HEALTH & DISABILITY COMMISSIONER
TE TOIHAU HAUORA, HAUĀTANGA

Delayed cancer diagnosis in man with Parkinson's disease

Executive summary

1. This report concerns the care provided to Mr A by Health New Zealand | Te Whatu Ora (Health NZ) at his local public hospital. Mr A's partner, Ms B, complained to the Health and Disability Commissioner (HDC) about the standard of care provided to Mr A at the local public hospital between 24 December 2021 and 28 February 2022 when his health significantly declined. Ms B is concerned that clinicians who assessed Mr A over this period did not look beyond his Parkinson's diagnosis for other potential causes of his symptoms and decline. Mr A was diagnosed with colon cancer in March 2022 and died in April 2022. I offer my condolences to Ms B and Mr A's family for their loss.

2. This investigation focuses on the standard of care Health NZ provided to Mr A between 24 December 2021 and 28 February 2022, including whether appropriate consideration was given to differential causes of Mr A's symptoms and the coordination of his care when he presented to his local public hospital's Admissions Planning Unit (APU) on 28 February 2022.

3. My independent clinical advisor, Dr Lucille Wilkinson, a specialist physician who works in acute and general medicine, identified deviations in the standard of care Health NZ provided to Mr A in the months before his death. I have given serious consideration to Dr Wilkinson's findings, including the mitigating factors she identified that have some bearing on the decisions taken by clinicians treating Mr A at the time. Diagnostic overshadowing (attributing the symptoms of an illness to an existing comorbidity) is a recognised issue in parts of the healthcare system and can clearly have significant ramifications for the consumers concerned. For this reason, I make an adverse comment about the care Health NZ provided to Mr A in relation to the influence of cognitive bias on diagnostic decision-making. I also make an adverse comment on the coordination of his care in the APU, including the management of his referral and allocation of his test results to the appropriate clinician.

Changes made and recommendations

4. Health NZ has advised that the following changes have been made since these events:

- Dr C, geriatrician, has reflected on the care she provided to Mr A and the influence of cognitive bias on her assessment of him on 24 December 2021 and states that she has learned from this experience.
- Health NZ has delivered training to staff on cognitive bias and errors through their Grand Round education sessions conducted by the chief medical officer.
- Health NZ has planned training for all clinicians, including subspecialty senior medical officers (SMOs), on the requirement to put details of expected patients into the Management of Acute Patients (MAP) system.

5. I acknowledge and support these changes. In addition, I recommend that Health NZ:

- provides a written apology to Ms B and Mr A's family for the issues highlighted in this report. This apology is to be sent to HDC within three weeks of the date of this report, for forwarding to Ms B.
- presents an anonymised version of this report as a case study to highlight the importance of considering differential diagnoses and the impact that cognitive bias can have on diagnostic decision-making. Evidence by way of presentation materials and staff attendance records is to be forwarded to HDC within three months of the date of this report.
- sends a memo to administrative staff in the local public hospital's APU about where to find a patient's referral when they have presented to the APU more than 24 hours after the referral was made and about the importance of including the referral with the patient's clinical notes. A copy of the memo is to be forwarded to HDC within three months of the date of this report.
- considers process changes so that radiography results can be assigned or passed on to the senior clinician who assessed the patient in the APU and has knowledge of their case, rather than sitting with the general medical doctor on call in the APU for the day. Report back to HDC on whether any relevant changes have been made (and if not, why not) within three months of the date of this report.

Background

6. In July 2021, after an ear, nose and throat specialist had assessed Mr A for changes in his voice and noted symptoms of Parkinson's disease, Mr A's general practitioner (GP) diagnosed him with the disease. Mr A, aged 73 at the time of the events, stopped working shortly after the diagnosis because of an ongoing decline in his health. His partner, Ms B, had also stopped working to care for Mr A as his health continued to deteriorate.

