

Inadequate coordination of care and failure to manage kidney complications

Introduction

1. In May 2021, Mrs A (84 years old at the time) had surgery at Hawke's Bay Hospital (Te Whatu Ora | Health New Zealand (Health NZ)) to remove a skin cancer from her ear canal. Her postoperative journey was complicated with a postoperative haematoma in the neck wound, wound dehiscence (reopening), facial nerve palsy (facial droop), and difficulty swallowing.
2. Because of concerns about malnutrition and aspiration (something entering the airway or lungs by accident), in September 2021 Mrs A underwent a percutaneous endoscopic gastrostomy (PEG) to place a feeding tube directly into her stomach. During the procedure, Mrs A's oesophagus was perforated. Mrs A remained in hospital for ongoing care. Although Mrs A's oesophageal perforation healed, her condition deteriorated and she developed pneumonia, sepsis, and an acute kidney injury (AKI). Sadly, Mrs A died in hospital in mid October 2021. I extend my sincerest sympathies to Mrs A's family for their loss.
3. Mrs A's daughter, Ms B, raised concerns with the Health and Disability Commissioner (HDC) about several aspects of the care provided to her mother by Health NZ. These included poor communication and coordination of care between hospital specialty services, perforation of Mrs A's oesophagus, and inadequate management of Mrs A's fluid balance, resulting in renal failure. This report focuses on whether these aspects of Mrs A's care were provided to an appropriate standard. I note that Ms B's complaint raised concerns about other matters, and these have been addressed separately during the investigation process.
4. Under Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code), Health NZ had a responsibility to ensure that services were provided at Hawke's Bay Hospital with reasonable care and skill. I have found Health NZ in breach of Right 4(1) for failing to provide services with adequate coordination and communication between speciality services and failing to appropriately monitor and action Mrs A's deteriorating kidney function during her September 2021 hospital admission.

Recommendations

5. Further to changes made since the events (outlined at the end of this report), I recommend that Health NZ:
 - a) Provide a written apology to Mrs A's family for the deficiencies in care identified in this investigation. The written apology is to be sent to HDC within three weeks of this final report, for forwarding to Ms B.
 - b) Within three months of this report, provide:

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- i) An update on current staffing levels of surgical junior doctors and phlebotomy services on weekends and whether Health NZ considers these are at safe levels.
- ii) An outline of the content of Hawke's Bay Hospital's teaching programme for medical registrars regarding assessment and management of AKI, with comment about whether this aligns with the recommendations in the Auckland Hospital handbook for Resident Medical Officers.
- iii) The outcome of the 2022 hospital-based project to assist with streamlining patient flow and practices within services to improve patient experience and timeliness of care, with an outline of whether Health NZ considers that the changes made address the issues identified in Mrs A's care and whether any further changes or improvements have been/will be made.
- iv) An outline of any other relevant changes or improvements made, or planned to be made, with an explanation of how these changes will address the issues identified in Mrs A's care.

Background

6. I note at the outset that Mrs A's condition and treatment journey were complex. Although I do not wish to minimise Mrs A's experience or the impact of this on her family, for clarity I have not discussed every aspect of her care. Instead, I have focused on the aspects of care I consider directly relevant to the issues that are the subject of this investigation.
7. On 24 May 2021, Mrs A had surgery to remove a skin cancer in her right ear canal. The surgery involved removal of her outer ear (pinnectomy) and part of her temporal bone (the part of the skull that houses the ear), with reconstruction using muscles on the side of the head and neck. Mrs A's medical background included hypertension (high blood pressure) and type 2 diabetes. Mrs A's preoperative blood tests showed elevated creatinine levels,¹ indicating stage 3b (moderate–severe) chronic kidney disease.
8. The surgery was initially thought to have gone well with no complications. However, 36 hours later, Mrs A developed a haematoma inside the wound on her neck and a right-sided facial nerve palsy. It was thought that the facial droop may have been caused by swelling pressing on the facial nerve. Mrs A was taken for emergency surgery to re-open the wound, drain and stop the bleeding, and close the wound again. Following this procedure, the facial nerve was functioning normally. After a few days of monitoring and recovery, Mrs A was discharged into the care of her daughter, Ms B, with a plan for follow-up in the Ear, Nose and Throat (ENT) clinic in three weeks.
9. Mrs A's wound was slow to heal and required frequent dressing changes. On 4 June, the facial droop recurred. She attended the Hawke's Bay Hospital Emergency Department. A CT scan confirmed that there was no abnormal collection of fluid. There was some dehiscence on one side of the wound but no signs of bleeding or infection. The dressing was removed to reduce any possible pressure on the facial nerve, and the wound was re-dressed.

