

Radiology Service
Radiologist, Dr B

A Report by the
Deputy Health and Disability Commissioner

(Case 17HDC00415)



Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Table of contents

Executive summary	1
Complaint and investigation.....	2
Information gathered during investigation	2
Opinion: Dr B — breach	6
Opinion: The radiology service — no breach	8
Recommendations	9
Follow-up actions	9
Appendix A: Independent advice to the Commissioner.....	10

Executive summary

1. In 2013, Mrs A presented to her GP with abdominal pain. Mrs A was referred to a public hospital for investigations, including a CT scan of the abdomen, which was normal.
2. Mrs A continued to suffer from abdominal pain, and further investigations were carried out in 2014 and 2015, and again the findings were normal.
3. In September 2016, Mrs A presented to her GP feeling fatigued and having experienced significant weight loss. The GP referred Mrs A to the public hospital for further investigation, and ordered a CT scan of the abdomen and pelvis. The scan was performed at the public hospital on 21 September 2016, and a radiologist, Dr B, read and reported on the scan remotely the same day.
4. Dr B's report documented his findings, noting some pancreatic atrophy and concluding that no abnormalities were detected in the abdomen or pelvis. Subsequently, no further investigations were ordered regarding the pancreatic atrophy finding on the scan.
5. Mrs A continued to have further investigations owing to ongoing changes in her weight, bowel habits, and fatigue, and the findings were normal. Mrs A was referred back to her GP.
6. In February 2017, Mrs A was seen by a gastroenterologist. As Mrs A had abnormal blood test results, the gastroenterologist reviewed the CT scan that had been performed in September 2016, and noted that pancreatic cancer was evident, and that this had not been reported at the time the scan was performed.
7. On 6 March 2017, a further CT scan performed at the public hospital indicated the presence of metastatic pancreatic cancer.

Findings

8. On reporting on the 21 September CT scan, Dr B had a responsibility to ensure that he interpreted the scan accurately and initiated appropriate investigations following his finding of pancreatic atrophy. Dr B failed to query the significance of the pancreatic atrophy and, subsequently, failed to analyse the finding. Accordingly, Dr B failed to provide services to Mrs A with reasonable care and skill, and breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code).

Recommendations

9. In accordance with the recommendation made in the provisional opinion, Dr B provided HDC with a written apology to Mrs A's family for the deficiencies identified in the care he provided.
10. The radiology service is to provide HDC with a progress report on the implementation of the peer audit system across its service, by August 2018.

Complaint and investigation

11. The Commissioner received a complaint from Mrs A about the standard of care provided to her by the radiology service. The following issues were identified for investigation:
 - *Whether Dr B provided Mrs A with an appropriate standard of care in September 2016.*
 - *Whether the radiology service provided Mrs A with an appropriate standard of care in September 2016.*
 12. This report is the opinion of Rose Wall, Deputy Commissioner, and is made in accordance with the power delegated to her by the Commissioner.
 13. The parties directly involved in the investigation were:

Mrs A	Complainant/consumer
Dr B	Diagnostic radiologist
Dr C	Consultant general surgeon
The radiology service	Provider
 14. Information was reviewed from:

District health board	Provider
Private practice	Provider
 15. Independent expert advice was obtained from a general radiologist with a speciality area of diagnostic radiology, Dr Brendan Murray (**Appendix A**).
-

Information gathered during investigation

Background

16. In 2013, Mrs A, then aged 65 years, presented to her general practitioner (GP) with abdominal pain and bloating.
17. The GP referred Mrs A to the public hospital for an abdominal CT scan.¹ On 29 May 2013, the CT scan report indicated a normal pancreas,² with other findings also normal.

General surgeon review

18. Also in 2013, while under the care of Dr C at the public hospital, multiple investigations for Mrs A's ongoing abdominal pain were carried out, including an ultrasound, endoscopy, and a CT scan, all of which were reported as normal.

¹ A cross-sectional, three-dimensional image of an internal body part produced by computed tomography chiefly for diagnostic purposes.

² A large gland near the stomach that produces insulin and fluid with enzymes that aid digestion.

19. Mrs A's abdominal pain continued, and in 2014 further investigations were undertaken, including an ultrasound scan and an MRCP³ scan and, in February 2015, a colonoscopy was performed. Again, all the findings were reported as normal.