Consultation with Dr C

7. On 24 December 2021, Mr A saw Dr C at his local public hospital's Health in Ageing Outpatient Clinic in relation to his Parkinson's symptoms. During the appointment, Dr C assessed Mr A's vital signs and gait and discussed the cause of Parkinson's disease and Mr A's medications with him and Ms B.

8. In a letter to Mr A's GP after the appointment, Dr C noted that his primary concern was Mr A's extreme fatigue, which Ms B had noticed before 2021. Dr C also noted that Mr A had lost weight (at the time of his appointment he weighed 72kg, down from 81kg in 2021).

9. Dr C referred Mr A for a brain MRI[1] and planned to see him again in three months' time.

Referral and admission to the local public hospital on 28 February 2022

10. On Friday 25 February 2022, Mr A presented to Accident and HealthCare as he had been experiencing nausea, decreased appetite, persistent constipation lasting one week, and

[1] MRI stands for magnetic resonance imaging and is a scan that creates detailed three-dimensional images of organs, tissues, and bones.

severe fatigue and was unable to get an appointment with his usual GP. The GP who assessed him noted a history of weight loss and rapid functional decline. The GP had a telephone consultation with Dr C, and they agreed that antinausea medication should be trialled over the weekend and Mr A admitted to the APU for a neurological assessment.

11. The GP sent an urgent electronic referral to the local public hospital, the receipt of which was confirmed on 26 February 2022.

12. The GP highlighted his concern for Mr A in his referral, noting that he had a follow-up appointment with Dr C scheduled but that 'at his current rate of decline I doubt he will be here then.'

13. When Mr A presented to the APU on 28 February 2022, he was not listed as an expected patient, and the clinicians who reviewed him did not have a copy of his referral.

14. In their response to HDC, Health NZ advised that a GP referral following a telephone consultation with a senior clinician is usual practice for APU referrals. The senior clinician who received the phone call is required to enter the patient's details into the electronic MAP list. However, Dr C did not enter Mr A's details into MAP, which is why he was not listed as an expected patient when he presented to the APU on 28 February. Health NZ said this had highlighted the need to ensure that all clinicians, including subspeciality SMOs, understand the requirement to enter the details of expected patients into MAP. Administration staff also did not search their system for Mr A's referral to print a copy of it. Ms B stated that she presented a paper copy of the urgent referral upon arrival at the APU, which she handed over to APU administrative staff at reception, but this does not appear to have been passed on to the clinicians assessing Mr A.

15. Mr A was initially seen by Dr D, the general medical doctor on call that day in the APU. Ms B stated that Dr D asked why Mr A had come to the APU and that, when Ms B tried to present a photo of the referral on her phone (as she no longer had the paper copy of it), Dr D would not review it. Health NZ noted in their response that the general doctor on call is responsible for all patients admitted to the APU but does not typically have clinical involvement in their assessment. As Mr A's referral had not been included in his clinical notes, and his case had not been verbally handed over to the APU team, Dr D was not familiar with his case and the reason for his presentation.

Assessment by Dr E: 28 February 2022

16. Mr A was next assessed by Dr E, a registered medical officer (RMO). Dr E noted his symptoms of Parkinson's (marked functional decline, fatigue, decreased appetite, and a 12kg weight loss over the past 12 months), as well as his persistent constipation and nausea over the previous two weeks, which had improved slightly after passing a small bowel motion that morning. Dr E also noted that Mr A had recently had a dental extraction for an abscess and completed a course of antibiotics with no further concerns.

17. On examination, Mr A had a minor rash on his abdomen, mild epigastric pain, and a slightly elevated heart rate (105 beats per minute).

18. Blood tests, including renal and liver function tests and a full blood count, were ordered, along with a mid-stream urine test and chest and abdominal X-rays. Dr E noted abnormalities in Mr A's liver function tests and raised C-reactive protein (CRP) levels, which can indicate inflammation in the body. Mr A's CRP levels were 98mg/L, whereas a normal range is 0–8mg/L.