¹ 108umol/L against a normal range of 45–90umol/L.

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Following review by an ENT surgeon the following day, Mrs A was discharged with antibiotics and steroid medication and scheduled for ENT follow-up in three days.

10. Over the next month, Mrs A's wound was reviewed several times in the outpatient ENT clinic at Hawke's Bay Hospital. Ongoing dehiscence, purulent discharge, and wound breakdown with formation of a deep cavity was noted, together with persistent facial nerve palsy. It was thought that Mrs A's postoperative bleed was the most significant factor in her wound breakdown, although her diabetes was contributory. On 2 July, Mrs A was referred to the District Nursing Service for ongoing wound care.
11. In late July 2021, the ENT outpatient service noted that Mrs A had developed vocal cord palsy and decreased tongue control. This caused difficulties with swallowing and speech. No referral was made to a dietician or speech language therapist (SLT) at this time. Health NZ said that a referral to Dietetics and/or SLT would have been beneficial when concern developed about Mrs A's ability to meet her nutrition requirements orally.
12. Because of concerns about malnutrition and aspiration, in late August 2021 Mrs A's general practitioner referred her to the Hawke's Bay Hospital Gastroenterology service for consideration of a PEG feeding tube.
13. On 13 September 2021, Mrs A had a PEG tube inserted at Hawke's Bay Hospital. By this time, Mrs A was significantly deconditioned, with weight loss of about 21kg since May 2021 and hypoalbuminaemia (low albumin – a protein made by the liver; low levels indicate malnutrition).
14. After insertion of the PEG tube, its placement was checked with a small camera on a flexible tube (gastroscope). The gastroscope accidentally perforated Mrs A's oesophagus. The complication was identified during the procedure and then confirmed on CT imaging with intravenous (IV) contrast (dye injected into a vein to highlight blood vessels, organs, and tissues on imaging). Health NZ said that oesophageal perforations are an infrequent but known complication for gastroscopies, with an incidence of 0.008–0.4% according to the literature. Health NZ said that good clinical practice was followed after the perforation, including admitting Mrs A to hospital, undertaking an urgent CT scan, and advising the surgical and Intensive Care Unit team.
15. Mrs A remained under the care of the General Surgery service, although she continued to be regularly reviewed by the ENT, Physiotherapy, and SLT services. Because of her age and poor nutritional status, it was agreed that conservative management was appropriate (IV antibiotics and supportive care, no further surgery, no oral fluids or food).
16. As Mrs A could have no oral food or fluids, she was initially on total parenteral nutrition (TPN, whereby complete nutrition is delivered intravenously). On 14 September, Mrs A was reviewed by a dietitian. The dietitian's plan included that Mrs A's weight and fluid balance be recorded daily during the period of TPN. Between 13 and 22 September, Mrs A's fluid balance was variably recorded; accurate output measurements were often missing and 24-hour totals of input/output/balance were rarely recorded. No 24-hour fluid balance totals were recorded from 19 September 2021 onward.

