainage of the infection, [Mr A's] discomfort appeared to lessen. This strengthens my opinion that [Mr A's] pain may have been due to an infection.

On the 4/4/1997, he appeared to improve and finally on the 20/5/1997, the wound was noted to be well healed.

I am concerned that [Mr A's] pain may indeed have indicated an infection, albeit low grade. [Mr A] was at risk of developing a wound infection, in that he had a second operation for replacement of a pin that had been exteriorised for some four days. Moreover I note that [Mr A] appeared to have relatively bad acne on the chest wall and was on Roaccutane. Both of these situations may have increased the likelihood of him developing a post operative wound infection. However, he was reviewed by

[Dr B] on the 13/3/1997, who appears not to have been greatly concerned about any infective process.

There was a question raised as to whether [Mr A] had Marfan's syndrome and clearly he is a tall, thin lad. He has no major stigmata of Marfans in the eyes or the cardiovascular system and therefore it is unlikely that [Mr A] does have Marfans syndrome.

- The following is my opinion as to the issues raised by the Commissioner

1. Whether [Dr B] should have advised the theatre staff that he would require a Steinman pin for [Mr A's] surgery:

I am unable to give a firm opinion regarding the above question. The key to this issue is the number of procedures previously performed by [Dr B], that is, his experience and that of the theatre staff. The information given by [Dr B] and by theatre staff is at variance and I think it is critical to this case, that both [Dr B's] and the theatre staff's experience be completely clarified.

If this was [Dr B's] first procedure with the theatre staff involved in this case, and with the condition, then he should have checked that the appropriate pin was available. However, if this was a routine procedure and the theatre staff had had previous experience in doing this with [Dr B], then it would not be unreasonable for [Dr B] to expect the appropriate equipment to be available.

2. Whether [Dr B] should have checked that all the equipment was available before proceeding with the operation.

Again I am unable to give a firm opinion regarding this. The issues are exactly the same as outlined in Point 1.

3. Whether [Dr B] should have continued with the surgery once it became clear that the equipment was not available.

On reading [Dr B's] operation note and understanding his technique of repair in this condition, it is my opinion that by the time the pin was required, the operation was too far advanced to allow [Dr B] to stop surgery.

4. [Dr B's] approach to repair of Pectus Excavatum.

It would be fair to say that [Dr B's] approach to repair of Pectus Excavatum would not be a standard approach. It does however obey certain principles that are required to correct this defect. Without an understanding of [Dr B's] training and previous experience with this technique and with this condition, I am unable to give a firm opinion regarding his approach, other than to say I would not regard it as standard.

5. In regard to the incidence of lung puncture in surgery.

It is my opinion that the development of pneumothorax following repair of Pectus Excavatum is not a rare phenomenon and usually does not lead to any complications. The pneumothorax may develop because the parietal pleura has been breached, which allows air to gain entry to the pleural cavity, therefore causing a pneumothorax or may be due to direct lung injury, with a resulting air leak. The former would be the more common of the two mechanisms. It is my opinion that the development of a pneumothorax does not imply inadequate surgical technique, or anything less than appropriate skill and care.

6. Whether [Dr B] met his responsibilities to the patient.

In a case such as this, I am unable to form a firm opinion. This is because of issues in response to Point 1. It is crucial that these issues are clarified so that an appropriate opinion may be formed.

7. Issues relating to pain relief and the development of post-operative infection.

This does not necessarily imply there has been inadequate skill involved in the patient's care by [Dr B]. Pain relief is managed in different ways in differing hospitals. In some institutions, pain relief is in the hands of the Pain Team, which is not necessarily part of the Surgical Team. It would be important to clarify whether such a Pain Team existed in the hospital, before a firm opinion is given.

It is quite likely that the pain that caused [Mr A's] readmission on the 28/2/1997 was due to a postoperative infection. Clear indications of a wound infection declared itself on the 24/3/1997 when [Dr Q] drained the wound. By this stage, [Dr B] was no longer looking after the patient, at the patient's request. The development of a wound infection postoperatively does not, in itself, imply inadequate skill and care on behalf of the operating Surgeon."

Dr Bunton raised issues about Dr B's qualification and experience and asked for clarification of the number of operations Dr B had performed. In the first instance my Office approached Dr B but he was on extended sick leave. I therefore asked the hospital for its opinion about Dr B's qualification and training in this type of surgery, and in particular the following questions:

- The hospital employed Dr B as a general surgeon. What training did Dr B have for Mr A's operation? What steps did the hospital take to ensure that Dr B was appropriately trained to perform an elevation of pectus excavatum?

Dr E, on behalf of the hospital, advised me that the hospital had no understanding of Dr B's training because, at the time, it did not have a credentialling process or peer review process in place, which would have provided this information. Dr E advised me that most other hospitals in New Zealand did not have a credentialling programme operating in 1997.