CT scan 21 September 2016

20. In September 2016, Mrs A presented again to the GP as she was feeling fatigued and had experienced significant weight loss. The GP referred Mrs A to the public hospital for further investigation, and ordered blood tests and a CT scan of the abdomen and pelvis.
21. On 21 September 2016, the CT scan of the abdomen and pelvis was performed at the public hospital's Radiology Department by a radiographer.
22. The DHB told HDC that the radiographer has no recollection of this particular CT scan examination.
23. Later on 21 September 2016 the CT scan was read and reported on remotely by radiologist Dr B. Dr B has been a practising consultant radiologist for over 25 years, and is employed by a private radiology service. The radiology service is contracted to the DHB to provide radiologist services on site at the public hospital, and also to provide radiologist services remotely.
24. Dr B told HDC that he does not recall the specifics of reporting on Mrs A's September 2016 CT scan. However, from the clinical history available to him, he does recall that there was no indication that the scan was tailored to the pancreas, and there were no discussions about the scan with any clinicians at the public hospital.
25. Dr B verified and reported on the 21 September 2016 CT scan. The report states:

“Indication:

1 month of increasing generalised abdominal pain which is colicky in nature. Normal blood tests, normal colonoscopy. Tender right upper quadrant and left iliac fossa. Cause of pain.

Findings:

There is some pancreatic atrophy which is generalised, no pancreatic mass lesion seen.

Conclusion:

No significant abnormality detected in the abdomen or pelvis.”

Further care

26. In November 2016, because of fatigue and changes in weight and bowel habits, Mrs A was seen by a gynaecologist who found no gynaecology issues and discharged her back to Dr C for further investigation.

³ Magnetic resonance cholangiopancreatography test.

27. In December 2016, Mrs A was seen again by Dr C for a private consultation. Dr C performed a colonoscopy on 16 December 2016, which was normal, and discharged Mrs A back to the care of her GP (the GP).
28. Dr C told HDC: “At the time I had access to the 21 September 2016 CT scan report, but I was not able to access the [public] hospital PACS system⁴ from my [private rooms]. Consequently, I was not able to review the scan myself.”
29. Owing to Mrs A’s ongoing concerns, the GP referred her to a private practice in another region. On 14 February 2017, Mrs A was seen by the gastroenterologist at the private practice. The gastroenterologist told HDC:
- “When [Mrs A] presented to my clinic in mid February my assessment was strongly based on the information provided in terms of the prior investigations which included radiology reports.”
30. The gastroenterologist said that upon receiving abnormal test results⁵ for Mrs A this raised the possibility of pancreatic cancer. The gastroenterologist asked the GP to forward any recent imaging of Mrs A’s pancreas for review.
31. On 4 March 2017, the gastroenterologist reviewed the September 2016 CT scan. He told HDC:
- “When I reviewed these images it was clear to me that there was a pancreatic cancer evident at that time which was not identified in the CT report.”
32. Subsequently, a further CT scan of Mrs A’s abdomen and pelvis was performed on 6 March 2017 at the public hospital. A radiologist reported on the scan and documented:
- “Conclusion: There is a pancreatic head tumour with extensive arterial and venous encasement. Extensive lymph node involvement and possible hepatic metastases present.”
33. On 10 March 2017, Mrs A was referred by the DHB to a gastroenterologist at a main centre hospital for a biopsy to confirm the findings of metastatic pancreatic cancer as reported on the March 2017 CT scan.
34. Sadly, Mrs A died.

Further information

Dr B

35. Dr B told HDC:

“Pancreatic cancers are notoriously difficult to detect as a distinct mass lesion. Pancreatic cancer most often presents clinically as painless jaundice, and the cardinal diagnostic sign is bile duct dilation along with pancreatic duct dilation. [Mrs A] did not present with jaundice.”

⁴ Picture archiving and communication system (a radiology information system).

⁵ Faecal elastase tests.

36. On re-reviewing the September 2016 CT scan, Dr B acknowledged to HDC:

“There is a poorly defined, infiltrative, low density mass lesion in the pancreas, which I consider that I should have perceived and reported on ... I have no specific explanation as to why I have not detected this pancreatic head mass lesion on [Mrs A’s] scan and can only attribute this to perception error.”