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17. On 20 September, a CT scan with IV contrast showed that the perforation had healed. PEG tube feeding commenced on 21 September 2021.
18. From 22 September, Mrs A's condition deteriorated, with several episodes of low oxygen saturations activating rapid response callouts on 22–23 September. A chest X-ray showed clear lungs, and an IV contrast-enhanced CT scan of Mrs A's lung arteries showed no blood clots. The clinical records document that Mrs A's care team were alert to her high risk of aspiration and that a saline nebuliser and suctioning were used to help with excess secretions. As Mrs A's oxygen saturations were satisfactory when she was alert, it was thought that the most likely cause was obstructive sleep apnoea, a condition in which the muscles of the throat, tongue, and soft palate relax during sleep, causing narrowing or obstruction of the airways.
19. On 23 and 24 September, no IV fluids were given. PEG feeds continued. On 24 September, the Patient at Risk service noted that Mrs A's blood pressure had dropped to 94/58 after being 122–195 (systolic) over the past few days. Low blood pressure can be a sign of low fluid in the body (dehydration). Mrs A's blood pressure increased to 129–145 systolic later that day.
20. On the morning of 25 September, there was a further rapid response call as Mrs A was unresponsive with reduced oxygen saturations (50%). She had an elevated heart rate (110) and fever (38.6°C). Her blood pressure was relatively low, at 105/64. A diagnosis of sepsis was considered. When Mrs A was roused after 15–20 minutes, it was noted that she had PEG feed in her mouth (reflux). PEG feeding was temporarily discontinued, Mrs A was kept elevated at 30 degrees, IV fluids were recommenced (2.5L/day), and a septic screen was implemented (including blood cultures, blood tests, and chest imaging). Mrs A's systolic blood pressure remained relatively low, at around 110, for the rest of the day.
21. Later that day, a house officer² (HO) reviewed Mrs A and noted that her blood test results showed increased creatinine levels of 128, up from 66 on 23 September. Elevated creatinine can be a sign of AKI. The working diagnoses were sepsis (possibly due to aspiration or fluid collection in the lungs) and AKI.
22. A CT scan with IV contrast that afternoon showed that Mrs A had pneumonia (inflammation and fluid in the lungs caused by infection). IV fluids were administered before and after the contrast was administered, to mitigate a contrast-related renal injury. Mrs A was already on a course of IV antibiotics (Tazocin) for a previously identified ear infection, and this was continued. The fluid balance chart that day was partially completed, with input measurements but no output measurements or balance totals.
23. On 26 September (Sunday), PEG feeding was resumed. No further blood tests were taken, and there is no evidence that Mrs A was reviewed by a doctor. Health NZ said that hospital and phlebotomy staffing levels are lower at the weekends. Although a nursing entry at 6.15am documents 'IV[Fluids] ongoing,' the fluid balance chart documents no IV fluids. The

² A junior doctor in their first or second year of hospital training after completing their medical degree.

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fluids balance chart shows input measurements of PEG feeds and medications but has no output measurements or balance totals.

24. On the morning of 27 September, Mrs A was reviewed by the surgical, ENT, and dietetic services. Her vital signs were stable with no fever. The dietician noted an increased creatinine level of 128 from 25 September. Later that morning, blood test results showed creatinine levels of 342 and an estimated glomerular filtration rate (eGFR) of 10. An eGFR is a blood test that measures kidney function, and a score of <15 is an indication of kidney failure. There is no comment about these results in the progress notes that day. IV fluids were recommenced. A fluid balance chart was partially completed, with input measurements but no output measurements or balance totals.
25. On the morning of 28 September, a joint review was undertaken by the surgical and ENT registrars. The clinical note does not mention Mrs A's markedly elevated creatinine levels from the previous day. After this, a dietitian reviewed Mrs A and noted her elevated creatinine and that her fluid balance chart was incomplete. Later that morning, an HO spoke to a renal registrar about concerns that Mrs A had signs of decreased renal (kidney) function. The renal registrar agreed to review Mrs A. In the meantime, the plan was to give IV fluids, start monitoring urine output, and change antibiotics.
26. Mrs A was reviewed by the renal registrar that afternoon. The renal registrar noted Mrs A's history and that her creatine had risen from 70 to 342 in five days. Following assessment and examination, the renal registrar diagnosed an AKI, likely caused by hypovolaemia (insufficient circulating fluid/blood) due to insufficient oral/PEG intake and sepsis.
27. The renal registrar requested review by a renal senior medical officer the next day. In the meantime, the plan included continued rehydration and close fluid balance monitoring, daily blood tests, and urine testing for albumin–creatinine ratio to assess kidney health. A fluid balance chart completed that afternoon/evening documented the first recorded urine output measurement since 21 September (one week prior).
28. Overnight on 28–29 September, Mrs A was seen by the on-call HO because of decreased urine output. The HO documented that she was 'borderline anuric' (lack of urine production), likely because of poor fluid intake and sepsis. IV fluids were stopped as there was concern that Mrs A was becoming 'overloaded' with too much fluid in her body. Her creatinine levels continued to climb (388 on 28 September and 423 on the morning of 29 September).
29. In a family meeting on 29 September, it was discussed that Mrs A had a severe AKI due to dehydration and four rounds of nephrotoxic³ IV contrast for CT, on a background of sepsis and stage 3b chronic kidney disease. IV fluids had been stopped because the fluids were 'going to the wrong place,' with a build-up of fluids in the lungs and no urine output. It was decided that dialysis and CPR (cardiopulmonary resuscitation; in the event of cardiac arrest) would not be appropriate at this stage because they would be detrimental to Mrs A's quality of life. Mrs A and her daughter Ms B expressed their dismay at Mrs A's condition when she

³ Nephrotoxins are substances that can damage the kidneys.

