Locum Pathologist, Dr B

Nelson Marlborough District Health Board

A Report by the

Health and Disability Commissioner

(Case 08HDC07231)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Overview

In late November 2006, Mr A, aged 67, was referred by his general practitioner to Nelson Hospital's Urology Department owing to persistently raised levels of prostate-specific antigen. During his initial review in March 2007 with urologist Dr C, Mr A requested further investigations, and an ultrasound and prostate biopsy were performed in late June 2007.

Mr A's biopsy slides were reviewed in July 2007 by Dr B, a short-term locum pathologist at Nelson Hospital. She reported that there was prostatic carcinoma on the right side of Mr A's prostate. Special stains were not requested to verify the diagnosis nor was a second opinion obtained from another pathologist. No multidisciplinary meeting was held to discuss the diagnosis.

In August 2007, Dr C discussed the biopsy results with Mr A, who indicated a preference for surgery. In December 2007, Mr A underwent a radical prostatectomy. Although the procedure itself was uneventful, Mr A experienced ongoing urinary incontinence following surgery requiring the use of several pads a day.

In January 2008, Mr A's prostatectomy slides were reviewed by another pathologist, who did not detect any evidence of malignancy. Instead, the histology showed "extensive areas of gland atrophy". Mr A was informed of the findings, and a sentinel event investigation was carried out.

This report considers the appropriateness of the care provided by Dr B and Nelson Hospital. It also discusses the systems in place at the time of the events in question and the remedial measures taken to prevent a similar event.

Parties involved

Mr A	Consumer
Dr B	Provider/Locum pathologist
Nelson Marlborough District Health Board	Provider
Dr C	Urologist
Dr D	Clinical Director
Dr E	Pathologist

Names have been removed (except Nelson Hospital/Nelson Marlborough DHB) to protect privacy. Identifying letters are assigned in alphabetical order and bear no relationship to the person's actual name.

Complaint and investigation

On 5 May 2008, the Health and Disability Commissioner (HDC) received a complaint from Mr A about the services provided by locum pathologist Dr B and Nelson Marlborough District Health Board (the DHB). The following issues were investigated:

- *The appropriateness of the care provided by Dr B to Mr A in relation to the reading and reporting of his prostate biopsy slides taken on 27 June 2007.*

- *The appropriateness of the care provided by Nelson Marlborough District Health Board to Mr A in relation to his prostatectomy.*

An investigation was commenced on 11 July 2008. Independent expert advice was obtained from pathologist Dr Ian Beer (attached as **Appendix 1**).

Information gathered during investigation

Referral to urologist
On 24 November 2006, 67-year-old Mr A was referred by his general practitioner (GP) to Nelson Hospital's Urology Department with a prostate-specific antigen (PSA)[1] reading above normal[2] of 7.6µg/L. The GP noted that Mr A's PSA levels had been "persistently raised" since 2003.[3] He also recorded that Mr A's prostate was "moderately enlarged"[4] and that he had a "slow flow of urine at times with hesitancy".

On 21 March 2007, Mr A was reviewed by urologist Dr C, who noted that his PSA level remained elevated (at 6.9µg/L). Various management options were discussed. Mr A requested further investigations and was placed on Dr C's urgent waiting list for a transrectal ultrasound and prostatic biopsy.

On 27 June 2007, Dr C performed the procedures by taking six needle core biopsies on each of the right and left lobes of the prostate gland. In his report to the GP, Dr C confirmed that Mr A's prostate was "moderately enlarged" and there were "characteristic changes of BPH [benign prostatic hypertrophy][5] present". The biopsies

[1] PSA is a blood test used to detect prostate cancer. The test measures a specific antigen normally secreted by the prostate. If cancer is developing, the prostate secretes greater amounts of prostate-specific antigen.

[2] The normal PSA range is 0–4.5µg/L.

[3] Mr A's PSA reading was 6.8µg/L on 6 October 2003 and 5.3µg/L on 21 April 2004.

[4] Prostate enlargement usually starts occurring in men at about 50 years of age. The enlarged gland squeezes the urethra causing problems in urinating.

[5] Non-malignant enlargement of the prostate gland. The enlargement occurs as a man grows older.

were sent for histology testing, and a further review to discuss the biopsy results was planned.

Dr B

Dr B has been a vocationally registered pathologist with the Royal College of Pathologists of Australasia (RCPA) for 15 years and has a special interest in prostate work. She worked in another public hospital as a consultant pathologist for over 10 years, and from then, she began working as locum pathologist for a medical laboratory and provided cover at two other laboratories.

Dr B's employment as locum

During the school holidays in July 2007, Dr B agreed to provide cover at the laboratory at Nelson Hospital.[6] Between 2 and 9 July 2007, Dr B worked as a locum pathologist at Nelson Hospital. She was employed at a consultant/senior medical officer level, and was expected to work independently without supervision. Dr B had not previously worked at Nelson Hospital. As she was a respected senior pathologist, and was well known to the resident pathologists in Nelson, no prior checks were considered necessary before Dr B started as a short-term locum at Nelson Hospital.

Orientation/induction of locum pathologists

Nelson Hospital has a small pathology department headed by Clinical Director Dr D. The induction process for locum pathologists involves:

- a tour of the laboratory, along with an introduction to technical and secretarial staff
- explanation of the workflow throughout the laboratory
- arranging computer passwords (hospital network, and histology lab system)
- basic introduction to histology lab system (data entry, screen/dictation, module/sign off/special stains)
- showing locums where cases awaiting reporting are stacked
- telling locums "anything you're not sure of, don't hesitate to ask. Any cases you aren't sure of, show to a colleague for their opinion."

The DHB confirmed that the above process was followed for Dr B.

Support for locum pathologists

According to the Chief Medical Advisor (CMA), "It was emphasised to [Dr B] at the start of her locum that she was working in a collegial environment, and that there was a low threshold for sharing cases of difficulty or interest, and that the other pathologists would be delighted to look at any of her cases falling into those categories with her." Four technical staff were on duty during the period Dr B worked at Nelson Hospital, and three other pathologists were rostered on duty. Dr D worked

[6] References to the laboratory in this report include Nelson Hospital's pathology department.

full time while the other two pathologists worked three days a week.[7] This meant that on four weekdays two other pathologists were available for consultation, and on Wednesdays, three pathologists were available.

The DHB commented that in its experience, "the best way to ensure that a locum pathologist is settling comfortably into the unfamiliar environment of a new laboratory, following an initial induction is to check frequently on their progress in the initial days of their locum". In relation to Dr B, the DHB stated:

> "On several occasions, in the first two days of [Dr B's] locum, and less frequently in the ensuing days, [Dr D] called in to her office to make enquiries of her progress. In the morning of the first day of her locum, some trial and error was required to ensure that correct recording levels were set up to allow her to dictate her reports. On the afternoon of the same day, she asked [Dr D] to demonstrate once again how to order special stains using the [histology lab system] information system, which he readily did. At no time during the course of the six days did [Dr B] indicate to him that she was unhappy with any aspect of the work she was undertaking, or that she felt that she was still experiencing difficulties in using [the software], or that she felt stressed by a high workload. At all times during her locum, she appeared confident and cheerful, and coping well with the work. Whenever [Dr D] asked her as to how she was getting on, her reply was always that she was getting on well."

Dr B has a different recollection of the degree of collegial support available to her at Nelson Hospital. She was not required to work under supervision during her six-day locum, and was "left fairly much to [her] own devices". In relation to seeking input from other colleagues in the laboratory, Dr B stated:

> "… [Dr D] was frequently not in his office when I wanted to ask a question, and the other pathologist worked part-time. The part-time pathologist assisted me several times on Tuesday and Wednesday to work with the computer, but I could not ask the technicians because they were not familiar with the pathologist screens. I approached the laboratory manager on one occasion for help, but he too was unfamiliar with the pathologist screens."

Dr B added:

> "For all the years I have practised, I have always helped my colleagues by patiently and consistently reviewing their work, discussing problems, and offering support when mistakes were made. These mistakes were reviewed before the patient underwent any major surgical or therapeutic procedure. The huge difference here is that I did not have the support of colleagues in Nelson when it came to reviewing my cases for major surgery.

