Taranaki District Health Board

A Report by the Deputy Health and Disability Commissioner

(Case 20HDC00333)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Contents

Executive summary

1. This report concerns the care provided in 2019 to a woman at Taranaki District Health Board (TDHB) following surgery for kidney stones. In particular, the report concerns the delay in obtaining a date for her required follow-up surgery, the delay in recognition of sepsis after the surgery was performed, and the lack of escalation of her care to senior medical staff when she deteriorated.

2. Sadly, the woman died of fungaemia (the presence of fungi or yeasts in the blood) during her hospital admission.

Findings

3. The Deputy Commissioner found multiple failures in the care provided to the woman at TDHB, including not escalating her condition appropriately as per the EWS mandatory pathway, not involving senior medical staff in her care earlier, and the delay by multiple TDHB staff in recognising and responding to her sepsis appropriately. The Deputy Commissioner considered that these failures were not the result of isolated incidents involving one or two staff members — they began at the time the woman was referred for her follow-up surgery, and involved at least six different staff members, both doctors and nurses. As such, she found that TDHB breached Right 4(1) of the Code.

Recommendations

4. The Deputy Commissioner recommended that TDHB provide evidence that all recommendations made in its case review have been implemented; randomly audit whether the Sepsis Ready Programme is being adhered to; provide evidence of its EWS education campaign and roll-out programme for staff; roll out a "speaking up for safety" campaign to all nursing staff, to ensure that nurses are supported, taught, and encouraged to place a 777 call or amplify their concerns around patient management to senior medical staff; consider what further changes TDHB could make to address these concerns and ensure that the professional knowledge and expertise of both nurses and doctors is considered appropriately when decisions are made about care of patients; consider changing the terminology from "pre-arrest" to a term (appropriate for the outreach/PAR system set up at Taranaki Base Hospital) that the teams are more comfortable using; provide an update to HDC on the DHB's ability to deliver urology surgery within the Ministry of Health Guidelines; and provide a written apology to the family.

5. The Deputy Commissioner referred TDHB to the Director of Proceedings.

Complaint and investigation

6. The Health and Disability Commissioner (HDC) received a complaint from Mr A about the services provided to his wife, Mrs A, at Taranaki District Health Board (TDHB). The following issue was identified for investigation:

- *Whether Taranaki District Health Board provided Mrs A with an appropriate standard of care between Month1[1] and Month4 2019 (inclusive).*

7. This report is the opinion of Deputy Health and Disability Commissioner Deborah James, and is made in accordance with the power delegated to her by the Commissioner.

8. The parties directly involved in the investigation were:

Mr A	Complainant/husband of consumer
Taranaki District Health Board	Provider

9. Further information was received from:

Dr B	House officer
Dr C	Urology registrar
RN D	Registered nurse (RN)
Dr E	House officer
Dr F	Anaesthetic registrar
Dr G	Medical registrar

10. Also mentioned in this report:

Dr H	Urology registrar
RN I	ICU coordinator

11. Independent expert advice was obtained from a urologist, Dr Nadya York (Appendix A), and an intensive care nurse, RN Lynsey Sutton-Smith (Appendix B).

Information gathered during investigation

Background

12. Mrs A, aged in her sixties at the time of events, had a medical history that included type 2 diabetes, high blood pressure, and asthma. On 15 Month1, Mrs A presented to Hawera

[1] Relevant months are referred to as Months 1–4.

Hospital's Emergency Department (ED) with acute abdominal pain, and subsequently she underwent surgery for kidney stones.

13. This report concerns TDHB's management of Mrs A from 15 Month1, in particular the delay in obtaining a date for her required follow-up surgery, the delay in recognition of sepsis after the surgery was performed, and the lack of escalation of her care to senior medical staff. Sadly, Mrs A died during her hospital admission. I take this opportunity to extend my sincere condolences to her family.

First surgery — Month1

14. On 15 Month1, Mrs A presented to Hawera Hospital's ED with acute abdominal pain, documented in the clinical notes as:

> "Colicky left flank pain, non-radiating, described as sharp, 8–10/10 in severity, no relief with paracetamol and codeine at home. Similar to prior kidney stones that were managed operatively in 2009."

15. Mrs A was given morphine for pain relief, diagnosed with possible renal colic (sharp pain caused by kidney dysfunction) and transferred to Taranaki Base Hospital (Taranaki Hospital) by ambulance for further investigation and treatment.