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had been ‘fit and well and independent’ before the surgery in May 2021. Ms B felt this was due to a series of failures in Mrs A’s care.

30. Nephrologist Dr C was involved with Mrs A’s care. Dr C told HDC that multiple factors had contributed to Mrs A developing an AKI. These included renal hypoperfusion (decreased blood flow) because of hypovolaemia caused by sepsis (which promotes fluid loss), hypoalbuminaemia, and relatively low blood pressure, with the cumulative impact of repeated exposures to IV contrast for CT scans between 20 and 25 September 2021, on a background of stage 3b chronic kidney disease and diabetes as well as possible age-related renovascular disease.
31. Dr C acknowledged that Mrs A was not given any IV fluids on 23 and 24 September 2021 but said they did not think that Mrs A’s AKI could be attributed to a lack of fluids alone. Dr C also noted that administration of IV fluids was complicated by Mrs A’s repeated nighttime oxygen desaturation events and the presence of oedema (swelling from fluid) and pleural effusions (collection of fluid around the lungs).
32. However, Dr C said it is concerning that, despite an AKI being identified on 25 September, Mrs A’s renal function was not checked and she was not seen by a doctor on 26 September. Dr C said also said it is a ‘major concern’ that, on 27 September, the medical team did not take any action in response to Mrs A’s deteriorating renal function (elevated creatinine of 342 and eGFR of 10). Further, Dr C noted that the medical team did not document renal function/fluid balance assessments after Mrs A’s AKI was recognised on 25 September and that it was a ‘significant issue’ that the renal service was not involved until 48–72 hours after the AKI was recognised.
33. On 29 September, the general surgery team handed Mrs A’s care over to shared care by the ENT and renal services. Between 29 September and 9 October 2021, Mrs A’s care team continued to manage her condition and attempt to improve her kidney function. Although her urine output improved, Mrs A’s blood results remained significantly deranged, and her kidney function had plateaued.
34. On 10 October, Mrs A declined further treatment as she was exhausted. Medical interventions were withdrawn and comfort cares were provided. Mrs A died in hospital shortly after.
35. Health NZ acknowledged the poor coordination of Mrs A’s care. It identified that there needed to be a focus on better case coordination processes and improved communication between services and specialities. As of October 2022, Health NZ had projects under way to improve its service provision and coordination (discussed under ‘Changes made’).

Analysis

36. From the outset, I acknowledge the incredibly difficult and unexpected circumstances faced by Mrs A and her family in the final months of her life.
37. I have considered whether the health services Mrs A received were delivered with adequate care and skill, as required under Right 4(1) of the Code.

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Coordination and communication between specialty services

38. Health NZ acknowledged that there was poor coordination of Mrs A's care. I agree with this assessment and consider that deficiencies in coordination and communication between specialties contributed to Mrs A receiving care that fell below accepted standards.
39. Of note, after her May 2021 surgery, Mrs A was not seen by dietetic or SLT services until her re-admission to hospital in September 2021. By this time, she was already malnourished and significantly deconditioned. Given the nature of her ENT surgery and facial palsy before discharge, it seems that a risk of swallowing difficulties might have been predicted as a consequence of surgery and that dietetic and/or SLT review could have been considered by the ENT service following the surgery.
40. Failing a proactive referral, it appears that there was indication for dietetic and/or SLT review when Mrs A attended an outpatient ENT appointment in late July 2021 and it was noted that she had developed vocal cord palsy and decreased tongue control. I am critical that this was not done. I would also have expected that the ENT service would have monitored Mrs A's nutritional status at her outpatient appointments, and I am critical that this does not appear to have occurred.
41. I am also critical that, despite instruction from the dietetic service to closely monitor Mrs A's fluid balance after her oesophagus was perforated in hospital in September 2021, Mrs A's intake, output, and 24-hour fluid balance was not consistently recorded in the period 14–22 September 2021. However, I note that there was no suggestion, based on vital signs, general assessment, and serum biochemistry over this period, that Mrs A was significantly fluid overloaded or dehydrated.
42. I also note that there was a delay in the surgical service involving the renal service when Mrs A showed signs of deteriorating kidney function on 25–27 September 2021. I discuss this in more detail in the section 'Monitoring, investigation, and management of renal symptoms.'