[7] One was rostered to work on Monday, Tuesday and Wednesday, while the other was rostered to work on Wednesday, Thursday and Friday.

> … There were certainly times where I couldn't find anyone that could help with technical problems."

Allocation of work within laboratory

Nelson Hospital's laboratory does not operate a formal system of workload allocation. In other words, pathologists are not allocated a quantum of work which becomes their work of the day and which they are required to report within a given timeframe. Instead, the daily output of cases from the laboratory needing to be reported is pooled and placed in a central area between the pathologists' offices, awaiting reporting. The distribution of work takes place on a "self service" basis; the pathologists who are available for reporting duties help themselves to trays of unreported cases, usually taking one or two trays of cases at a time. They take the cases into their office, where they work through the cases they have taken, at their own rate. The responsibility for ensuring that the work is completed is shared jointly between the pathologists.

The DHB considers this system "equitable" as it "allows for the fact that different pathologists work at different rates". The DHB commented that "it also allows for the fact that different trays of cases carry cases of differing complexity" and enables the pathologist to work through each tray of cases "at a self determined rate, comfortable to them without feeling pressurised that there is a set workload allocation that they have to complete by the end of the day". The DHB confirmed that this system of workload allocation was "explained clearly to [Dr B] on the first morning of her locum", and stated that "at no time was it indicated to her that it was her responsibility that the stack of unreported work be completed".

Review of prostatic biopsy results

During her six days of locum work at Nelson Hospital, Dr B reported a total of 236 cases. The audit trail of Dr B's microscopy work showed that she reported 79 cases on her first day (2 July 2007) and 57 on her second day (3 July 2007). She requested special stains (immunoperoxidase studies[8]) in 19 cases and recorded the opinion she sought from other pathologists in three cases. Over the course of her locum, Dr B reported on 17 prostate cases. Prior to reviewing Mr A's biopsy slides, Dr B reported on four other prostate cases. She recalls requesting special stains for one of them, and her request being actioned by technical staff on the afternoon of 3 July 2007. In contrast, Dr D clarified that Dr B requested special stains on two of the 17 prostate cases she reported on, and that those requests were made on 3 and 4 July 2007.[9]

[8] A form of immunostain used in molecular biology, medical research and clinical diagnostics. Immunoperoxidase reactions refers to a sub-class of immunohistochemical procedure whereby an enzyme known as peroxidase is used to catalyse a chemical reaction to produce a coloured product which is examined under the microscope.

[9] Dr D confirmed that technical staff actioned the request on the afternoon of the day they were made. The special stains were despatched to the main laboratory in another city for staining, and the stained slides were returned to Nelson Hospital's pathology department on 6 and 9 July 2007.

Dr B reviewed Mr A's slides on the afternoon of 3 July 2007. In her report the next day (4 July 2007), she recorded her findings as "1. Right Prostate: Adenocarcinoma[10] Gleason Grade 3 + 3 = 6.[11] 2. Left Prostate: No evidence of malignancy." Dr B explained:

> "[Mr A's] slides were part of the workload that awaited me on the Monday morning of my first day (2 July 2008), and included cases that were delayed in their reporting by the other pathologists. There were cases that were at least three days old (the standard reporting time is completion by three days), and one breast case that I remember that was quite delayed. I cannot recall how many cases there were waiting for me.
>
> When I examined [Mr A's] slides, my thoughts were either malignant (adenocarcinoma — pattern three) or non-malignant (atrophy[12]). This differential is usually readily resolved with immunohistochemistry.[13]"

However, immunohistochemical staining was not requested for Mr A's slides. Dr B explained:

> "For many years I have worked in laboratories that routinely process immunohistochemistry on prostate biopsies with the first H&E[14] slides. This routine processing of immunohistochemistry was not the practice at Nelson Hospital; a separate request was required. Having been shown how to enter a request by [Dr D] under my login, it took me at least the first day to learn how to order the special stains independently, as the computer system in Nelson was quite different to the triple G system used in [other laboratories]. The Nelson system allowed incorrect entries to be made without warning or rejection. This created additional pressure on me; I not only had to deal with a

[10] A form of cancer that involves cells from the lining of the walls of the organ.

[11] The grade given to an area of prostate cancer, reflecting the level of differentiation of the tumour. It ranges from 1 to 5 with 5 having the worst prognosis. The Gleason score (ranges from 2 to 10 with 10 having the worst prognosis) is the sum of two Gleason grades given to the most common and second most common pattern of prostate cancer seen in the tumour.

A pathologist examines the biopsy specimen and attempts to give a score to the two patterns. The primary grade represents the majority of tumour (which has to be greater than 50% of the total pattern seen), and the secondary grade relates to the minority of the tumour (less than 50%, but at least 5%, of the pattern of the total cancer observed). These scores are then added to obtain the final Gleason score. Gleason grade 3 indicates that the tissue still has some recognisable glands but the cells are darker. At high magnification, some of these cells have left the glands and are beginning to invade the surrounding tissue.

[12] Wasting away or diminution in the size of a cell, tissue, or organ.

[13] Immunohistochemical staining is widely used in the diagnosis of abnormal cells such as those found in cancerous tumours.

[14] Hematoxylin and eosin. H&E is a popular staining method in histology involving the application of the basic dye hematoxylin (which derives blue-purple stains) and an alcohol based acidic eosin (which derives bright pink stains).

> back log of unreported cases when I started on the Monday, but new cases were also building up while I tried, with little support, to get my head around Nelson's computer system.
>
> Around Wednesday [4 July 2007], I remembered that special stains had to be checked on a pattern three (adenocarcinoma) case. I reviewed a batch of prostate slides, on the Thursday and Friday of that week (technical staff helped to retrieve the numbers and slides from the files). I reviewed as many pattern three cases as we could find, and I assumed that the stains must have been done and the case correctly verified by myself.
>
> Now, I realise I must have entered the request incorrectly and the slides never appeared on my desk, as the immunohistochemistry was not done until after the prostatectomy.
>
> With deep regret I realise that the special stains were never done, and this case missed my checking."

Dr B stated that it was "impossible for [her] to find any slides by [her]self, as [she] had no knowledge of their storage arrangements". She specifically recalls asking a female staff member for help with finding slides. In contrast, none of the four technical staff recall helping Dr B retrieve any prostate slides during her locum.

Further urology review in August 2007

On 1 August 2007, Mr A saw Dr C to discuss the biopsy results and the options open to him. Mr A indicated a preference for surgery but wanted more time to consider it.

In September 2007, Mr A saw Dr C again. He confirmed his decision to proceed with the prostatectomy, and an anaesthetic review was arranged. However, owing to recent episodes of chest pain, the surgery was postponed for three months while Mr A underwent coronary investigations.

Prostatectomy in December 2007

On 18 December 2007, Dr C performed Mr A's radical prostatectomy[15] at Nelson Hospital.[16] The surgery was uneventful, and a specimen of the prostate was sent for histology testing. Following the prostatectomy, Mr A experienced mild abdominal distension secondary to flatus[17] but this improved with bowel motion. During the ward round on the morning of 20 December, the urology house officer noted that Mr A's observations were stable, and a decision was made to discharge him that day. In his discharge letter to Mr A's GP, the urology house officer documented Mr A's follow-up care as "removal of his staples in 7–10 days, trial removal of catheter in 2 weeks, outpatient appointment with [Dr C] in 8 weeks with histology results".

Review of histology results in January 2008

On 11 January 2008, pathologist Dr E reviewed Mr A's slides from the prostatectomy in December 2007 and the biopsies in June 2007, and reported:

> "The prostate gland shows extensive areas of gland atrophy within the peripheral zone. There is no evidence of high grade PIN[18] or invasive malignancy.
>
> Sections of seminal vesicle are unremarkable.
>
> The previous core biopsy has been reviewed (…, 27/6/07). On review, the area in specimen #1 (right prostate) that was most likely interpreted as adenocarcinoma is an area of atrophy. The presence of a basal cell layer has been confirmed using immunohistochemistry to HMWCK.[19] The focus in question is negative for p504s.[20]"

Dr E discussed her findings with Dr C, who scheduled an urgent appointment with Mr A that day. Mr A was informed of the test results carried out by Dr E. Dr C apologised to Mr A on behalf of the DHB and explained that the DHB would be investigating the incident further. The details of the discussion were recorded in a letter to Mr A's GP

[15] Removal of the entire prostate including its capsule, as well as the seminal vescicles.