37. Dr B also stated:

“Had I appreciated these [signs of pancreatic head mass lesion] I would have recommended a follow-up MR examination for her.”

Dr B’s employment arrangement

38. Dr B is employed by the radiology service as a full-time diagnostic radiologist. His role includes routinely providing radiologist services to the DHB. As an employee of the radiology service, Dr B was required to adhere to the DHB’s Radiology Department policies in place at the time of these events.

The radiology service

39. The radiology service stated in its response:

“[Dr B] is fully conversant with [the DHB’s radiology information system (a picture archiving and communication system)]. He has used the system for more than 10 years ... All radiologists received initial training when the system was being deployed and are kept up to date with new features as they are developed. [Dr B] is also completely trained in the use of [the radiology service’s portal for referrers, specialists, and other treatment providers, allowing them easy access to their patients’ information and images.]

40. The radiology service told HDC that peer reviewing in day-to-day practice is not standard practice for imaging reporting from the public hospital. In New Zealand, a double reading of a scan occurs routinely only in particularly complex imaging such as mammography, and would not be considered for a CT scan of the abdomen and pelvis, as this is not considered to be complex imaging.

41. The radiology service conducts bi-monthly peer reviews, and Mrs A’s case was discussed for learning and to minimise the future risk of overlooking a pancreatic mass lesion. The radiology service told HDC:

“Given the routine, standard nature of the CT abdomen pelvis examination no specific service changes have been made.”

42. The radiology service said that it plans to introduce a regular random audit tool to enhance the existing peer reviews across the group practice.

The DHB

43. The DHB stated that all the radiologists employed by the radiology service are informed of the relevant policies and are involved in review of the policies. Peer reviews of radiology reporting are completed fortnightly by the DHB radiologist and the visiting radiologist from the radiology service.

Further information — perception errors

44. At the time of events, Dr B offered his sincere apology to Mrs A for any role he may have played in the diagnostic delay affecting her prognosis.

45. Dr B regards the failure to diagnose the unexpected mass on the CT scan from 21 September 2016 as a perceptual error, and stated:

“Perception errors are well known and relatively common in Radiology and any discipline that involves visual interpretation.⁶”

46. Dr B’s lawyer told HDC:

“It will always be the case in Radiology that reporting standards do not accommodate perception errors (and nor should they). It is expected that abnormalities will be detected and reported on, even though it is also accepted that all Radiologist[s] will from time to time due to perception errors miss what with hindsight is obvious.”

47. The radiology service told HDC that perception errors are an aspect of radiology practice, owing to the objective nature of the role, and efforts are made to minimise and manage these; images are saved and the reports are available for review. The radiology service advised that following the merging of the PACS across the service it will undertake regular random audits to enhance its existing peer review systems.

Responses to provisional opinion

48. Dr B was provided with a copy of the provisional opinion and stated that he accepts the recommendations made and has no further comment to make.

49. The radiology service was provided with a copy of the provisional opinion and stated that it accepts the recommendations and has no further comment to make.

50. Mrs A’s daughter was provided with a copy of the “information gathered” section of the provisional report for comment, and had no further information to add.

Opinion: Dr B — breach

51. Dr B, an experienced radiologist, read and reported on Mrs A’s CT scan on 21 September 2016.

52. Dr B said that at the time of reading the September 2016 CT scan, the clinical information available to him was non-specific, therefore the performance of the examination was not specifically tailored to the pancreas. He noted that the clinical information provided no reference to back pain or jaundice, which are indicators of pancreatic cancer.

53. Dr B’s report of the scan stated: “[T]here is some pancreatic atrophy which is generalised, no pancreatic mass lesion seen ...”

⁶ Dr B cited Busby et al, “Bias in Radiology: The How and Why of Misses and Misinterpretations”, *Radio Graphics* (2018) 38 (1).

54. Dr B, in his response to HDC, acknowledged:

“I have reviewed the scan that I reported from [September] 2016 several times and feel that in retrospect there were signs of pancreatic head infiltration present at the time. Had I appreciated these I would have recommended a follow-up MR examination.”