Oesophageal perforation

43. The oesophageal perforation was an unfortunate outcome of Mrs A's PEG surgery, and I acknowledge the impact this had on the progression of her condition. However, I accept that oesophageal perforation is a known complication of gastroscopies. As such, the occurrence of a perforation does not in itself indicate that the gastroscopy was conducted without adequate care and skill. I do not consider there is any evidence to suggest that the procedure was not carried out in a manner consistent with accepted practice.
44. Further, I am reassured that the perforation was promptly identified and appropriately confirmed on imaging and that it appears to have subsequently been managed in an appropriate manner.

Monitoring, investigation, and management of renal symptoms

45. To assist with my investigation, I obtained advice from renal specialist Dr Helen Pilmore (**Appendix A**). Dr Pilmore was asked to comment on the standard of care Mrs A received during her September 2021 hospital admission.

46. Dr Pilmore advised that, in her opinion, Mrs A developed an AKI due to a combination of hypotension (low blood pressure), multiple doses of IV contrast for CT, and sepsis on a background of significant chronic kidney disease. Dr Pilmore noted that Mrs A was extremely deconditioned by the time of her admission and had a high risk of mortality. She advised that AKI is a common complication in people who are severely unwell with multiple medical problems. Dr Pilmore stated that iodinated contrast for CT can exacerbate this, but she advised that all the CT scans appear to have been clinically necessary and that Mrs A was appropriately given IV hydration to minimise the risk of nephrotoxicity. Dr Pilmore stated that it is possible Mrs A was dehydrated for a period (noting that Mrs A's blood pressure was low on 24 September and remained relatively low on 25 September 2021). However, she advised that there is no clear evidence of dehydration and that Mrs A's weight was stable during her admission.
47. However, Dr Pilmore identified two significant omissions in Mrs A's care.
48. First, Dr Pilmore noted that, on Sunday 26 September 2021, Mrs A was not reviewed by a doctor and her renal function was not checked, despite Mrs A being extremely unwell on 25 September with a high fever, oxygen desaturations, and a clearly documented elevation in her creatinine. Dr Pilmore advised that, on 26 September, renal function tests should have been repeated, careful fluid balance monitoring should have been commenced, and clinical review should have been arranged. In mitigation, she acknowledged that 26 September was a Sunday, when staffing levels were likely reduced. Taking this into account, Dr Pilmore advised that the failure to arrange appropriate repeat renal tests, fluid balance monitoring, and clinical review was a moderate departure from accepted practice.
49. Second, Dr Pilmore noted that, on 27 September 2021, Mrs A's deteriorating kidney function was neither noted nor actioned, despite her creatinine levels more than doubling between 25 and 27 September. Dr Pilmore advised that the failure to act on Mrs A's significantly elevated creatinine results on 27 September was a severe departure from accepted practice.
50. I accept Dr Pilmore's advice. I am critical that appropriate actions were not taken to monitor, review, and action signs of Mrs A's deteriorating kidney function on 26 and 27 September 2021. I note that Health NZ have also accepted Dr Pilmore's findings.
51. Dr Pilmore stated that, by the time renal review was arranged on 28 September, it was clear that Mrs A was in established acute tubular necrosis⁴ with essentially anuric AKI. She noted that it is unclear whether earlier detection and action in terms of hydration would have prevented the AKI from worsening and that, in the context of Mrs A's other medical problems, it is unlikely that her AKI contributed significantly to her subsequent deterioration and death.

Decision

52. Under Right 4(1) of the Code, Health NZ was responsible for ensuring that the services Mrs A received at Hawke's Bay Hospital were provided with reasonable care and skill.

⁴ A condition that results in a lack of oxygen and blood flow to the kidneys, resulting in AKI.

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53. For the reasons outlined above, I consider that the care provided to Mrs A at Hawke's Bay Hospital lacked adequate coordination and communication between specialty services, which resulted in a series of deficiencies in her care. Further, I consider that the failure to appropriately monitor and action Mrs A's deteriorating kidney function on 26 and 27 September 2021 was a significant omission that fell well below accepted standards. As these deficiencies involved multiple staff across several different services, I hold Health NZ accountable for these failings at a service level. For these reasons, I find that Health NZ failed to provide Mrs A with services with reasonable care and skill and, accordingly, breached Right 4(1) of the Code.