[16] Prior to the surgery, there was no discussion between Dr B and Dr C about Mr A's biopsy results nor was any multidisciplinary meeting held. This is discussed further below.

[17] Wind or gas generated in the stomach or other cavities of the body.

[18] Prostatic intraepithelial neoplasia. PIN is the most likely precursor of prostatic adenocarcinoma, and is divided into low grade PIN and high grade PIN. A low grade PIN is not considered to be significant whereas further investigations should be carried out if high grade PIN is found.

[19] High Molecular Weight Cytokeratin. HMWCK is the most commonly used basal cell-specific marker in prostate cancer.

[20] P504S is a prostate cancer-specific gene that encodes a protein involved in the beta-oxidation of branched chain fatty acids. Immunohistochemical detection of the P504S gene is a sensitive and specific marker of prostatic carcinoma.

in which Dr C noted that Mr A's surgical wound had healed well but he was experiencing "poor" urinary control and dysuria.[21]

Sentinel event investigation
In February 2008, the DHB conducted a sentinel event investigation. The Sentinel Event Core Group comprised the CMA, Dr D and the Director of Nursing. As part of the investigation, Mr A's slides from the original biopsy (June 2007) were re-read by three resident pathologists at Nelson, all of whom agreed that the biopsy showed benign cell atrophy, with no evidence of carcinoma.[22] Although immunoperoxidase studies would have provided additional supporting evidence that Mr A's case was benign, all three pathologists agreed that immunoperoxidase studies were not required to reach that conclusion.

Mr A's biopsy slides were also sent to Dr B, and she was asked to provide information for the investigation. In her letter of 1 February 2008 to the CMA and Dr D, Dr B commented that Mr A's case was "tricky" and outlined the circumstances underlying the misdiagnosis. She acknowledged that the special stains were never done, and that Mr A's case "missed my checking". According to her usual practice, "special stains would have been done automatically at the time of sectioning, and, a second pathologist would have reviewed the case in the [following] week's urology meeting". Dr B expressed her "deepest regret" to Mr A and his family, Dr C, the laboratory and Nelson Hospital, and said that Mr A's case was "a recurring nightmare that [she] had always hoped to avoid".

Apology
On 7 February 2008, the CMA and Dr D wrote to Mr A to outline the findings of the sentinel event investigation and to apologise on behalf of the DHB.

An apology was also sent to Mr A by Dr B on 7 February 2008 in which she outlined the reasons for her errors. Dr B commented that she "will certainly carry the anguish of this error with [her] from this time onwards".

Further urology reviews
On 12 February 2008, Dr C reviewed Mr A again and stated:

> "I saw [Mr A] for review today now 8 weeks following his surgery. He has made a good general recovery although his urinary control is still poor requiring 3–4 pads per day. He is diligently performing his pelvic floor exercises and I have reassured him that this situation will continue to improve steadily with time. …"

[21] Painful urination typically described as a burning or stinging sensation.

[22] Apart from Dr E, the other two pathologists viewed Mr A's slides without any prior knowledge of the circumstances of the case.

On 5 June 2008, Mr A attended another follow-up appointment with Dr C, during which Mr A and Dr C discussed his written complaint to the DHB. Dr C acknowledged the impact the incorrect diagnosis had on Mr A and his family, including his slow return to urinary control. Dr C explained that he had placed "full reliance" on Dr B's report, and "d[id] not have the expertise to be able to question the accuracy of the report as written". He assured Mr A that his urinary control would continue to improve, and planned a further review for six months' time.

Subsequent correspondence between Dr B and the DHB

In March 2008, the CMA wrote to Dr B to outline his concerns that Mr A had received two different explanations (from Dr B and the DHB) about the circumstances resulting in the misdiagnosis. The CMA disagreed with Dr B that Mr A's case was "tricky". He also stated:

> "… It is not our practice to leave 'tricky cases' for locums to complete. Any 'tricky' cases are completed by the pathologist who takes initial responsibility for them. In the rare event that the responsible pathologist was going on leave before the case was able to be completed, they would hand the case over formally to one of the other permanent pathologists for completion, usually with annotations as to the point of difficulty.
>
> None of the 79 cases reported by you on the first day of [the] locum could be described as 'tricky'. Scrutiny of the cases reported reveals that they were all of a routine nature.[23] …
>
> … [I]t is a moot point as to whether this case is indeed 'tricky'. It has been reviewed by [Dr D], [Dr E], and [another pathologist]. They each concluded independently that there was no evidence of malignancy, and that the changes represented atrophy. [Two pathologists] viewed the sections without any prior knowledge of the circumstances of the case. None of our pathologists felt that immunoperoxidase studies were required to reach that conclusion, although they agreed that immunoperoxidase studies would give additional supporting evidence as to the benign nature of the case."

In April 2008, Dr B wrote to the CMA to clarify several matters and reiterated her view that she considered Mr A's case "tricky". Dr B stated:

> "… [R]eports highlight that any case of adenocarcinoma or atrophy in the prostate should be approached with caution ('as a tricky case'), as it is not a straightforward diagnosis, and immunoperoxidase stains should be readily ordered. … [T]hese studies are routinely ordered in other centres. …"

[23] The CMA clarified that Nelson Marlborough DHB did not consider Mr A's biopsy as "routine". Rather, the cases referred to as "routine" were the 79 cases Dr B reported on the first day of her locum (2 July 2007).

Dr B concluded:

> "… I agree I made a mistake and apologise without reservation. I do not resile from that apology. This case has, however, highlighted a major deficiency in the systems at your hospital. I am pleased that you have already noted the deficiency and instigated a second review process."

Relevant issues

Dr B's false positive reporting rate
As part of the investigation, Dr B was asked to provide information about her false positive reporting rate. She stated:

> "[The other hospital I had worked at] keeps records of reporting 'incidents' and I can assure you that I have not had a minor incident report[24] written against me, let alone a false positive report incident.
>
> In over ten years of busy surgical pathology practice at [the other hospital] (where I was often the only pathologist for weeks on end), and equally as many years working for [other laboratories] I have never had a false positive malignant report. These things stand out in one's career and it would not be anything I would forget.
>
> …
>
> There have been occasional instances of minor discordance following review by other pathologists, resulting at times in amendments being made to my reports, and usually before final reporting. Most often this was where an expert opinion was sought from overseas. At no time was a diagnosis changed from benign to malignant or vice versa. This is part of a normal working pathologist's practice.
>
> I have often consulted other colleagues before a report was finalised, and we would sometimes agree to differ on minor points. This is part of a normal working pathologist's practice. I have not had the experience of a major discordance such as a false positive diagnosis."

[24] Dr B clarified that the incident report system she refers to is part of the official records kept at the other hospital.

Multidisciplinary meeting
The District Health Board does not have any formal process for reviewing biopsy results at a multidisciplinary meeting before a patient undergoes surgery. Instead, the urologist and the pathologist attend a clinico-pathological meeting along with the specialist urology nurse on the first Friday of every month, to discuss the pathology of all urological resections along with any other cases requested by the urologist.

The DHB stated:

> "… The possibility of reviewing all biopsy pathology before surgery at clinico-pathological meetings was discussed but was considered impractical. The monthly meeting is not sufficiently frequent to allow timely discussion of all biopsy cases, although some are discussed in this forum. Furthermore there has been a longstanding practice whereby urologists meet individually with pathologists to review biopsy pathology before planning major surgery."

Remedial measures
Since the events in question, the DHB has implemented all the recommendations from the sentinel event investigation. The pathologists working in Nelson have reviewed their processes relating to biopsy specimens, including prostate and other malignancies. Two pathologists are now required to report all prostate biopsies[25] and, under a new policy, all breast core biopsies are routinely signed out by two pathologists. However, it is not considered necessary for two pathologists to sign out biopsies from other organ systems, including skin, gastrointestinal, gynaecological, lymphoreticular and liver. The pathologists have also agreed that there should be a low threshold for seeking a second opinion from colleagues in difficult cases. In addition, the laboratory has agreed to comply fully with the DHB's policy for the credentialling of locum specialists. However, since the sentinel event review, the DHB has not employed any locum pathologists.