Input from Dr C and Dr F

19. Dr E discussed Mr A's case and the referral from 25 February 2022 with Dr C, who was not part of the team managing Mr A's care in the APU that day. Health NZ stated that Dr C did not discuss wider differential causes of Mr A's symptoms with Dr E, as this was the role of the acute medical team assessing Mr A in the APU. Dr C considered the support she provided to Dr E on this occasion to have been appropriate.

20. Dr E also discussed Mr A's case with Dr F, an SMO and the APU consultant on duty.

21. Dr E's discussions with Dr C and Dr F were not documented in the clinical notes. Health NZ stated in their response that the registrar is expected to document discussions with senior clinicians, including the reasons for the discussion and any management plans agreed.

22. Although clinical notes do not record this, Health NZ stated that Dr E considered differential diagnoses, including malignancy, chronic infection, and autoimmune disease, as explanations for Mr A's abnormal blood test results. However, after discussions with Dr C and Dr F, these results were deemed most likely to be due to Mr A's recent infection and antibiotics. Mr A's constipation was attributed to his Parkinson's, and his weight loss was deemed secondary to reduced oral intake.

Discharge from the APU

23. Mr A was discharged from the APU on the afternoon of 28 February 2022. He was prescribed laxatives and a dietary supplement and advised to see his GP for repeat blood tests in two weeks' time to check whether his liver function had improved. He was also referred to a Parkinson's disease nurse for further support and education.

24. Dr D received the radiography results for Mr A at 5.50pm, after Mr A had been discharged from the APU. The abdominal X-ray showed evidence of faecal loading (the presence of a large volume of faeces in the colon or rectum) and abnormal positioning of the colon towards the centre of the abdomen, suggesting the possibility of ascites (an abnormal build-up of fluid in the abdominal cavity, often caused by issues with the liver). Dr F stated in Health NZ's response to HDC that she was not alerted to the X-ray results, including the possible presence of ascites. Dr F says that, if she had been alerted, the results may have prompted her to consider whether any additional actions or investigations were required.

Further GP investigation and subsequent cancer diagnosis

25. Mr A's GP reviewed him on 14 March 2022 and ordered blood tests, which again showed abnormal liver function results. Mr A's GP referred him for an abdominal ultrasound the next day.

26. The abdominal ultrasound showed several lesions on the liver, suspected to be metastases, as well as a large volume of abdominal ascites. An urgent CT scan performed the next day showed further masses in the peritoneal area and colon. The radiology report suggests that a tumour found in Mr A's colon was likely the primary tumour, with extensive malignancy throughout his abdomen.

27. Mr A's GP discussed Mr A's condition with Ms B on 18 March 2022. The GP also consulted an oncologist and referred Mr A to hospice services.

28. Following his cancer diagnosis, Mr A's health deteriorated rapidly, and he died at his home in late April 2022.

Responses to provisional opinion

29. Ms B was given an opportunity to comment on the 'background' section of the provisional opinion, and her comments have been incorporated into the report where relevant.

30. In her response, Ms B emphasised the sense of hopelessness she and Mr A had felt when clinicians in the APU did not view the referral from the GP at Accident and HealthCare, who Ms B felt had finally listened to them and cared about their concerns after they had tried to raise them with multiple clinicians, including raising the prospect that Mr A had cancer with his GP.

31. Health NZ was given an opportunity to comment on the provisional opinion and advised that they had no comments to make.

Analysis

32. In forming my opinion on the standard of care provided to Mr A at the local public hospital, I have relied on independent advice from Dr Lucille Wilkinson (see **Appendix A**).

Care provided to Mr A by Health NZ between 24 December 2021 and 28 February 2022 – adverse comment

33. When considering the overall care provided to Mr A by Health NZ between 24 December 2021 and 28 February 2022, there are two key areas of concern. These are cognitive bias influencing the diagnostic decision-making of clinicians who assessed Mr A over this period and the coordination of his care in relation to the APU referral and assessment.