55. Regarding the failure to analyse the pancreatic atrophy noted in the CT scan, Dr B is of the view that this is a perception error. Dr B told HDC: “I have no specific explanation as to why I have not detected this pancreatic head mass lesion on [Mrs A’s] scan and can only attribute this to perception error.”
56. As part of this investigation, I obtained advice from a radiologist, Dr Brendan Murray. I am mindful that Dr Murray advised that “a pancreatic abnormality would be unexpected based on the clinical presentation”.
57. In relation to Dr B’s reading and reporting on the September 2016 CT scan, Dr Murray advised:

“Nevertheless, even without a supportive clinical history, the presence of a poorly defined infiltrative pancreatic mass is an unequivocal imaging finding made more apparent by the presence of pancreatic duct dilatation and atrophy which are due to the mass causing obstruction of the pancreatic duct.”

58. I accept Dr Murray’s expert advice.
59. Dr Murray has indicated that the error is a significant departure from reporting standards, and Dr B agrees. Dr B’s lawyer told HDC, it will always be the case in Radiology that reporting standards do not accommodate perception errors (and nor should they). It is expected that abnormalities will be detected and reported on, even though it is also accepted that owing to perception errors all radiologists will from time to time miss what with hindsight is obvious. Dr Murray stated that it would be accepted and expected practice for the abnormality on the CT scan performed in September 2016 to have been detected and reported by radiologists. I accept this advice. I do not accept that because errors of perception (such that a radiologist misses an apparent abnormality that would have been detected by most of his or her peers in similar circumstances) occur in a small but persistent number of radiology readings, this should be determinative in assessing whether the standard of care has been met in a particular case.
60. In this particular case, I consider that the finding and reporting of the pancreatic atrophy ought to have elicited further analysis of the significance of this concerning feature, and I am critical of Dr B for failing to do so.

Conclusion

61. The standard of care applicable in the present case is the care and skill that an ordinarily careful radiologist would exercise under similar circumstances. In reading the CT scan in September 2016, Dr B reported on the finding of pancreatic atrophy. However, Dr B failed to query the significance of this feature and, subsequently, failed to analyse the finding. Dr B did not interpret the scan accurately and initiate appropriate investigations following his reporting of the pancreatic atrophy. Accordingly, I am of the view that Dr B failed to

provide services to Mrs A with reasonable care and skill, and breached Right 4(1) of the Code.

Opinion: The radiology service — no breach

62. The radiology service has a responsibility for ensuring that consumers receive an appropriate standard of care. It is incumbent upon radiology service providers to have in place adequate systems and procedures to support staff, reduce work place stressors, and create a focused work environment where the risk of perception error is managed effectively. The radiology service has stated that as a group it works hard to minimise errors such as Dr B's, through training, experience, continuing medical education, and peer review.
 63. I also note the radiology service's advice that it is not standard practice for imaging reporting from the DHB to be peer reviewed in day-to-day practice, and that in New Zealand, double reporting occurs routinely only in mammography and particularly complex imaging. Further, the radiology service advised that the CT scan of the abdomen and pelvis in question is not considered to be complex imaging, and would not be double read routinely anywhere in New Zealand or Australia (outside of teaching hospitals) and, accordingly, the radiology service has not made any changes to its radiology services as a result of this incident. I consider that the error that occurred did not indicate broader systems or organisational issues at the radiology service. In these circumstances I do not find the radiology service directly in breach of the Code.
 64. At the time of these events, Dr B was an employee of the radiology service. In addition to any direct liability under section 72(2) of the Health and Disability Commissioner Act 1994 (the Act), employing authorities may be vicariously liable for any act or omission by an employee. However, a defence is available to an employing authority under section 72(5) of the Act if it can prove that it took such steps as were reasonably practicable to prevent the act or omission.
 65. As stated earlier, Dr B has 25 years of experience as a diagnostic radiologist, and has acknowledged his error in reporting on the September 2016 CT scan. Regarding Dr B's error, Dr Murray advised that this is a situation where an abnormality was not perceived or appreciated at the time, and the error did not occur because of a gap in training or medical knowledge. I also note and accept the radiology service's advice that it is not standard practice for imaging to be peer reviewed, and that the CT scan of the abdomen and pelvis in question is not considered to be complex imaging and, in New Zealand or Australia, would not be double read routinely.
 66. Having considered the circumstances of this case, I am satisfied that the radiology service took such steps as were reasonably practicable to prevent the omission that occurred. Accordingly, I find that the radiology service is not vicariously liable for Dr B's breach of the Code.
-