ACC
On 18 January 2008, Mr A's GP completed a treatment injury claim on behalf of Mr A. The injury was stated as "inappropriate prostatectomy following incorrect biopsy diagnosis".

On 28 August 2008, ACC accepted the claim for treatment injury and noted that there had been an "unnecessary removal of the prostate". In reaching its decision, ACC obtained external clinical advice from independent urologist Dr Andre Westenberg and a pathologist.

Dr Westenberg commented:

> "[Mr A] did not have urinary incontinence prior to his radical prostatectomy. Although he has not had formal urodynamic studies it is likely his

[25] Implemented in January 2008.

> incontinence is in large part due to sphincteric incompetence and he would not have developed this without the surgery.
>
> …
>
> Although incontinence following a radical prostatectomy is common, it is usually temporary. Most patients regain 'social' continence within three to six months (although they may still leak a small amount with exertion in some positions).
>
> Ongoing incontinence requiring the use of daily pads occurs in around 10–15% of patients. It is often not completely clear why some patients don't recover their continence. … Older men, such as in this case, are more likely to have a thinner sphincter which contains more collagen, but many older men achieve perfectly satisfactory continence.
>
> I do not believe that it is an ordinary consequence that his prostate biopsy slides were read incorrectly and as the incontinence is a direct result of those slides having been read incorrectly then, in my view, this case meets the criteria for Treatment Injury. If the slides had been correctly interpreted as showing only benign tissue then surgery which caused his incontinence would not have been carried out.
>
> ..."

Dr Westenberg also commented:

> "… I know that in my institution all biopsies that are considered to show prostate cancer have confirmatory specialised staining (which does not appear to have occurred in this case)."

The ACC pathologist advised:

> "[Mr A] has suffered a physical injury. He underwent unnecessary moderately complicated and lengthy surgery; namely a radical removal of his prostate gland and associated structures based on a false positive diagnosis of malignancy in his assessment transrectal prostate biopsies. Radical prostatectomy is associated with a significant rate of morbidity and [Mr A] is suffering from one such complication of the surgery, namely loss of urinary continence."

In relation to interpreting the biopsy slides, the ACC pathologist commented:

> "The injury [Mr A] [suffered] was not a necessary or ordinary consequence of treatment. While false negative rates of cancer in prostate core needle biopsies are of the order of 12–25%, false positive diagnoses are very uncommon

> occurring in less than 1 in 500 to 1 in 1000 biopsies. Such false positive diagnoses occur in situations of low grade carcinomas where benign processes (atrophy, adenosis, sclerosing adenosis, reactive changes to previous biopsy or therapy, presence of normal seminal vesicle) are mistaken for malignancy.
>
> Reporting pathologists should be well aware of these mimics and be vigilant to their presence, especially where 'malignancy' occurs very focally within the tissue. The presence of malignancy can be easily confirmed in these situations by the use of a simple immunohistochemical stain which is commonly used by reporting histopathologists in these cases. Because the consequences of a false positive report can be very significant (namely radical surgery) most histopathologists would also show the case to a second pathologist who can also add their name to the report. It is also common practice to review material with an urologist in a multidisciplinary meeting ahead of radical prostate surgery.
>
> None of these 'check' methods seem to have been employed in the reporting of the biopsies in question; had they been it is unlikely the diagnosis of malignancy would have been sustained. These tests were applied post hoc to the material after examination of the whole prostate gland failed to reveal cancer and confirmed that the changes seen in the initial were benign. ..."

Responses to provisional opinion

Mr A
Mr A commented on the impact the prostatectomy had on his life:

> "Prior to intervention by Nelson Marlborough DHB, I was living a fully functional life with a reasonable expectation that I would continue to do so into old age. As a consequence of the substandard care I received I am now seriously incapacitated and my quality of life continues to be grossly impaired."

Dr B
Dr B clarified several matters in the "information gathered" section of my report. In relation to her decision to accept the locum at Nelson Hospital, Dr B stated:

> "I would not have accepted the brief six-day locum if [the laboratory CEO] and the [organising pathologist] had not expressed such desperation at finding cover for that period, and, if I had known the computer system was different or multidisciplinary meetings at Nelson Hospital so haphazard. I had frequently locumed in [other centres], where the laboratory computer system is the same

> as the system I used regularly, and multidisciplinary review meetings rigorous."

Dr B confirmed that she attempted "to order the immunoperoxidase stains on Mr A's biopsy that would have rapidly and definitively diagnosed the non-malignant nature of Mr A's biopsy". She said:

> "In my usual practice these are performed routinely. Difficulties entering the request, no one to ask, no rejection or warning from the system if incorrectly entered, and the distraction of numerous other cases to finish, all hindered my usual efficiency. The turnaround time from request to completion is three days, in which many other things happened. I do, however, recall speaking to the head technician … at an early stage about whether requests had come through, or, whether I should resort to a paper system for tracking."

Dr B reiterated her "deepest regret and apologies that this misdiagnosis was made" and "take[s] responsibility for the diagnostic error". She said that this experience has been "harrowing" and that she is "no longer reporting prostate biopsies".

The DHB

The CMA responded on behalf of the DHB and clarified several matters in the "information gathered" section of my report. The DHB considers that it "complied with its responsibility, with respect to Dr B's induction, in a satisfactory manner".

In terms of the volume of work Dr B completed during her locum, the CMA commented:

> "… [I]t should be clear that [Dr B] was able to determine her own rate of work during the course of her work (as was appropriate for an experienced pathologist). The fact that her volume of completed work in the first two days of her locum represented, in Dr Beer's words an 'extraordinarily high' caseload was a situation entirely of her own choice. It is incorrect to say that she was 'required' to undertake a heavy workload.
>
> We noted the high throughput of cases undertaken by [Dr B] in the first days of her locum. On the afternoon of the first day of her locum, when [Dr D] was checking on [Dr B's] progress, to make sure she was comfortable with the way things worked, [Dr D] mentioned that she had reported a substantial volume. She replied (he cannot remember her exact words) to the effect that the cases were straightforward in nature. We took the fact that [Dr B] had reported a large volume of work in that time as an indication that she was comfortable with the reporting systems, and as an indication of her experience.
>
> If Dr Beer feels that the high volume of work undertaken by [Dr B] was a contributory factor in the misdiagnosis of [Mr A's] slides, we feel that, given

> the fact that she was able to decide the pace and volume of her work, it is not appropriate for NMDHB to share that responsibility."

In relation to the signing out of prostatic biopsies, the CMA provided the DHB's survey of laboratories in New Zealand undertaking prostatic biopsy and noted that in 10/16 of laboratories, the biopsy report was "signed out by a single pathologist without further review of the sections". In other words, there was "wide variation in practice across the country". However, in light of the sentinel event review, the CMA reiterated that Nelson Marlborough DHB now has a second pathologist to "scrutinise prostatic biopsies and for both pathologists to sign out the report, thus taking joint responsibility for the diagnosis". In other words, the second pathologist "takes the same professional responsibility as the first pathologist for the diagnosis provided" and "must subject the slides to the same degree of rigorous scrutiny as the first pathologist".

In terms of the advantages of multi-disciplinary meetings, the DHB sought Dr C's comments. He stated:

> "… It is my experience from previous involvement in MDM … [multi-disciplinary meetings] that only pathologists have the expertise to debate the validity of the report. It should not be necessary to hold an MDM meeting simply to remind the Pathology Department to independently double read the slides.
>
> I do think there would be some merit in holding MDM meetings prior to major treatment decisions however there are a number of issues to consider in setting these up if they are to be effective. Firstly given the very significant pressure of time from diagnosis to treatment, that is either necessary or perceived to be necessary by the patient, they would need to be held on a regular (perhaps weekly) basis. Clearly this is a very significant investment for the hospital to make. Secondly the major participants in these meetings are those who are involved in the treatment of patients rather than allied specialties such as pathology and radiology. The key specialists that could have an input in urological oncology, apart from the urologists themselves, would be radiation oncologists who only visit Nelson infrequently and medical oncologists who have a specific interest in urology. The logistics of setting this up would be very difficult and in reality I am not sure whether there would be any benefit for the vast majority of patients with prostate cancer."