<u>Cognitive bias</u>

34. Dr Wilkinson advised that, although Dr C completed a reasonable assessment of Mr A on 24 December 2021 based on his Parkinson's referral, it would have been ideal for Dr C to have considered wider differential diagnoses and to have performed a more general physical examination of Mr A at this time to determine whether further investigations of the reported symptoms were indicated. Dr Wilkinson advised that this would be considered a cognitive error with early closure of diagnostic thinking (ie, attributing Mr A's symptoms to his known Parkinson's diagnosis) and that she would consider this to be a minor departure from an acceptable standard of care, noting that cognitive errors are known to occur in medical practice.

35. Dr C accepted Dr Wilkinson's view that her assessment of Mr A was reasonably focused on the reason for referral (Parkinson's disease) and that she could have undertaken a more complete physical examination and considered whether any further investigation beyond an MRI scan of Mr A's brain should have been ordered.

36. Dr Wilkinson was also critical of Dr C's and Dr F's input into Dr E's assessment of Mr A on 28 February 2022 and advised that this represented a moderate departure from the accepted standard of care. In Dr Wilkinson's view, Dr C and Dr F, as senior clinicians, became responsible for decision-making when Dr E consulted them on Mr A's condition. She would have expected them to have prompted Dr E to consider wider causes of Mr A's abnormal test results and to provide advice on further investigation and management options, particularly as Mr A had abnormal liver function tests and a significantly raised CRP result.

37. Dr C has clarified that, although she was consulted by Dr E about Mr A's case on 28 February 2022, she was on the acute stroke team that day and not responsible for acute medical admissions. Dr F was the SMO covering the APU on this date. Health NZ noted that this role is challenging, with multiple tasks and competing responsibilities. Nonetheless, Dr F could still have guided Dr E to consider whether any further investigations were appropriate. Similarly, Dr C was familiar with Mr A, having seen him in December 2021 and taken the referral from the GP on 25 February 2022, and could have considered her knowledge of the case and prompted Dr E to consider differential diagnoses. I acknowledge Dr Wilkinson's criticism of Dr C's and Dr F's guidance to Dr E, and I am of the view that cognitive bias was likely a key factor in this.

38. Dr Wilkinson stated that Dr E's assessment of Mr A was adequate and within the standards of accepted practice but noted that anchoring bias affected Dr E's assessment of Mr A on 28 February 2022 (ie, Dr E remained focused on Mr A's Parkinson's diagnosis when considering the causes of his symptoms and abnormal test results).

39. Dr E acknowledged that Mr A's known Parkinson's diagnosis and the fact that she did not see the GP's concerns noted in the referral letter may have led her to not consider differential diagnoses more seriously.

40. Health NZ stated that Dr E considered differential causes of Mr A's symptoms but that, after discussion with Dr C and Dr F, his symptoms were again attributed to his Parkinson's disease and a recent course of antibiotics.

41. I accept Dr Wilkinson's advice and am critical that cognitive bias appears to have affected the diagnostic decision-making of multiple Health NZ clinicians assessing Mr A between December 2021 and February 2022. The presence of cognitive bias in the clinicians' thinking, and their failure to recognise this, affected their assessment of Mr A and the level of investigation of his symptoms.

42. I acknowledge that Dr Wilkinson also noted in her advice that cognitive errors, such as the ones she deemed were made by Dr C and Dr E in this case, are more common when clinicians are under high levels of stress and are facing high workloads and repeated interruptions. Dr Wilkinson noted that this case occurred around the time of New Zealand's COVID-19

response, during which the health system, specialist medical clinicians, and medical registrars were under increased pressure, and Dr Wilkinson stated that this should be taken into consideration in this case.

43. Further, Mr A's GP noted that his symptoms (including extreme fatigue, weight loss, nausea, reduced appetite, and persistent constipation) were non-specific and were adequately explained once the diagnosis of Parkinson's disease was made. Because Mr A's Parkinson's diagnosis explained these symptoms, the kinds of cognitive biases shown by Dr C and Dr E may have been more likely. Mr A's GP also noted in his response to HDC that the timing of the onset of Mr A's symptoms and the serious nature of his Parkinson's disease meant that this condition obscured the presence of his cancer until it was unfortunately at a very advanced stage.