Changes made

54. Health NZ advised of the following changes since events:
- a) Since 2021, Hawke's Bay Hospital has increased staffing levels of surgical junior doctors over the weekends.
 - b) In 2022, Hawke's Bay Hospital's teaching programme for medical registrars was updated to include assessment and management of AKI.
 - c) In October 2022, a refresh of the Hawke's Bay clinical services plan was under way to review how services are provided and how to improve this into the future, including models of care and functional relationships across services.
 - d) In October 2022, a hospital-based project was under way to assist with streamlining patient flow and practices within services to improve patient experience and timeliness of care.

Follow-up actions

55. A copy of the final report with details identifying the parties removed, except Health NZ and Hawke's Bay Hospital, will be placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Dr Vanessa Caldwell

Deputy Health and Disability Commissioner

Appendix A: Independent clinical advice to the Commissioner

The following independent advice was obtained from Dr Helen Pilmore, nephrologist:

‘Complaint: Mrs [A] / Health New Zealand | Te Whatu Ora – Te Matau a Māui
Hawke’s Bay
Our ref: C22HDC00861
Independent advisor: Dr Helen Pilmore

Qualifications, training and experience relevant to the area of expertise involved	Nephrologist Auckland City Hospital Te Toka Tumai February 1999 – current MBChB, FRACP, MD 26 years’ experience as renal senior medical officer
Documents provided by HDC	1. Letter of complaint 2. Health NZ’s response dated 23 June 2022 3. Health NZ’s response dated 17 October 2022 4. Health NZ’s information on service improvements dated 10 January 2023 5. Health NZ’s response dated 27 February 2024 6. Clinical records from Health NZ
Referral instructions from HDC	Please review the enclosed documentation that relates to the care provided to the late Mrs [A] by Health New Zealand Te Matau a Māui Hawke’s Bay and advise whether actions taken after acute kidney injury was discovered on 25 September 2021 were appropriate.