In relation to the use of immunostains for all prostatic biopsies as a routine, the CMA noted that this was not a common practice in New Zealand, and commented:

> "The weight of evidence indicates that the decision to apply immunostains is an individualised, and clinical decision rather than one related to clinical governance. We would not feel comfortable implementing it."

Review of providers' responses

Expert pathologist Dr Ian Beer was asked to review the providers' responses to my provisional opinion. Dr Beer's comments are attached as **Appendix 2**.

Opinion: Breach — Dr B

Standard of care

Dr B is a well regarded and experienced senior pathologist with a special interest in prostate work. At the time of these events, she had worked in a large public hospital as a consultant pathologist for over 10 years, and then as a locum pathologist for a medical laboratory company, and provided cover in two other centres. During the school holidays in July 2007, Dr B agreed to provide cover at the laboratory at Nelson Hospital as the organising pathologist was "desperate" to find a locum. This was the first time Dr B had worked in Nelson.

During her six days as a locum (2–9 July 2007), Dr B reported 236 cases, of which 17 were prostate cases. One of these was Mr A's biopsy performed several days earlier (on 27 June 2007) by urologist Dr C to investigate Mr A's persistently elevated PSA levels.

Mr A's biopsy slides were reviewed by Dr B on the afternoon of her second day (3 July 2007) and reported the following day (4 July 2007). Based on her review, Dr B made a definite diagnosis of prostatic carcinoma on the right lobe of Mr A's prostate, and recorded her findings as "adenocarcinoma Gleason Grade 3 + 3". In fact, the histologic appearances of the biopsy were typical of post-atrophic hyperplasia, which is a "well documented mimic of prostatic cancer".

I note the advice of ACC's pathologist that most pathologists would ask a second pathologist to verify their findings before making a definite diagnosis. There is no indication that Dr B did this at the initial microscopic examination or subsequently. The occasions when Dr B sought input from other colleagues were mainly for computer-related matters.

My pathology expert, Dr Ian Beer, considered that Dr B provided suboptimal care in making a definitive diagnosis of "adenocarcinoma Gleasen Grade 3". Misdiagnosis "is a recognised pitfall of interpretation of needle core biopsies of [the] prostate". Dr Beer advised that needle core biopsies of the prostate can be "tricky" and required a "considered approach to the histology".

According to my expert, it would have been preferable for Dr B to phrase her report as "atypical glands suspicious for carcinoma … awaiting immunoperoxidase studies".

My expert also noted that false positive diagnoses of prostatic cancer "have a significant effect on the patient who may undergo unnecessary surgery or irradiation".

Another suboptimal aspect of Dr B's care was that immunoperoxidase studies were not conducted before reporting Mr A's biopsy. According to Dr B, she "did attempt to order the stains on [Mr A's] biopsy". However, owing to several hurdles including the "difficulties entering the request" on a new and unfamiliar computer system, the fact that there was "no one to ask" and the "distraction of numerous cases to finish", the special stains were never requested. Dr Beer commented that this was "regrettable" as immunostains are "critical ancillary tests in distinguishing adenocarcinoma from benign lesions in needle core biopsy material". Special stains were a further check that could have been used to verify Dr B's findings, and reveal the false positive diagnosis. I note that Dr B was "not averse" to ordering immunostains since she did so on 19 of the 236 cases she reported.

Prior to Mr A's case, Dr B successfully ordered stains on another prostate case, and her request was actioned by the laboratory on the afternoon of 3 July — within the same time frame as when she reviewed Mr A's slides. Dr B recalled that on her third day of her locum she needed to order special stains for pattern three cases such as Mr A's. Apparently, she retrieved (with technical staff's assistance) a batch of prostate slides previously reviewed, and assumed incorrectly that the special stains had been ordered and that she had checked these slides.

I note Dr Beer's comment that Dr B's workload was "extraordinarily high for the first two days of locum". According to the District Health Board, this was "a situation entirely of [Dr B's] own choice" (discussed below). She also had to adjust to an unfamiliar laboratory and computer system. It was in this set-up that Dr B made an incorrect call of prostate cancer — her only diagnostic error during this locum and, apparently, in the course of her career. My expert noted that "the pathology of postatrophic hyperplasia has been a pitfall that numerous pathologists have fallen into" not helped by the lack of a multidisciplinary meeting to review malignant diagnoses (discussed below). I accept that Dr B "intended to perform [her] best on behalf of [Mr A], but circumstances have conspired to cause a misdiagnosis that was not reviewed before radical prostatectomy was performed".

The fact remains that Dr B misinterpreted Mr A's biopsy slides and did not order the special stains to verify her findings, nor consulted other pathologists for a second opinion. In these circumstances, I conclude that Dr B did not exercise reasonable care and skill and breached Right 4(1) of the Code.[26] Dr Beer advised that Dr B's departure would be viewed with mild disapproval by her peers. Dr B accepts my findings and deeply regrets her diagnostic error.

Opinion: Breach — The DHB

Safeguards

Mr A underwent unnecessary surgery on the definitive diagnosis of one pathologist. The wrong diagnosis could have been detected had the DHB instituted several quality safeguards to "catch the error" before it was too late.

At the time of the events in question, there was no requirement on pathologists to verify a positive diagnosis with a colleague before reporting it. This has changed as a result of Mr A's case, and the DHB now requires the input of two pathologists when reporting prostate biopsy results. Dr Beer advised that this practice provides "a satisfactory internal audit check so long as the signing out is performed independently by two pathologists, rather than concurrently". In response, the DHB clarified that the second pathologist "takes the same professional responsibility" and must subject the slides being reviewed to "the same degree of rigorous scrutiny as the first pathologist".

Secondly, there was no formal process for reviewing biopsy results at a multidisciplinary meeting before a patient undergoes surgery.[27] Given that prostatectomy is a major procedure, Dr Beer considered it prudent to have some form of review preoperatively, although he accepted that the current practice varies across New Zealand. My expert commented that the DHB's monthly clinico-pathological meeting, to discuss the pathology of urological resections, is a retrospective rather than a prospective meeting. The DHB agrees that there is "some merit in holding multidisciplinary meetings prior to major treatment decisions" but outlined several issues including significant time pressures from diagnosis to treatment, and the difficult logistics in setting up such meetings. While I acknowledge these concerns, I share Dr Beer's view that it is important to have "some form of regular dialogue" as

[26] Right 4(1) of the Code of Health and Disability Services Consumers' Rights states that "every consumer has the right to have services provided with reasonable care and skill".

[27] For another HDC decision highlighting the value of multidisciplinary meetings, where there was found to be no meetings to discuss pathology before surgery, see case 04HDC02992 (accessible at www.hdc.org.nz).

this "enhances clinico-pathological correlation and understanding, and optimises management".

Despite the apparently longstanding practice of urologists meeting individually with pathologists to review biopsy pathology before planning major surgery, such a meeting was unlikely to have happened in Mr A's case because Dr B left Nelson Hospital after her six-day locum. In any case, Dr Beer was of the impression that the meetings were an "ad hoc practice in reality". His view is supported by the ACC pathologist, who commented that "the tests were applied post hoc to the material after examination of the whole prostate gland failed to reveal cancer".

Patients need to know that their biopsy results will be interpreted accurately in order to guide the surgeon (in this case, the urologist) in planning the next course of action. I appreciate the risks of defensive pathology practice and over-ordering of tests and investigations. Nonetheless, there is considerable force in Dr Beer's "ethical rule of thumb" for his own clinical practice: "What if this was my father's / brother's / colleague's or my biopsy?" Dr Beer considers that most responsible pathologists would have had the prostate biopsy results reviewed by a second pathologist or performed a further test to corroborate the findings. As my expert notes, "[Mr A] was not offered this luxury." Similarly, a prudent surgeon will check that the pathologist has taken all reasonable measures to ensure that their diagnosis is reliable, by taking steps to verify their findings such as conducting further tests and seeking a second opinion.