44. I accept the above mitigating factors for the clinicians assessing Mr A. However, I remain of the view that clinicians should have considered whether there may have been other causes for Mr A's symptoms and whether other investigations were required, particularly given Mr A was in his 70s and that the risk of colorectal cancer increases with age. I encourage Dr C, Dr E, and Dr F to reflect on this case and to remain vigilant to the risk of cognitive bias in their practice and the impact this can have on diagnostic thinking and interactions with patients and their families.

<u>Coordination of care – APU referral and assessment</u>

45. I am concerned about the coordination of Mr A's care in relation to his referral to the APU and the subsequent assessment on 28 February 2022.

46. Dr C had not entered Mr A into the MAP system as an expected patient after her conversation with the GP at Accident and HealthCare, which Health NZ stated is an expected part of the APU referral process. This meant that staff were unaware of the reason Mr A had presented at the APU.

47. The clinicians who reviewed Mr A in the APU did not have a copy of his referral because administrative staff did not locate and print it, as is usual practice. According to Ms B, Dr D also would not accept the photo of the referral she tried to present during the appointment. Dr E stated that the potential for cognitive bias would have been exacerbated by the fact that the GP's concerns were not known to her as she did not see the referral letter.

48. The results of abdominal and chest X-rays performed on 28 February 2022 were assigned to Dr D as the general doctor on call in the APU that day. However, as noted in Health NZ's response, Dr D was not the clinician most familiar with Mr A's case. Dr F advised that, if she had seen the X-ray results suggesting possible ascites, she would have considered whether further investigation was required. Dr Wilkinson advised that it is not unusual in New Zealand's current hospital system for test and scan results to go to the on-call clinician rather than the doctor who knows the patient's clinical details but that there should be a robust system whereby results can be quickly and easily reassigned to the appropriate clinician. Dr Wilkinson advised that the lack of such a system would be considered a moderate departure from the accepted standard of care.

49. The above issues collectively suggest poor coordination of care, which meant that Dr E did not have a copy of the referral letter (and was therefore unaware of the GP's concerns). Dr E stated that this may have caused her to not seriously consider other causes of Mr A's symptoms beyond his Parkinson's diagnosis. Dr F also did not receive a copy of the abdominal X-ray results, which she has stated may have prompted further investigations.

Conclusion

50. For the reasons outlined above, I make an adverse comment about the care Health NZ provided to Mr A between 24 December 2021 and 28 February 2022. I have identified several areas for reflection and improvement and encourage Health NZ to consider these.

Distribution

A copy of this report with details identifying the parties removed, except Health NZ and the clinical advisor, will be placed on the HDC website, www.hdc.org.nz, for educational purposes and to facilitate an increased awareness of cognitive bias and diagnostic overshadowing in healthcare.

Rose Wall
Deputy Health and Disability Commissioner

Appendix A: Independent clinical advice to the Commissioner

The following independent advice was obtained from specialist physician Dr Lucille Wilkinson.

My name is Dr Lucille Wilkinson. I am a specialist physician working in acute and general medicine and obstetric medicine. I am a clinical leader working as Associate Chief Medical Officer for Te Whatu Ora – Te Tai Tokerau. I have been asked to provide an opinion on the care provided to Mr [A] between 24 December 2021 and his discharge from hospital on 28 February 2022. I have had access to the clinical notes and letters in this case as well as the response from [the local public] hospital. I confirm that I have no conflict of interest in providing this opinion. I want to express my condolences to Mr [A]'s whānau, and I provide the following advice on the questions asked by the Health and Disability Commissioner.