Factual summary of clinical care provided complaint

Brief summary of clinical events	Summary of Complaint This complaint has been raised by [Ms B], the daughter of Mrs [A], who sadly passed away after a long illness after surgery to remove a basal cell carcinoma from her ear. Ms [B] is concerned that systemic failures within the hospital system led to her mother’s deterioration and, sadly, her premature passing. Specific to this response are two key issues: 1. That lack of communication between departments occurred 2. A lack of oral care and lack of fluid caused her renal failure. She does not specifically raise the question as to whether actions taken after AKI was discovered on 25 September were appropriate; however, this is what I have been asked by HDC to address. Summary of Clinical Notes I was provided with a number of documents, including:
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	1. A copy of [Mrs A]’s clinical records from May 2021 to October 2021, including clinical notes, medications, laboratory tests, imaging reports and diabetes charts. 2. A copy of the complaint. 3. Health NZ responses from 23 June 2022, 17 October 2022, 10 January 2023, and 27 February 2024. My response pertains to the admission on 13 September 2021, when [Mrs A] was admitted under the surgical team with a suspected oesophageal perforation after a PEG placement. Prior to this admission, [Mrs A] had undergone extensive surgical procedures for an invasive basal cell carcinoma (BCC), with the initial surgery occurring in May 2021. The initial surgery was complicated by a postoperative haematoma and facial nerve palsy. By the time of admission on 13 September, [Mrs A] had significant deconditioning, dysphonia, and difficulty swallowing, hence the requirement for PEG feeding. According to the dietitian note, [Mrs A] appeared to have lost 21kg since early 2021. She had a background of hypertension and type 2 diabetes mellitus with a baseline creatinine at the time of her initial surgery of around 100 (108 on preop labs, 6 May 2021) consistent with stage 3b chronic kidney disease. This was most likely related to hypertensive nephrosclerosis +/- diabetic nephropathy. At the time of admission on 13 September, she had an eGFR of 49ml/min and serum creatinine of 93. An eGFR of 49ml/min is consistent with about 50% normal kidney function. After the PEG insertion, concerns were raised regarding oesophageal perforation, and a CT scan was undertaken, demonstrating probable oesophageal perforation. The case was discussed with the Auckland ENT fellow who agreed conservative management was appropriate and that an oesophageal stent or surgery would not be appropriate due to her age and poor nutritional status at the time of admission. It was noted this was a complication with a high risk of mortality. Because she was unable to have any food or fluids by mouth, total parenteral nutrition (TPN) commenced on 14 September. TPN was initially commenced at a low rate to prevent refeeding syndrome but thereafter was administered at 70ml/hour until PEG feeding was established on 21 September 2021 after a CT scan on 20 September demonstrated that the oesophageal perforation was likely to have healed.
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	[Mrs A] was initially treated in the High Dependency Unit and transferred to the surgical ward on 17 September. At the time of transfer to the ward, she was established on TPN and had a serum creatinine of 69. The lower creatinine level was not due to improving kidney function but due to deconditioning and loss of muscle mass, which would be expected in someone with such a significant complication. She was hypoalbuminaemic, consistent with her prolonged poor nutrition, and had a clear chest. From 22 September, [Mrs A]'s general condition appeared to be deteriorating, with a number of rapid response callouts due to episodic oxygen desaturations. Due to concerns about the cause of these desaturations, she had a respiratory review and a CTPA [computed tomography pulmonary angiography – to visualise blood vessels that supply blood to the lungs]. IV fluids were given to prevent nephrotoxicity from the CT scan as contrast was required. This scan excluded a PE [pulmonary embolism]. She was diagnosed with hospital-acquired pneumonia on 23 September and was commenced on Tazocin. A family meeting was held on Friday 24 September, where there were well-documented discussions about [Mrs A]'s general deconditioning, frailty and the possibility of a poor outcome was discussed. It was also clearly discussed and documented that [Mrs A] was not to be resuscitated in the event of a cardio-respiratory arrest due to the likelihood that CPR would not be successful. On Saturday 25 September at 06:50h there was a further rapid response call for a reduction in GCS and oxygen desaturation. [Mrs A] was febrile and tachycardic with a BP of 105/64. She was seen by the team who noted PEG feed in the oral cavity. Hence PEG feeding was discontinued, and a CT scan was undertaken showing bilateral pleural effusions and consolidation in both lower lobes and the right middle lobe. IV hydration was given for this CT as well. It was noted by the surgical house officer that her creatinine had increased to 128. Of note, [Mrs A]'s blood pressure was noted to be low on 24 September and for all of 25 September was sitting around 110 systolic, which is significantly lower than her usual blood pressure of around 150–170 systolic. There was no accurate recording of urine output on the fluid balance charts after the detection of worsening renal function except for occasional noting of 'Up to Toilet'. Accurate measurement of urine output did not occur until 28/29 September, after a renal review.
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	No laboratory tests or review by any doctor occurred on Sunday 26 September. [Mrs A] was back on PEG feeding by this time. On 27 September, it was noted that her weight was 85kg. She had loose bowel motions, presumably due to the PEG feeding (<i>Clostridioides difficile</i> negative). Laboratory tests showed a significantly elevated serum creatinine of 342. There is no comment in the clinical record about this from the surgical or ENT teams; however, it was noted by the dietitian on the morning of 28 September and noted by the House officer at 11.55pm on 28 September, after which a renal referral was made. [Mrs A] was reviewed by the Renal Registrar at 2.30pm on 28 September and thereafter was seen by the renal service (largely by a consultant nephrologist) daily until 8 October. A decision was made that dialysis was not appropriate on 29 [September] and in fact, by the time of her passing, her renal function appeared to be on the point of improving, with stabilisation in her kidney function and increasing urine output. At no stage was there any absolute indication for dialysis. Sadly, her clinical condition deteriorated and she passed away on [in mid] October.
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Question 1: Were appropriate actions taken after acute kidney injury was discovered on 25 September 2021.	
List any sources of information reviewed other than the documents provided by HDC	KHA-CARI guideline: KHA-CARI adaptation of the KDIGO Clinical Practice Guideline for Acute Kidney Injury. Resident Medical Officer (RMO) Clinical Handbook Te Toka Tumai 2023 section on Acute Kidney Injury
Advisor's opinion	In my opinion, [Mrs A] developed an AKI due to a combination of hypotension, multiple doses of IV contrast for CT, and sepsis on a background of significant CKD. She was extremely deconditioned by the time of her admission and had a high risk of mortality, all of which are clearly documented. It is possible she was dehydrated for a period; however, there is no clear evidence of this and her weight was stable – I imagine examination of her JVP [jugular venous pressure – to assess volume overload] would have been very difficult with her previous neck dissection.