I consider that a district health board's duty of care to a patient facing surgery for suspected prostate cancer requires, as a minimum, that a second pathologist reviews the biopsy pathology and confirms the positive diagnosis, accepting shared professional responsibility for taking due care in the diagnosis. Ideally, a multidisciplinary meeting should also be held (involving the primary reporting pathologist and the surgeon) before the surgery is undertaken.

In my opinion, Mr A was let down by the DHB, which did not have robust systems in place to detect incorrect pathology results. In these circumstances, the DHB breached Right 4(1) of the Code.

Vicarious liability

A district health board may be vicariously liable for the acts or omissions of its staff.[28] In my view, the DHB did not take reasonable steps to reduce the risk of a misreading of prostate pathology.

Dr Beer recommended that the DHB review its induction process for locum pathologists before requiring them to undertake a heavy workload. The DHB responded that it had complied satisfactorily with its responsibility to induct Dr B

[28] Section 72(2) Health and Disability Commissioner Act 1994. See also Skegg & Paterson (eds), *Medical Law in New Zealand* (2006), para 2.8.2.

properly. The DHB stated that it is up to the pathologist to determine his or her own rate of work and considers that the "extraordinarily high" caseload Dr B completed for the first two days of her locum was "a situation entirely of her own choice". The DHB also stated that the system of workload allocation was "explained clearly to [Dr B] on the first morning of her locum". Despite this, it appears that Dr B worked under considerable pressure during her locum — reflected in her comments about the backlog of unreported cases when she started her locum (on 2 July) and the new cases that were building over that week. I am not satisfied that the DHB fully discharged its responsibility in its induction of Dr B as a locum pathologist.

Dr B was not assisted by the systems operating in Nelson Hospital's pathology department, which did not have the same checks and balances as other laboratories where she had worked. For example, the system at Nelson Hospital required immunoperoxidase studies to be ordered specially whereas (in the words of Dr B), other laboratories "routinely process immunohistochemistry on prostate biopsies with the first H&E slides".

Although Dr B was shown how to use the computer system and how to make independent requests, it took her at least the first day to learn to order special stains. This added to the pressure she faced in reviewing a backlog of unreported cases. Dr B later discovered that she had requested the immunoperoxidase studies incorrectly but the computer system at Nelson Hospital did not alert her to her error, unlike computer systems in other laboratories. I share Dr Beer's view that "more liberal utilisation of laboratory technology (referring to immunophenotyping studies) and commitment to multidisciplinary audit meetings would help minimise these types of misdiagnosis". According to my expert, such checks and balances have "significant downstream consequences" in ameliorating the risk of a misdiagnosis. I agree with Dr Beer that there is no point carrying out a sentinel event investigation if a review of such checks and balances is not carried out.

In my view, it would not be fair for Dr B to carry the sole legal responsibility for the shortcomings in Mr A's case. The DHB must also accept its share of responsibility. I conclude that the DHB is vicariously liable for Dr B's breach of the Code.

Actions taken

Dr B has acknowledged her mistake and apologised in writing to Mr A. She has reiterated her "deepest regret for [Mr A]" and stated that she will "carry the anguish of this error with [her] from this time onwards". Dr B has discontinued all surgical pathology as the primary reporting pathologist, and stopped doing locums and prostate work.

The DHB has also apologised to Mr A. It has conducted a sentinel event investigation, and implemented the findings to prevent a similar event. All resident pathologists have reviewed their practice and there is now a lower threshold for seeking a second opinion from colleagues in difficult cases. In addition, since January 2008, two pathologists are required to sign out prostate and breast biopsies.

Recommendations

I recommend that the DHB:

- (*in the event it re-considers employing locum pathologists in future*) review its induction of locum pathologists (to ensure the locum is well oriented to the laboratory and its computer systems) and the caseload assigned to locums.

- give further consideration to holding multidisciplinary team meetings to discuss pathology before major surgery.

Follow-up actions

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

- A copy of this report, with details identifying the parties removed except the names of Nelson Hospital, Nelson Marlborough District Health Board, and the experts who advised on this case, will be sent to the Royal College of Pathologists of Australasia, the Royal Australasian College of Surgeons, the Cancer Society of New Zealand, all district health boards, and all medical laboratories that provide histology services, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix 1 — Expert advice from pathologist Ian Beer

"I have read and accept the 'Guidelines for Independent Advisors' (Appendix H) together with reading the summary, clinical notes, correspondence and reports that were supplied by [the] HDC Investigator. I have examined the microscopic slides of the prostatic core biopsies (17207209, 27/6/07) and the subsequent prostatectomy specimen (17213122, 19/12/07).

[At this point, Dr Beer includes a précis of the background of the case which has been omitted for the purpose of brevity.]

Documents reviewed

- *[Mr A's] complaint with supporting documents, marked 'A' (Pages 1–18).*
- *HDC's letter to Nelson Marlborough DHB seeking its response, marked 'B' (Page 19).*
- *Nelson Marlborough DHB's response to HDC dated 12 June 2008 with supporting documents, marked 'C' (Pages 20–35).*
- *HDC's notification letter to [Dr B], marked 'D' (Pages 36–38).*
- *[Dr B's] response to HDC, marked 'E' (Pages 39–43).*
- *HDC's notification letter to Nelson Marlborough DHB, marked 'F' (Pages 44–46).*
- *Nelson Marlborough DHB's response to HDC dated 1 August 2008, marked 'G' (Pages 47–52).*
- *[Mr A's] slides in a casing marked 'H'.*

Questions asked of expert advisor

1. *Please comment generally on the standard of care provided to [Mr A] by:*

   (a) [Dr B];
   (b) Nelson Marlborough DHB

2. *[Dr B] states that the differential between false positives and negative malignancies in prostate core needle biopsies 'is notorious for being difficult'. Please comment on the appropriateness of her view.*

3. *Please comment on the appropriateness of [Dr B's] decision not to order immunoperoxidase studies before interpreting and reporting [Mr A's] biopsy results. Should immunoperoxidase studies have been requested?*

4. *Please comment on the absence of a multidisciplinary meeting before [Mr A] underwent his prostatectomy. Should a multidisciplinary meeting have been held?*

5. *Did Nelson Marlborough DHB have adequate checks in place to ensure the correct interpretation and reporting of prostate biopsy results?*

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

7. *Please comment on the changes that Nelson Marlborough DHB has made since the events in question. In your view, have the concerns about [Mr A's] care been adequately addressed?*

8. *(If applicable) Please outline any recommendations you may have to address the concerns in this case.*

9. *Are there any aspects of the care provided by [Dr B] and/or Nelson Marlborough DHB that you consider warrant additional comment?*

EXPERT ADVICE REQUIRED:

1. Standard of Care Provided to [Mr A]:

a) [Dr B]

[Dr B] provided suboptimal care in making a definitive diagnosis of 'adenocarcinoma, Gleason Grade 3' on the right prostatic core biopsy, when the histologic appearances are typical of post-atrophic hyperplasia (PAH). This is a recognised pitfall in the interpretation of needle core biopsies of prostate, quoting page 53, table 4.1 of 'Biopsy Pathology of the Prostate', Bostwick and Dundore 1997 (publishers Chapman and Hall Medical Services): 'Atrophic acini with epithelial proliferative changes; easily mistaken for adenocarcinoma due to architectural distortion'. The text expands '… the morphological similarity of PAH and carcinoma creates the potential for misdiagnosis, sometimes resulting in unnecessary prostatectomy (Cheville and Bostwick, 1995). To avoid this potentially tragic misinterpretation, the pathologist should have an understanding of this extreme morphological variant of atrophy'. [Reference 1]

Cheville and Bostwick's paper lists characteristics of PAH and low grade adenocarcinoma that may help the pathologist to differentiate these entities. [Reference 2]

Immunoperoxidase studies are critical ancillary tests in distinguishing adenocarcinoma from benign lesions in needle core biopsy material. In particular, High Molecular Weight cytokeratin, P504S and P63 immunostains are useful practical tools that can assist in making the correct diagnosis. The failure to use any immunoperoxidase tests, or to review the H&E slides with another pathologist at the initial microscopic examination, constitutes suboptimal care in this case.