16. At Taranaki Hospital, a CT scan confirmed an obstructing kidney stone measuring 8mm x 4mm, which was blocking the part of the ureter[2] that drains to the bladder. Mrs A was admitted to the General Surgery ward, and on 16 Month1 surgery was performed to place a left ureteric stent[3] to bypass the blockage.

17. After the surgery, a referral was sent for Mrs A to be placed on the waiting list for a ureteroscopy lithotripsy[4] to treat the kidney stones. The referral noted that the priority was "routine", and listed a clinically appropriate timeframe for the surgery as within four weeks.

18. Mrs A's recovery from the stent placement was uneventful, and she was discharged from Taranaki Hospital on 18 Month1. Her place on the elective surgery waitlist for a lithotripsy was confirmed on 19 Month1.

Presentations to ED — Month3 and Month4

19. On 24 Month3, Mrs A's GP clinic sent an urgent urology referral to TDHB as, despite it being almost 10 weeks since her stent placement, she had not received a date for her follow-up lithotripsy. The referral stated:

[2] A tube that carries urine from the kidney to the urinary bladder.
[3] A ureteric stent is a thin, flexible plastic tube that is placed between the kidney and the bladder.
[4] A ureteroscopy is a procedure to look inside the ureters and kidneys; a lithotripsy is a procedure to break up kidney stones so that they can be passed in the urine.

> "Urgent referral for bad pains and recurrent UTIs … Still having vaginal pains, started after they put in stent (because of kidney stones) in [Month1], no change in pain but can't stand it any longer, no operation date yet to remove kidney stones."

20. On 26 Month3, Mrs A presented to Hawera ED with flank[5] and abdominal pain, which had been ongoing since the stent surgery 10 weeks previously. She was seen by an ED consultant, and her vital signs,[6] a urine sample,[7] and an ECG[8] were taken. Intravenous morphine was given for pain relief, and Mrs A was admitted to Hawera Hospital overnight for symptom relief.

21. The following morning, Mrs A was noted to be feeling "somewhat better", but she was still reluctant to go home and was keen to have the stent removed. The ED consultant discussed Mrs A's presentation with a urology registrar, Dr H, and a plan was made to discharge Mrs A with pain relief, antibiotics,[9] and a follow-up clinic appointment with Dr H.

22. Dr H met with Mrs A at the follow-up clinic appointment on 1 Month4. The reason for the consultation was noted as "significant difficulty with stent irritation". The clinic letter stated:

> "I [Dr H] brought [Mrs A] in today to have a discussion with her about the rationale for the stent and how unfortunately, the stent has to remain at this stage, as she had an infected stone [and] taking this out would cause her to run into problems again. She currently does not have a date for surgery therefore I have sent an email to [the booking clerk] to try to expedite this if possible.
>
> I have given her some information about the stents and how the management for her is going to be pain relief … I was unable to give her a date today but I will try to arrange this to happen as soon as possible."

23. One week after the clinic appointment with Dr H, on 8 Month4 Mrs A presented to Hawera ED with worsening pain that was noted to be unbearable. She was given fentanyl, morphine, paracetamol, and tramadol for pain relief during her admission, and was discharged on the morning of 9 Month4. Prior to her discharge, Mrs A was told that unfortunately, Dr H still did not have a date booked for the follow-up surgery.

24. In a subsequent letter to the family, TDHB stated that the focus of Mrs A's medical management on her second and third assessments at Hawera ED (26 Month3 and 8 Month4 respectively) was different to her first. TDHB explained that this was because the diagnosis of kidney stones had been made and the interim treatment by way of the stent had occurred, and so the main goal of treatment was to manage Mrs A's pain, which was being caused by irritation of the ureter by the stent, until such time as lithotripsy could be done.

[5] The side of a person's body between the ribs and the hip.
[6] The results were unremarkable.
[7] The urine culture grew E. coli.
[8] The results were unremarkable.
[9] For the E. coli infection in the urine.

25. On 13 Month4, Mrs A presented to Taranaki Hospital's ED with abdominal pain, stinging on urination, nausea, and hot/cold sweats. It was noted in the clinical records that she was brought in by her husband and son, as they had "had enough" of the ongoing pain Mrs A was experiencing and the lack of progress with obtaining a date for her surgery. TDHB stated that the severity of illness at this time prompted the need for further diagnostic investigations, which at this point indicated the need for acute surgery. The lithotripsy occurred the following day, on 14 Month4, and is discussed in detail below.