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	AKI is, sadly, a common complication in people who are severely unwell with multiple medical problems. Iodinated contrast for CT can exacerbate this; however, all the CT scans appear to have been very necessary for clinical care, and IV hydration to minimise the risk of nephrotoxicity was administered appropriately prior to each CT scan. In my opinion, there were two significant omissions. 1. There was no medical review or a check of renal function on Sunday 26 September, despite [Mrs A] being extremely unwell on 25 September with a high fever and desaturation and a clearly documented elevation in her creatinine. 2. Her deteriorating kidney function was neither noted nor actioned on 27 September despite a more than doubling of her serum creatinine between 25 and 27 September. By the time a renal review was requested, it is clear [Mrs A] was in established acute tubular necrosis with essentially anuric AKI. It is unclear whether earlier detection and action in terms of improving her blood pressure and increased IV hydration would have prevented worsening AKI; however, as below, there were departures from an acceptable standard of care at the time of detection of the AKI. In my opinion, this lady sadly was significantly unwell and deconditioned with multiple medical problems, including hospital-acquired pneumonia, reliance on PEG feeding, diabetes, and severe deconditioning. Sadly, AKI is not uncommon in this setting, and I think it is unlikely that the AKI contributed significantly to her death but was more a consequence of how severely unwell she had become.
What was the standard of care/accepted practice at the time of events? Please refer to relevant standards/material.	It is difficult to protocolise practice regarding AKI; however, in my opinion, an acceptable standard of care on detection of AKI would be at a minimum as follows: 1. Establish monitoring of urine output. 2. Treatment of sepsis and hypotension. 3. An attempt to determine the cause of AKI – ie, pre-renal, renal, or post-renal. 4. Repeat laboratory testing daily.

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	At a minimum, renal function should have been repeated on 26 September and careful fluid balance commenced. Examination of JVP and weight would have also been helpful; however, JVP may well have been difficult, especially for a junior surgical house officer. Additionally, on receipt of laboratory tests on 27 September showing a significantly elevated creatinine compared with 25 September, the above should have been implemented and help from the renal service requested. AKI recommendations in the RMO Clinical Handbook from Auckland City Hospital recommend reassessment of fluid volume status when giving IV fluids and regular tests for electrolytes, bicarbonate, and creatinine. The RMO Handbook recommends considering a renal consult for AKI in the setting of oliguria not responding to hydration, a doubling of serum creatinine or a serum creatinine >200micromol/L, hyperkalaemia, red cell casts in the urine, or AKI in the setting of multisystem disease.
Was there a departure from the standard of care or accepted practice? • No departure; • Mild departure; • Moderate departure; or • Severe departure.	In my opinion, the lack of repeat laboratory tests and initiation of careful fluid balance, including urine output, and the absence of a medical review on 26 September after [Mrs A] was so unwell on 25 September and AKI had been recognised are a moderate departure from accepted practice. The major mitigating factor is that 26 September was a Sunday, and I have no understanding of or documentation about staffing levels on the weekend. Likely, staffing levels for medical staff would have been significantly lower than during the week, and it is likely there would have been fewer phlebotomists. There is no nursing record indicating that an HO was called to review the patient on 26 September and due to lower staffing on weekends it is common for patients to not be reviewed unless there are clinical concerns. Nevertheless, standard practice would be for repeat labs and a clinical review.

	The failure to act on the significantly elevated serum creatinine on 27 September is a severe departure from accepted care. I do not have documentation of whether this laboratory result was noted by the medical staff; however, it is clear no action was taken until 28 September.
How would the care provided be viewed by your peers? Please reference the views of any peers who were consulted.	I have not consulted peers; however, I believe most nephrologists in New Zealand would agree that the lack of tests on 26 September and lack of action on what is clearly a significant AKI on 27 September would be considered a departure from standard clinical care.
Please outline any factors that may limit your assessment of the events.	I do not know if lab tests were ordered on 26 September but not carried out or if they were not ordered. There is no way to ascertain this unless electronic forms are used for ordering – I presume they are not. I do not have data about staffing levels on 26 September at Health NZ Hawke's Bay. I do not know if there is a document similar to the Auckland City Hospital RMO Handbook outlining what to do in the setting of AKI.
Recommendations for improvement that may help to prevent a similar occurrence in future.	My understanding is that there has been an improvement in the HO staffing in Surgery on the weekend. Improvements that would have helped are: • Adequate medical staffing on weekends • Adequate phlebotomy services on weekends • Recommendations for RMOs regarding actions for AKI, similar to those in the Auckland RMO Handbook – in particular recommendations for referral to the renal service in the setting of AKI.
By signing this report, I agree to HDC correcting any formatting, spelling, or grammar issues on the proviso that the substance of the report and any quoted material remains unchanged.	
	
Signature:	
Name: Dr Helen Pilmore	
Date of Advice: 4 November 2025	

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