b) Nelson Marlborough District Health Board

The Nelson Marlborough DHB could use this event to review its governance of clinical policies. Two issues arise from this case:

i) Fostering of Multi-Disciplinary Meetings (MDMs) to review management of patients proposed for radical surgery, chemotherapy and/or irradiation where there is inherent treatment-associated morbidity. These meetings require another review of the diagnostic material including biopsy histology, imaging studies and clinical factors. This collaborative review approach allows opportunity for a clinical audit check, before embarking on significant and expensive treatment protocols. In major hospitals in New Zealand, MDMs are becoming standard practice. However, in smaller centres and in non-hospital based medical practice, the logistics of physically organising regular meetings of several senior medical/surgical consultants can be problematic. This can be overcome by a District Health Board that facilitates MDMs by making provision for a meeting venue, imaging and microscopic projection equipment, staffing commitment to collate diagnostic material (histology slides, x-rays and other imaging studies), contractual commitment from clinicians, radiologists, pathologists and oncologists to regularly attend meetings and secretarial support to document case management decisions.

   There are several examples of MDMs that have been in successful operation in New Zealand for many years.

ii) Orientation of locum pathologists: The Quality Management system of inducting locum pathologists warrants review to assure the locum is comfortable with the workings of the laboratory and the Laboratory Information System (LIS) before being subjected to heavy caseloads. For a locum pathologist familiarising herself in a new laboratory environment, [Dr B's] caseload was extraordinarily high for the first two days of the locum. The audit trail of [Dr B's] microscopic work was detailed as follows:

79 cases	2/7/07	
57 cases	3/7/07	The day of [Mr A's] biopsy report
31 cases	4/7/07	
20 cases	5/7/07	Morning only
11 cases	6/7/07	Afternoon only

31 cases 9/7/08

The average for each of the first two days work, 68 cases, projects to 13,600 cases per FTE per annum (assuming 200 effective working days per year).

2. Appropriateness of [Dr B's] view regarding difficulty of needle core biopsies with respect to false positive and false negative interpretation:

It is my experience that needle core biopsies of prostate can be 'tricky' and, together with the serious therapeutic procedures (particularly radical prostatectomy, radio-active implants or irradiation) contingent on the diagnostic interpretation, that is why a considered approach to the histology is imperative. False negative results are less serious because the opportunity for repeat biopsies (if clinical suspicion for malignancy is high) may allow for a more definitive diagnosis in the fullness of time. Prostatic cancer is often an indolent disease and a later diagnosis is unlikely to compromise the patient's management.

The entity of ASAP (Atypical Small Acinar Proliferation, reference Meiers et al, Pathology Case Reviews 2008; 13: 129–134) is a better diagnosis when the evidence for cancer in needle cores is borderline. [Reference 3] The patient may be followed up and further biopsies may prove or disprove the diagnosis.

False positive diagnoses of prostatic cancer have a significant effect on the patient who may undergo unnecessary surgery or irradiation. Regrettably, false positive diagnoses of prostatic cancer do occur and the review by Berney et al (TransAtlantic Prostate Group 2007) referred to by [Dr B] reported a false positive rate of 7.5% in a cohort of 1791 cases between 1990 and 1996 in the UK (Histopathology, Vol 51, No. 4, Oct 2007: 452–457). [Reference 4]

Postatrophic hyperplasia (PAH) is a well documented mimic of prostatic cancer; along with atypical adenomatous hyperplasia, sclerosing adenosis, clear cell cribriform patterns in hyperplasia, basal cell hyperplasia, granulomatous prostatitis and prostatic intra-epithelial neoplasia.

'Pathologists routinely encounter prostate biopsies with atypical features that are not diagnostic of carcinoma. It is prudent to have a diagnostic category for cases where the biopsy findings do not fulfil the criteria for cancer, but are highly suggestive of malignancy. Urologists on the receiving end of this diagnosis should be aware of the clinical implications of such a diagnosis and the currently recommended biopsy strategies for a repeat biopsy.' Reference: Vakar-Lopez et al, Pathology Case Reviews Vol 8, No. 2, March/April 2003. [Reference 5]

In the case of [Mr A], [Dr B's] report would have been better phrased as 'atypical glands suspicious for carcinoma … awaiting immunoperoxidase studies'. However, the report was definitively phrased as showing adenocarcinoma.

3. Appropriateness not to order immunoperoxidase studies:

[Dr B's] decision not to order immunoperoxidase studies, in particular, a High Molecular Weight Cytokeratin (HMWCK), was regrettable as this would have refuted a malignant diagnosis. It appears that [Dr B] was not averse to ordering immunostains as she had ordered immunostains on 2 of 17 cases during the locum period. The record indicates that [Dr B] reported 6 cases as benign, 3 cases as atypical and 9 cases as malignant. So [Dr B] appears to have taken on board the Vakar-Lopez advice to report atypical glands suspicious but not diagnostic for malignancy as a valid diagnostic category.

In [Mr A's] case, [Dr B] has made a malignant diagnosis rather than an atypical diagnosis based on the Haematoxylin and Eosin (H&E) appearances and not deemed it necessary to order immunostains.

In New Zealand the standard practice to order immunoperoxidase stains varies. Some institutions routinely perform HMWCK along with the H&E, while others base the decision to perform immunostains depending on the H&E appearances. Immunostains are an expensive item to routinely test at an average $25 per HMWCK or $40 per P504S/P63 immunostain. Depending on the funding of the institution, different policies will apply. [Dr B] mentioned that she was familiar with the practice of 'laboratories that routinely process immunohistochemistry on prostate biopsies with the first H&E slides'. The Nelson-Marlborough DHB would be advised to consider reviewing their funding policies in relation to routine HMWCK immunostaining of needle core biopsies of prostate.

4. The absence of MDM before patients undergo prostatectomy:

As a general principle it is prudent for some form of review to be performed before major therapeutic procedures (such as radical surgery, irradiation therapy, and chemotherapy) are embarked upon. However, the current practice in New Zealand in relation to prostate cancer varies from:

(a) the Urologist accepting the report of a single Pathologist and on that basis alone advising the patient on his management options, to

(b) formal and regular MDMs involving Pathologists, Urologists, Oncologists and Radiologists.

Some labs adopt a middle ground by instituting a review of malignant needle core biopsies internally before issuing a malignant report.

The Auckland Hospital Gynaecologic Oncology Group, Middlemore Bone and Soft Tissue Tumour Panel and Breast Screening Aotearoa provide excellent examples of MDM in deciding on patient management programmes.

There is a gender imbalance in New Zealand demonstrated by the funding of breast and cervical cancer management in contrast to prostate cancer

management. Colorectal cancer impartially affects both genders and like prostate cancer is funded in a reticent fashion.

5. Did Nelson Marlborough DHB have adequate checks in place to ensure the correct interpretation and reporting of prostate biopsy results?

[The CMA's] response to the HDC of 1 August 2008, Section 4 on page 2 sums up the answer to this question. 'There is no formal process for reviewing biopsy results at a Multi-Disciplinary Meeting before a patient undergoes surgery.' The monthly meeting that is held appears to be an after the event (post 'urological resections') affair. In other words the meeting is retrospective rather than prospective.

Furthermore, [the CMA] writes 'the possibility of reviewing all biopsy pathology before surgery at clincopathological meetings was discussed but was considered impractical'.

This is an example of the reticence afforded to the male gender that is currently not tolerated in treating women with breast or cervical cancer.

The statement that '… there has been a longstanding practice whereby urologists meet individually with pathologists to review biopsy pathology before planning major surgery' did not apply in [Mr A's] case. My impression is that this would be an ad hoc practice in reality.

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

The fundamental issue of concern demonstrated by this case is that needle core or punch biopsies that are performed to look for a malignant diagnosis may be thwarted by sampling and interpretation problems. Most cases are plainly positive or negative and fit with the clinical presentation and organ imaging findings. However, a small number of cases are problematic and that is where the collaborative approach between medical disciplines can minimise false positive and false negative results and enhance patient management.