Recommendations

67. In accordance with the recommendation made in my provisional opinion, Dr B has provided this Office with a written apology to Mrs A's family for the deficiencies identified in the care he provided.
 68. In accordance with the recommendation made in my provisional opinion, the radiology service will provide this Office with a progress report on the implementation of the peer audit system across its service within three months of the date of this report.
-

Follow-up actions

69. A copy of this report with details identifying the parties removed, except the expert who advised on this case, will be sent to the Medical Council of New Zealand, and it will be advised of Dr B's name.
70. A copy of this report with details identifying the parties removed, except the expert who advised on this case, will be sent to the DHB, the Royal Australian and New Zealand College of Radiologists, and the Health Quality & Safety Commission, and will be placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix A: Independent advice to the Commissioner

The following expert advice was obtained from a diagnostic radiologist, Dr Brendan Murray.

“Dear Sir

In the course of providing further opinion, I have reread this preliminary advice.

I need to make two corrections to the report below.

In my radiology report of the CT scan I meant to say ‘mass related narrowing of the Superior Mesenteric and Splenic vessels’.

I have also assumed that Pancreatic duct dilatation was mentioned in the Radiology report of [Dr B], however this was not the case. The report clearly states there is no dilation of the bile ducts and no pancreatic mass lesion. The pancreatic duct was not commented on.

Dr Brendan Murray
Radiologist

19.7.17

HDC

Dear Sir/Madam

I have been asked to provide an opinion to the Commissioner on case number C17HDC00415. I have read and agree to follow the Commissioner’s Guidelines for Independent Advisors.

I completed my Medical Degree (MBChB) in 1992, and Specialist Radiology training (FRANZCR) in 2000. I have been working as a Diagnostic Radiologist in Tauranga at the Bay of Plenty DHB and at Bay Radiology for the last 16 years.

Reporting CT abdomen examinations is part of my routine scope of practice.

I have been asked to provide an interpretation of the CT scan performed 21.9.16 at [the public hospital] on [Mrs A]. In doing so I have been asked specifically ‘to mimic my usual working practice when reviewing the images, for example in relation to the time that I would usually spend on radiological analysis’.

At this stage I remain blinded to any subsequent imaging and clinical information.

My report of the CT abdomen from 21.9.16 is as follows:

Indication

The clinical information provided on the CT request states:

'1 month of increasing generalised abdominal pain which is colicky in nature.

Normal blood tests, normal colonoscopy.

Tender right upper quadrant and left iliac fossa

? cause of pain'

Findings

There is a large approximately 35mm x 30mm poorly defined mass centred within the head and neck of the pancreas. The mass also extends to the left of the midline and there is obstruction of the main pancreatic duct within the body/tail of pancreas with resultant pancreatic duct dilation and atrophy of the distal pancreas. The mass infiltrates around the Superior Mesenteric Artery and there is mass related narrowing of the adjacent splenic artery.

There is no lymphadenopathy.

No metastatic disease

Cholecystectomy noted.

The liver, spleen, kidneys, aorta and adrenal glands are normal.

There is no small or large bowel abnormality. No free fluid or bone lesions.

Conclusion

There is a tumour mass within the head of pancreas with appearances in keeping with an adenocarcinoma. There is no lymphadenopathy or metastatic disease, however infiltration of adjacent vascular structures likely makes this lesion unresectable.

Summary

The report from [Dr B] notes the pancreatic duct dilatation and atrophy of the tail but does not include the important finding of a pancreatic tumour mass which is causing the duct dilatation and atrophy.

Kind regards

Dr Brendan Murray

Radiologist

24.8.17

Dear Sir

As requested, following my preliminary advice on [Mrs A's] CT scan, I have now read [Dr B's] report of the scan dated 21 September 2016, and [Dr B's] letter of response to [Mrs A's] complaint dated 27 March 2017.

I have been asked to advise whether [Dr B's] report of [Mrs A's] CT scan was reasonable in the circumstances, and why.