Furthermore, if Dr B considered that he was not qualified to perform the surgery he could have referred Mr A to a cardiothoracic surgeon at another hospital.

As far as Dr B's experience is concerned, Dr B advised Dr E, during the hospital's investigation, that he (Dr B) had successfully performed four pectus excavatum operations in the last ten years. Dr E has been unable to substantiate this claim. The hospital's records (from 1993) show that Mr A's was the only pectus excavatum operation he performed since 1993. This is substantiated by the theatre nurse in charge of orthopaedic theatre, Ms G, who has worked in orthopaedic theatre since 1992. Ms G said that she has never been asked for a long Steinman pin and has had no cause to specifically order one.

Responses to Provisional Opinion

Dr B
In response to my provisional opinion, Dr B forwarded a letter of apology for Mr A, and his lawyer advised me that because of ongoing health problems he has decided to surrender his practising certificate.

The public hospital
In response to my provisional opinion, the District Health Board to which the hospital is attached, made the following submission in relation to the card system in place in 1997 to record availability of surgical equipment in theatre:

> "[The hospital's] Operating Theatre Department has successfully used a Cardex system for many years. Information is recorded on these cards in order to ensure that information is not lost. We agree it is inevitable that staff will move on and therefore the Cardex will retain the information. In this case, the list of requirements on the operating card included 'Steinman pin set'. The whole set was therefore available which excluded the unusual requirement for a 28cm Steinman pin. This was not recorded on the card as it was not requested. We disagree with the statement 'in my opinion the system was designed to fail'. The system is in fact robust."

Code of Health and Disability Services Consumers' Rights

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

RIGHT 4
Right to Services of an Appropriate Standard

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

Opinion: Breach – Dr B

Right 4(1)

Under Right 4(1) of the Code Mr A had the right to have services provided with reasonable care and skill. In my opinion Dr B did not provide Mr A with surgical services with reasonable care and skill, and therefore breached Right 4(1) of the Code.

Availability of equipment
My surgical advisor did not have a clear view on whose responsibility it is to ensure all necessary equipment is available before surgery commences. A number of factors need to be considered, including the number of operations the surgeon had previously performed at the relevant hospital. In my advisor's opinion if the operation was routine for Dr B at the hospital, it would have been reasonable for him to expect the equipment to be available for Mr A's operation. If Mr A's operation was his first procedure with the theatre staff involved and with this condition, Dr B should have checked that the appropriate equipment was available prior to proceeding; if the operation was done relatively infrequently, it would have been "prudent" to check that the necessary equipment was available. Since the length of the pin was crucial to the success of the operation, my advisor thought it would have been "not unreasonable" to have made sure that the correct pin was available.

There is conflicting evidence about the number of pectus corrections Dr B has performed at the hospital. Dr B recalled performing about four in ten years but the hospital's records indicated that Mr A's was only the second of this type of operation Dr B had performed since 1993. Clearly the operation was not routine and was performed very infrequently.

With respect, I believe that my surgical advisor understates the position in suggesting that it is "not unreasonable" for a surgeon to check the availability of a piece of equipment crucial for the success of an operation performed very infrequently. From the patient's viewpoint, it is surely unreasonable *not* to check and ensure that the necessary equipment is available. If the surgeon is not able to check personally, he or she should delegate this task. But the surgeon remains responsible for ensuring that the equipment (and theatre staff) needed for the operation are available, and that it is safe to proceed.

My advisor said that if Dr B considered the size of the pin was crucial to the success of the operation it would have been reasonable for him to check that the correct size pin was available prior to surgery. In failing to ensure that the equipment needed to perform Mr A's operation was available before he commenced surgery, Dr B failed to exercise reasonable care and skill and breached Right 4(1) of the Code.

Surgical competence

My independent advisor said that Dr B's operation technique could not be considered standard practice for the correction of a pectus excavatum, but that he followed some of the principles required of the more orthodox approach to pectus repair. Attempting a different surgical technique is not necessarily unreasonable if it is recognised as an appropriate treatment option by a responsible body of medical opinion within the relevant speciality, and it is within the technical competence of the doctor proposing to use it. My surgical advisor commented that repair of pectus excavatum is a major procedure in the chest wall, and that repair using Steinman pins "would not be considered standard". My advisor noted that it would be uncommon for a general surgeon (as opposed to a cardiothoracic surgeon) to receive specific training in pectus excavatum repair and unreasonable for a general surgeon to attempt such a procedure without specific training. My advisor's comments raise questions about Dr B's competence as a general surgeon to perform specialist surgery. I have been unable to determine what special training, if any, Dr B had in performing a pectus excavatum repair operation. Dr B assured me that he had performed pectus excavatum corrections successfully in the ten years preceding Mr A's operation and was, therefore, experienced in the procedure. However, the fact that Dr B performed the operation so infrequently raises questions about his skill and expertise, particularly in the absence of any training to develop or maintain the necessary skills.