7. Changes implemented by Nelson Marlborough:

These are detailed in [the CMA's] letter to HDC dated 1 August 2008 in Section 8 on pages 3&4. The practice of signing out particular cases (prostate and breast biopsies) by two pathologists would provide a satisfactory internal audit check so long as the signing out is performed independently by the two pathologists, rather than concurrently. One pathologist reporting the initial diagnosis and another reviewing case for presentation to medical colleagues at an MDM allows for two separate processes on the patient's biopsy material.

Sometimes, one pathologist's views may lead a second pathologist into a similar thought process if the biopsy material is interpreted concurrently by the two pathologists.

My advice is intended to support routine review of needle core biopsies of reported malignant cases in preparation for a Multi-Disciplinary Meeting. However, I accept that this is not currently standard practice for prostatic cancer throughout New Zealand.

8. Recommendations:

The potential for false positive diagnosis of malignancy in needle core biopsies needs to be recognised to avoid unnecessary surgery, radiotherapy or chemotherapy. Biopsies sampling a variety of lesions (e.g. pigmented skin lesions, radial scar lesions of breast, prostatic hyperplasia) may be problematic for the morphologist. All of the morphologic criteria for cancer should be identified before making a definitive diagnosis.

i) Similarly, the potential for false negative diagnosis resulting in delayed treatment needs to be understood. Clinical awareness of the fallibility of needle core sampling will recognise that repeat biopsies may be required to make a definitive diagnosis.

ii) The clinical commitment to Multi-Disciplinary Meetings needs to be fostered and logistically engineered to allow effective participation by clinicians, pathologists, radiologists and oncologists.

9. Departure from the Appropriate Standard of Care:

a) [Dr B]:

The false positive diagnosis of prostatic adenocarcinoma was suboptimal, but understandable with mitigating circumstances of a heavy workload in the first two days of a locum of 6 days, coping with a new laboratory and computer system. The pathology of postatrophic hyperplasia has been a pitfall that numerous pathologists have fallen into. In a new laboratory environment and faced with an unusually heavy workload, [Dr B] has made an incorrect call of cancer and moved on to the next of many cases. The severity of her departure from an accepted standard of practice depends on her false positive reporting rate.[29] If her rate is a fraction of 1% of malignant diagnoses rendered on prostatic needle core biopsies, a peer group would have to view this lapse in conduct with mild disapproval. If her rate approached that of the UK pathologists referred to by Berney et al, this would attract moderate

[29] Refer to Dr Beer's further advice which clarifies the severity of Dr B's departure from an accepted standard of practice.

disapproval, and if her rate exceeded 7.5% her peers would regard this with severe disapproval.

b) Nelson Marlborough DHB:
Many other DHBs may be considered in a similar light as they struggle with cost effectiveness issues in healthcare delivery. The funding arms of DHBs have an unenviable task of matching limited resources to unlimited demand and health funding bureaucrats are often ill-equipped to appreciate the issues until a case like this comes along.

Nelson Marlborough DHB's approach to Multidisciplinary Meetings for breast cancer screening is part of a nationally funded and initiated Breast Screening Aoteoroa programme, but prostate cancer management does not enjoy the same political, logistical or funding support.

The ideal level of support would include fostering of MDMs and routine HMWCK immunostaining of needle core biopsies of prostate but this is not uniform across the country, so a peer group of DHBs would view any departure by Nelson Marlborough DHB from the appropriate standard of care with mild disapproval only.

10. Summary:
The adverse outcome for the patient has been severe with an unnecessary radical prostatectomy. It will be of little consolation to the patient that some authorities believe PAH is a precursor lesion in the development of prostatic cancer. [References 6 & 7] The clinician and pathologist involved in this case appear to have intended to perform their best on behalf of this patient, but circumstances have conspired to cause a misdiagnosis that was not reviewed before radical prostatectomy was performed. More liberal utilisation of laboratory technology (referring to immunophenotyping studies) and commitment to multidisciplinary audit meetings would help to minimise these types of misdiagnosis.

Dr Ian Douglas Beer, B.Sc MBChB, FRCPA
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Further advice

Dr Beer was contacted for clarification following additional information from Dr B about her reporting rate of false positives. Dr Beer advised:

> "This [information] indicates that [Dr B's] false positive rate would be a tiny fraction of 1%. A single false positive diagnosis for malignancy in any pathologist's career would not be uncommon and the event engraved in their memory as a salutary lesson.
>
> Accordingly, I would rate this event as a departure from the appropriate standard of care with mild disapproval."

Appendix 2 — Further advice from pathologist Ian Beer

Dr Beer reviewed the providers' responses to the provisional opinion and advised:

"1) I can understand [Dr B's] defeatism in deciding not to report prostatic biopsies after this experience. However, the pitfalls of needle core biopsies are not confined to the prostate. I would like to think that a salutary lesson like this would make [Dr B] a better morphologist and/or at least a more cautious one.

2) I can understand the defensive position of the Nelson Marlborough DHB and its pathologists. Their work practices were similar to my own while I practised in Tauranga with four other colleagues to share the distribution of cases and review of difficult cases.

However since I was appointed to Health Waikato in August 2008, I found myself as one of two pathologists serving a 600 bed hospital where there should have been six pathologists, I had to adapt so that the workload didn't add to the risk of making a hasty misdiagnosis. This is the setting in which I have found routine performance of HMWCK on prostate biopsies useful.

Depending on the circumstances, we need to be willing to review and adapt our professional practice.

3) The informal review of practices in reporting prostate biopsies, utilisation of immunoperoxidase and multi-disciplinary meetings in NZ conducted by [Dr D] was helpful and simply supports my opinion expressed in my report that these practices vary across the country.

4) My view is that the histologic interpretation of thin core biopsies can be problematic with false negative diagnoses delaying correct diagnosis and appropriate management and false positive diagnoses resulting in unnecessary treatment ... and a small number of these misdiagnoses will always happen ... it is a statistical reality.

This risk may be ameliorated by implementing checks and balances in our technical and reporting systems. The use of immunoperoxidase stains and a mechanism for reviewing histology that has significant downstream consequences are examples of checks and balances in this case.

There is no point in carrying out a Sentinel Event exercise if a review of these checks and balances is not effectively carried out. To NMDHB's credit double reading of prostate and breast core biopsies was implemented.

5) My report raised issues for consideration and did not mandate any directives for NMDHB and its pathologists to follow ... so the reiteration of the collective surprise

regarding immunoperoxidases surprises me in the context of [Mr A's] plight. The medical literature will inevitably provide support for various clinical practices, but pathologists (as opposed to automatons) may adapt their practice to reduce any perceived risk of misdiagnosis.

6) An ethical rule of thumb that I try to apply to my clinical practice is to ask myself 'What if this was my father's/brother's/colleague's or my biopsy?'

I struggle to imagine any pathologist who would not have the material reviewed or perform some corroboratory test. [Mr A] was not afforded this luxury.

7) My unabashed support for MDMs is due to the success of the Aoteoroa Breast Screening Programme and others mentioned in my report. I realise a prospective weekly review of all prostate cases along the lines of the ABSP would impose expense on Vote Health, but some form of regular dialogue enhances clinico-pathological correlation and understanding and optimises management.

8) The variation in clinical practice identified in [Dr D's] informal survey may cause the Commissioner some concern. Generally, pathologists in NZ perform to a high level and the incidence of false positive diagnoses in prostate biopsies is vanishingly rare ... particularly in comparison to the UK cohort reported by Berney et al.

In the three false positive cases that I am aware of in NZ, two were misinterpretation on morphology and one was a clerical error compounded by morphologic inconsistency. The checks and balances mentioned above were either not operating or thwarted by the review process being sidelined when the patient was unexpectedly promoted on the waiting list.

9) If the NMDHB pathologists have fully evaluated the checks and balances in their processes in the light of [Mr A's] situation, I would be satisfied. One palpable consequence is the adoption of double reporting. The defensiveness regarding induction of locums, workload distribution, signout practice, IPX stains and MDMs is understandable, but these issues should be considered in the review process of this Sentinel Event."