In particular, I have been asked to advise with respect to:

What is accepted practice

Whether there has been any departure from expected reporting requirements

How this case would be viewed by my peers

Recommendations for improvement that may help to prevent a similar occurrence in the future

Any other aspects worthy of comment

Accepted Practice

[Dr B's] report of [Mrs A's] CT scan failed to mention the presence of a 35mm diameter pancreatic head mass lesion that was causing pancreatic duct dilatation and atrophy. Pancreatic atrophy was commented on in his report, but the report specifically stated that no pancreatic mass lesion was seen.

This was clearly an unexpected finding and I would concur that the clinical history did not at all sound suggestive of a pancreatic problem.

Nevertheless, even without a supportive clinical history, the presence of a poorly defined infiltrative pancreatic mass is an unequivocal imaging finding made more apparent by the presence of pancreatic duct dilatation and atrophy which are due to the mass causing obstruction of the pancreatic duct.

It would be accepted and expected practice that this abnormality should usually have been reported.

Departure from Reporting Requirements

In my opinion not reporting the infiltrative pancreatic mass, or noting the pancreatic duct dilatation which would have alerted one to the possibility of a pancreatic mass is a departure from expected reporting requirements.

It is a significant departure in respect that the abnormality is not subtle. It is also significant with respect to the clinically important diagnosis of pancreatic cancer.

There is a mitigating factor that a pancreatic abnormality would be unexpected based on the clinical presentation.

How would it be viewed by my peers?

My peers would view this situation with a sense of 'there but for the grace of God go I'.

As Radiologists, we have all had situations where there are unreported potentially significant findings that we have overlooked which are apparent in hindsight. We would look at the images and think 'how did I not see that?'

This is unfortunately the nature of Radiology, that despite our best efforts we do not always see everything there is to see on a scan. It is a product of looking at a myriad of images and subconsciously interpreting what we see in the context of the clinical

information we are given. Most times this appropriately leads us to focus where any likely abnormality may be, or to specifically answer the clinical question as to a suspected cause of symptoms.

Unfortunately, when it comes to ‘unexpected findings’, the clinical scenario may have directed us away from a more thorough assessment of seemingly less relevant areas of any scan.

There were no specific clinical indicators pointing to a likely pancreatic abnormality in this case. The pancreas is a notorious site of delayed diagnosis because abnormalities may be clinically unexpected, or the abnormalities may be subtle and difficult to appreciate.

Recommendations for improvement that may help prevent a similar occurrence in future.

I do not have any specific recommendations in this regard as this is almost certainly a situation where an abnormality was just not perceived or appreciated at the time, and not due to a gap in training or medical knowledge.

[Dr B] is a Specialist trained experienced Radiologist, who would be in the habit of reporting many hundreds of CT scans a year, and many thousands over his 25 year career.

He is a member of the Royal Australian and NZ College of Radiologists and compliant with both the RANZCR and NZ Medical Council Continuing Professional Development programmes.

I am sure, as we learn the most from our own mistakes, that [Dr B] will take extra care forevermore when reviewing the pancreas, no matter the clinical scenario.

Other Aspects and factors making the diagnosis more difficult as per [Dr B’s] letter of response.

I would concur with [Dr B’s] letter of response that the diagnosis was made more difficult as the findings were unexpected based on the clinical history.

It is correct that the examination was not specifically tailored towards the pancreas and so the mass was perhaps not as obvious as it may have been on a dedicated pancreas protocol examination.

It is also true that there was no bile duct dilatation and this is often a diagnostic clue with pancreatic cancer.

As his letter indicates pancreatic cancers may be difficult to detect and infiltration can be hard to appreciate. In this case there were additional secondary signs of pancreatic duct dilatation and atrophy of the distal pancreas due to pancreatic duct obstruction. This finding pointed to a pancreatic mass. Vascular infiltration and a low density poorly defined mass were also evident.

[Dr B] has acknowledged in his letter that there were signs of pancreatic head infiltration present on the CT in retrospect and that had he appreciated this he would have recommended further work up with MRI at the time.

This would have been an appropriate course of action that would have helped confirm the diagnosis.

Yours sincerely

Dr Brendan Murray
Radiologist