26. TDHB told HDC that the reason Mrs A had not received a lithotripsy earlier was "almost certainly" capacity. TDHB stated that in 2019, the DHB had only one full-time urologist, and that even with two full-time urologists employed in 2021, it remains a challenge to deliver surgery within the Ministry of Health Guidelines.[10] TDHB said that "this is a known organisational risk and is currently being monitored by the surgical directorate".

27. TDHB stated that on reflective discussion with the consultant urologist responsible for Mrs A's care, it was considered that despite the delay in receiving the lithotripsy, and in conjunction with Mrs A's presentations to Hawera ED due to pain, there was no significant clinical indication to have operated any sooner.

Second surgery and admission — 14 Month4

28. At approximately 11.20am on 14 Month4, Mrs A was placed on IV antibiotics and taken to theatre for her lithotripsy. The theatre note documented that Mrs A's ureter was very inflamed, and that multiple stones were found and fragmented. Given the degree of inflammation, the stent was also replaced.

29. The surgery took approximately 50 minutes, and Mrs A was transferred to the Post Anaesthetic Care Unit for recovery, and then returned to the surgical ward at 1.50pm under the care of the urology team.

30. While on the ward, Mrs A was monitored using (among other things) an Early Warning Score (EWS). An EWS is calculated from routine vital sign measurements, and increases as vital signs become increasingly abnormal. The EWS triggers an escalating clinical response so that clinicians with the appropriate skills can intervene and manage the patient's deterioration.

4.15pm review

31. Dr B was the first-year house officer allocated to the urology team that day, from 7.30am–4.00pm, under the supervision of the consultant radiologist. Dr C was the locum urology registrar rostered to cover the urology service on this day.

32. At 4.15pm, Mrs A was reviewed by Dr B. Despite Dr B's shift officially ending at 4.00pm that day, he was contacted by a nurse regarding concerns about Mrs A's postoperative pain. Dr B reviewed Mrs A and noted that she had "ongoing pain post-op[eration], not significantly

[10] https://www.health.govt.nz/our-work/hospitals-and-specialist-care/planned-care-services/planned-care-services-and-how-dhbs-are-performing.

responsive to opioid". He documented in Mrs A's notes that she described the pain as "less severe comparing to post-[operation] but different in nature".

33. Dr B recorded his impression as "1) Post operation pain ? stent related; 2) Tachycardia [fast heart rate] ? secondary to pain ? P.E[11] unlikely, ? early sepsis", and made a plan for more regular pain relief, and to notify the night house surgeon if Mrs A's pain was completely unresponsive to pain relief.

34. Immediately after his review, Dr B contacted Dr C (who was off site at the time), and informed her of the review and his plan, to which Dr C agreed. As Dr B was still concerned about Mrs A's pain, he did not leave the ward, and stayed longer to be available for any deterioration.

4.15–4.40pm

35. Between 4.15pm and 4.30pm, Mrs A's EWS fluctuated between 4 and 6.[12]

36. At 4.40pm, RN D (the primary nurse caring for Mrs A) calculated Mrs A's EWS as 10, due to a high heart rate (135 beats per minute[13]), a low systolic blood pressure (BP) reading of 95,[14] and a reduced level of consciousness. Ten minutes later, at 4.50pm, RN D again calculated the EWS as 10.

37. As per TDHB's Mandatory Escalation Pathway for EWS, an EWS of 10 indicates an "immediately life threatening critical illness", and the pathway mandates that a 777 or "pre-arrest" call is to be made. When a 777 call is made, the Medical Emergency Team will respond with the intent of reducing mortality and preventing cardiac arrest in response to the deteriorating patient. TDHB's "Adult Vital Sign and Early Warning System" policy states:

> "Anyone may place a 777 pre-arrest call if they are seriously concerned about a patient, regardless of vital signs of EWS. Always consider activating a 777 pre-arrest call. This will ensure a response."

38. However, a 777 call was not made on this occasion.

39. RN D told HDC that she assessed Mrs A clinically at this time, and although her EWS had increased (mainly due to a low systolic BP and high heart rate), she considered that the EWS had increased because Mrs A was becoming drowsy, which does sometimes occur following IV opioid administration. RN D stated that Mrs A was still rousable to voice, and all of her other observations had not changed significantly, and this was one of the reasons why she did not put out a 777 call.