1. **The clinical assessment by [Dr C] on 24 December 2021. Was it reasonable to accept the diagnosis of Parkinson's disease? Were there any other clinical features that would suggest other diagnoses should be considered?**

[Dr C] was asked to review Mr [A] with regards to the potential diagnosis of Parkinson's disease and to give advice regarding management of this condition. This review took place in an outpatient clinic on Christmas Eve, 2021. The review undertaken regarding the Parkinson's disease was very reasonable, and a reasonable conclusion was reached. It was noted at the time that Mr [A] had unintentional weight loss, and this seems to have been attributed to poor oral intake secondary to Parkinson's disease. It would have been ideal for a wider differential diagnosis to be considered at this time and to undertake a more complete general physical examination and consider whether other investigations were indicated. This would be considered to be a cognitive error with early closure of diagnostic thinking. Cognitive errors are known to occur in medical practice, and I would consider this to be a minor departure from an acceptable standard of care as [Dr C] was reasonably focused on the reason for referral, which was the movement disorder diagnosis and management.

2. **On 24 December 2021, [Dr C] referred Mr [A] for an MRI. Would any other investigations have been indicated at this point given the presenting symptoms?**

As [Dr C] was focusing on the movement disorder diagnosis, then brain imaging was the most appropriate next investigation. If [Dr C]'s cognitive process had extended to a wider differential for the weight loss, then other investigations such as blood tests and abdominal imaging may have been indicated — but this was not the case as a cognitive error had already occurred and the focus of the clinic review was the movement disorder diagnosis and management.

3. **The adequacy of the assessments undertaken by the medical registrar, Dr [E], on 28 February 2022.**

Dr [E] undertook the assessment of Mr [A] when he was admitted to hospital on 28 February with concerns about weight loss and constipation. Dr [E] undertook an appropriate medical review and came to the conclusion that the weight loss was due to poor oral intake and the constipation was due to Parkinson's disease. There were

abnormal blood results returned, including abnormal liver function tests and a raised C-reactive protein. The liver function test abnormalities were attributed to a recent course of antibiotics. The raised CRP is not noted in the discharge summary, so it is not possible to determine what this was attributed to. Notably, Dr [E] discussed the results of the blood tests and her findings with [Dr C] and Dr [F] (according to the response from [the local public] hospital), and decisions regarding further management therefore became the responsibility of the more senior doctors, being [Dr C] and Dr [F]. Overall, Dr [E]'s assessment was adequate and within accepted practice.

4. The reasonableness of Dr [E]'s clinical impression of Parkinson's disease, including her lack of consideration of possible differential diagnoses.

Dr [E]'s lack of a wider differential diagnosis at the time of Mr [A]'s admission to hospital is unfortunate and represents further cognitive bias in this case. The bias in this situation was anchoring bias (not moving beyond the initial diagnosis of Parkinson's disease causing the patient's presentation) and also not considering important "not to be missed" diagnoses such as malignancy or chronic infection (with weight loss and a raised CRP). Dr [E], the medical registrar, did discuss the case with the senior clinicians, and, assuming that [Dr C] and Dr [F] were informed of the pertinent facts, I would expect them to prompt Dr [E] to consider a wider differential diagnosis and to advise Dr [E] regarding further investigations and management. I would have expected for the combination of progressive weight loss, constipation and abnormal liver function tests, alongside a raised CRP, to have prompted further investigation, in particular abdominal imaging with either ultrasound or CT scanning and investigations for possible chronic infection or inflammation. Overall, the senior clinicians that are aware of the acute patient's clinical presentation and results should have overall responsibility for this decision-making. I consider [Dr C]'s and Dr [F]'s decision-making in this situation to be a moderate departure from the usual or expected standard of care. It is not possible with the information provided to determine which of the senior clinicians was most responsible for this decision-making at the time as this is not documented in the clinical record. I consider this lack of documentation of the senior doctors involved in the discussions to be a minor departure from the usual standard of care.

5. The adequacy of Dr [E]'s documentation, including documentation of discussions with senior clinicians.

The documentation is brief but reasonable. It would have been more appropriate to include details of discussions with her senior colleagues, but I would consider this a minor departure in care.