I am not satisfied that Dr B had the surgical competence necessary to perform a pectus excavatum repair on Mr A, particularly since he employed a non-standard technique that he had used very infrequently. Accordingly, in my opinion Dr B failed to exercise reasonable care and skill, and therefore breached Right 4(1) of the Code.

Pain control

Correction of pectus excavatum is recognised as a painful operation. Post-operative pain control is an important consideration in planning for this type of surgery. Dr B explained this to Mr A and his family. The desire for good pain management was a factor in their choice of hospital.

In the immediate post-operative period Mr A's pain was well managed by the hospital's pain team. Until the time of his discharge, on 24 February, his pain was controlled with paracetamol and Tilcotol. However, once Mr A went home his pain worsened and was not controlled with this medication. On 26 February, Mrs F telephoned Dr B about Mr A's pain. Dr B did not arrange to examine Mr A's wounds, investigate the likely cause of his pain or prescribe any other analgesia for him.

Mr A's pain persisted and on 28 February he was re-admitted to the hospital with intractable acute pain, which was only relieved with intravenous morphine. Dr B did not see Mr A until the following day when he removed the pin. There is no evidence that Dr B

attempted to resolve Mr A's pain issues prior to, or subsequent to, the removal of the pin on 1 March.

On 19 March Mr C and Mrs F requested that Dr D refer them to another surgeon because of Dr B's failure to appropriately respond to Mr A's pain.

Dr B failed to respond appropriately to Mr A's persistent pain. Mr A's pain should have been carefully assessed and advice sought on the most appropriate way of managing it, from a specialist in pain management if possible. The hospital employed a speciality pain team at the time. I accept that Dr B did contact Dr L from the pain team about Mr A's pain management (although he failed to document this). However, I am not satisfied that, as the primary surgeon, Dr B took adequate steps to investigate the causes of Mr A's pain and manage it appropriately. In my opinion, Dr B's omissions amount to a failure to care for Mr A appropriately, and constituted a breach of Right 4(1) of the Code.

Wound infection

My surgical advisor noted that Mr A ran substantial risk of developing a wound infection, given that he had a pin protruding beyond the surface of his wounds, and endured two attempts at securing the pin. Dr B must have recognised this risk, as he commenced Mr A on Augmentin on 19 February when there were no outward signs of infection such as an elevated temperature.

The first indication that Mr A's wound could be infected did not appear until 21 February, when a nurse changing Mr A's dressings reported infection. Dr I examined Mr A's wounds that day and noted pus in the chest drain wound. Although a swab was taken no organisms were isolated. Mr A was on Augmentin at the time. Mr A was discharged on 24 February without antibiotics.

On 28 February Mr A was admitted to hospital in extreme pain and blood tests suggested the possibility of an infection. When Dr B removed Mr A's pin on 1 March he took a wound swab because the pin site was oozing a "purulent-looking" discharge. This swab, which was not reported on until 6 March, grew a Pseudomonas species. However, there is no evidence that Dr B followed up the swab result, or that he was aware of this pathology.

On 4 March the district nurse noted that Mr A's left pin site wound was infected, and recommended Mr A take antibiotics. There is no indication that Mr A was given antibiotics at that time.

Dr B saw Mr A at his follow-up appointment on 13 March. Dr B noted that Mr A had discharge at the left pin site, and recorded a low grade infection. Dr B also noted that Mr A was on Augmentin for the infection and stopped it because he thought Mr A could be developing an insensitivity. Dr B suggested, in his letter to Dr D, that Dr D prescribe Augmentin. My investigation has been unable to establish who prescribed Mr A's antibiotics between 3 March, when he was discharged from the hospital, and 14 March, when Dr D prescribed penicillin for what he thought was a streptococcal infection.

My advisor noted that the development of a wound infection post-operatively does not, in itself, imply inadequate skill and care on behalf of the operating surgeon. However, there is evidence that Mr A's wounds displayed signs of infection as early as 28 February. Dr B saw Mr A on 1 March and 13 March but failed to treat Mr A's infection adequately despite his ongoing pain. Dr B took a swab of the wound site on 1 March, because it was discharging, but he failed to act upon the results. Where a doctor orders a test and receives the results it is imperative he or she acts upon those results. In failing to follow up the results of the swab, Dr B did not provide services with reasonable care and skill. Accordingly, in my opinion Dr B breached Right 4(1) of the Code.