6. The appropriateness of discharging Mr [A] prior to the formal radiograph reports being received.

It is extremely rare for plain radiology reporting to be completed prior to discharging patients from hospital. It is expected that hospital clinicians have the ability to interpret plain radiology such as chest X-rays and abdominal X-rays, so discharge prior to the reporting of plain X-rays is appropriate and common in hospital practice in New Zealand.

7. The appropriateness of any additional actions or investigations following the radiograph reports.

It is unusual to have an abdominal X-ray report indicate the possibility of ascites as this is not considered to be the usual form of imaging to detect ascites. That being the case, a report such as this should have prompted reconsideration of potential diagnoses for the patient concerned and the need for further investigations. This would be the responsibility of the doctor receiving the report, unless they hand over this responsibility to another clinician as noted below in question 9. To be able to decide the next appropriate steps for a patient, the clinician receiving an abnormal report needs to be able to combine this information with the clinical details. In this instance, it appears that the clinician who received the report was different to the clinician who knew the clinical details. This is a systems issue that needs attention, as noted in the response to question 9. The lack of a robust system to "marry up" the report to the clinician who knows the clinical details and the lack of a system that is able to promote this connection of information would be considered to be a moderate departure from a usual standard of care.

8. The adequacy of the procedures in place for handling referrals, including for consumers who present more than 48 hours after their referral.

Each district in Te Whatu Ora has different process for handling acute referrals. Referrals from the community are usually made via a phone call to a member of the hospital team, and some districts are then able to note these referrals on an expected patient system. Sometimes, these referrals are followed up by electronic or written correspondence. Delayed admissions do complicate this process as the referrals can then "drop off" the system due to capacity issues in the expected patient log. This is a reasonably consistent process throughout Te Whatu Ora and is a systems issue that could be improved. In general terms, there is not adequate staffing resource to follow-up or chase patients who do not attend for admission, which is a system resource issue. I don't consider this to be a departure from a usual standard of care.

9. The adequacy of procedures in place relating to delegation of authority and supervision, including follow-up of results if a patient has been discharged.

As noted above, there is an expectation that the most senior doctor who is aware of a patient's situation is responsible for decision-making around final diagnosis and appropriate investigations. The registrar in this case did discuss the patient with the consultant who had the greatest knowledge of the patient's background medical situation as well as the consultant on duty for the APU that day, and this is appropriate.

The results of the abdominal X-ray were directed to the on-call specialist, who was not one of the specialists that knew the patient's clinical details. This is not unusual in our current hospital system, but there should be a system to easily and quickly reassign this result to the appropriate clinician. This process can be onerous as it can be difficult to determine who the clinically responsible specialist is at times. This is a widespread system issue in Te Whatu Ora and remains a risk to patient care, especially in specialties where there are a large number of laboratory results to sign off. The lack of supportive systems to allow clinicians to work more seamlessly with the large number of pieces of information needing

to be reviewed is ubiquitous in the New Zealand public health system so can't really be considered a departure from a usual standard of care in New Zealand. It could be considered a moderate departure from a standard of care compared with more advanced medical systems overseas.

10. Any other matters in this case that you consider warrant comment.

Diagnostic error due to cognitive bias is a known risk in medicine as the human thought process is not perfect and can be swayed by commonly identified biases such as anchoring and premature closure of the diagnostic process. This is more common when clinicians are exposed to high levels of stress, high workloads and repeated interruptions. All of these environmental factors have increased in the hospital health system in New Zealand, and this has increased the risk of diagnostic error. This case occurred around the time of New Zealand's COVID-19 response — creating marked stress on the health system and on specialist medical physicians and medical registrars in particular. These systems factors should be taken into account in this case.

The extreme work pressure on general medical services in public hospitals in New Zealand, especially over the period of the COVID-19 response, has also reduced clinicians' ability to access and complete continuing medical education. It is vital that physicians are able to update themselves regularly in areas such as how to avoid cognitive errors and to have opportunities to reflect on the patients they see so they can decrease the risk of early diagnostic closure.



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