Other comments

Removal of Steinman pin
My independent advisor said that whatever method Dr B used to support the chest wall, the support must be left in place for no less than six months and up to 12 months, to ensure healing and chest stability. Dr B, in his preliminary discussion with Mr A and his mother, advised them that the pin would remain in place for four to six weeks.

Dr B removed the pin from Mr A's chest 18 days after the first operation. Mr A's chest had not healed enough to be sufficiently stable and it was predictable that the effectiveness of the operation would be compromised. Dr B said that he removed the pin because Mr A wanted it removed. If removing the pin was not in Mr A's interests it would have been reasonable for Dr B to talk this issue through with Mr A and his family before taking any decision that would compromise the results of his surgery. Doctors are not required to comply with a patient's wishes for treatment that is clinically inadvisable.

My independent advisor said that it is his experience that the pin would have stabilised Mr A's chest wall, thus alleviating pain, rather than exacerbating it. In his experience Mr A's pain was more likely to be caused by his wound infections rather than the Steinman pin. In his opinion Dr B should not have removed it so soon. I accept this advice. If Mr A's pain had been better managed, he may have been able to tolerate the pin supporting his rib cage until such time as it could have been removed without jeopardising the results of his surgery.

Opinion: No breach – Dr B

Right 4(1)

It is my opinion that Dr B did not breach Right 4(1) of the Code in relation to the following matter:

Pneumothorax
My independent cardiothoracic surgeon advised me that the development of a pneumothorax following a repair of pectus excavatum is not a rare phenomenon and does not imply improper technique. The pneumothorax may develop because the parietal pleura has been breached in the normal course of surgery, or because of a direct lung injury. The former explanation is apparently the likely cause of Mr A's pneumothorax, which did not reveal itself until some time after his surgery and resolved quickly.

I accept that Mr A's pneumothorax does not imply any inadequacy or fault in Dr B's surgical technique. Accordingly, in my opinion Dr B did not breach Right 4(1) in relation to this matter.

Opinion: Breach – The Public Hospital

Vicarious liability
In addition to any direct liability for a breach of the Code, 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.

At the time of these events Dr B was an employee of the hospital. I have found Dr B in breach of the Code because he failed to ensure that the necessary equipment was available, operated beyond his level of surgical competence, failed to adequately assess and treat Mr A's post-operative pain, and failed to appropriately follow up and treat Mr A's infection.

The hospital advised me that Dr B was a trained specialist general surgeon and that, in 1997, it was not unusual for doctors in provincial areas to perform uncommon procedures that would normally be performed in a larger hospital by a specialist. At that time, the hospital, like other public hospitals throughout New Zealand, did not have formal systems in place to detect whether a doctor was practising within his or her level of competence. It appears to have relied on the professional integrity of its doctors to refer a patient to another specialist when faced with a situation beyond their own level of competence.

I accept that the hospital should have been able to rely on Dr B to refrain from performing surgery that was beyond his level of surgical competence. However, I have received no evidence that the hospital took even the most rudimentary steps to ensure that Dr B remained competent to practise as a general surgeon or to define the appropriate scope of his clinical practice.

The District Health Board advised me of the Cardex system in place in 1997 to record surgical equipment in theatre and any special instructions from individual surgeons. It appears that, although the list of requirements on the operating card for pectus excavatum

included 'Steinman pin set', the length of pin required by Dr B (28cm) was not recorded. It is inevitable that staff, who are familiar with the equipment preferences of individual surgeons, move on. Unless there is a robust system in place for recording those requirements, such information will be lost. In my opinion the public hospital's system did not reliably capture a comprehensive record of surgical equipment preferences.

My investigation has revealed serious deficiencies in Dr B's care of Mr A throughout the course of his surgery. In the circumstances, and in the absence of evidence that, as employer, it took reasonable steps to prevent the various shortcomings on the part of its general surgeon employee, the hospital is vicariously liable for Dr B's breaches of the Code.

Actions

I recommend that the District Health Board take the following actions:

- Provide a written apology to Mr A for breaching the Code of Health and Disability Services Consumers' Rights. This letter is to be sent to my Office and will be forwarded to Mr A.
- Review its systems in light of this report, in particular in relation to credentialling of medical staff and recording the theatre (including equipment) preferences of surgical staff.

Further actions

- In accordance with section 45(f) of the Health and Disability Commissioner Act 1994, I will refer this matter in relation to Dr B to the Director of Proceedings to determine whether any further action should be taken.
- A copy of this opinion will be sent to the Medical Council of New Zealand.
- A copy of this opinion with identifying features removed will be sent to the Royal Australasian College of Surgeons, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Addendum

The Director of Proceedings considered this matter and decided not to issue proceedings before the Medical Practitioners Disciplinary Tribunal or the Human Rights Review Tribunal.