[11] A pulmonary embolism (PE) is a sudden blockage in the vessels that supply blood to the lungs.
[12] An EWS of 1–5 requires the action of managing the pain, fever, and/or patient distress. An EWS of 6–7 mandates a house officer review within 60 minutes.
[13] A normal resting heart rate for adults ranges from 60 to 100 beats per minute.
[14] A systolic blood pressure of around 120mmHg is considered normal, but a systolic blood pressure of under 90mmHg is considered low.

40. RN D stated that another reason why she did not put out a 777 call was because she knew that Dr B was on the ward, and she asked him to review Mrs A. RN D told HDC that she asked Dr B if he wanted her to call a pre-arrest, but he said that he would review the patient first. RN D stated: "[Dr B] was also in the bedspace when I repeated the observations at [4.50pm]. He was aware of the EWS 10."

41. RN D documented the following notes at the end of her shift, at 8.50pm:

> "… EWS [raised to] 10, rousable to voice, BP as systolic drop from 122, HR 132+ on 1L[itre] via nasal prongs — [Dr B] in attendance contacted reg[istrar] — bloods taken and stat 500ml NaCL 0.9% started at 1700 responsive to fluids EWS 8 …"

42. In contrast, Dr B told HDC that he was not contacted or updated by nursing staff regarding the worsening calculated EWS, and that "at no stage were concerns about [Mrs A's] observations raised" with him. In particular, he noted that he was not told about the EWS being 10, nor was any need for a pre-arrest call suggested to him.

43. RN D told HDC that on reflection, and now as a more experienced nurse, she accepts that a 777 call should have made when Mrs A's EWS was 10, with support from senior nursing staff.

5.05pm review

44. At 5.05pm, Dr B reviewed Mrs A for the second time (after the 4.15pm review). He told HDC that this was simply to re-evaluate her condition after the IV pain relief had been administered. He reiterated that he was not told by the nurse that the EWS had increased to 10 in the interval between 4.40pm and 4.50pm. Dr B told HDC that his practice when asked to see a patient is to take observations himself, rather than to rely on the past observations made by nursing staff. He stated: "As for my own assessment, I did think that [Mrs A] warranted review by the registrar, however I did not assess her as being pre-arrest."

45. At the time of Dr B's review, Mrs A's EWS was still high, at 8 and 9 (at 5.00pm and 5.15pm respectively). As per TDHB's EWS mandatory escalation pathway, the requirement for an EWS of 8–9 was to contact the registrar for a review, and for the registrar to undertake a review within 20 minutes. In addition, the pathway states that the ICU outreach team should be informed. Dr B discussed Mrs A with Dr C, who advised to take Mrs A's bloods and to give analgesia (pain relief), and said that she would review Mrs A later. There is no evidence that the ICU outreach team was contacted at this time.

46. Dr B told HDC that bloods were not taken, as Mrs A had poor IV access, and so he sent for venous blood gases to be checked instead. He documented his review in the clinical records as follows:

> "Reviewed 45 minutes later: improvement but became drowsy. Responsive and rousable … discussed with surgery. Pupils pinpoint … Impression: drowsiness ?opioid

related. 1. Surg reg will review later. 2. Blood gases sent now. 3. IVF [intravenous fluids] 500ml bolus[15]."

47. Dr B stayed on the ward until Dr C arrived, at which time a handover was given, and it was suggested (by Dr C) that Dr B could go home. Dr B told HDC that before leaving the hospital, he found the on-call surgical house officer, Dr E (a first-year house officer), and handed over Mrs A's care and his concerns in person.

5.30pm review

48. At 5.30pm, Mrs A was reviewed by Dr C, to assess the postoperative pain described by Dr B as well as Mrs A's general postoperative condition.

49. Dr C noted that at the time of her review, Mrs A's EWS was 5 and was trending down from a high of 10 earlier. Dr C told HDC that she was reassured by this trend, and felt that Mrs A's fast heart rate was most likely due to her pain, and that her low BP and drowsiness was likely due to opioid administration as well as lingering effects of the anaesthesia. As a result, Dr C considered that further escalation (such as contacting the consultant) was not required.

6.20–10.30pm

50. At 6.20pm, Dr E was called to review Mrs A as she was still experiencing postoperative pain.

51. At this time, Dr E assessed Mrs A and noted that despite multiple regular doses of IV pain relief (morphine), her pain levels had continued to increase. He contacted the acute pain service, who suggested a trial of fentanyl — a fast-acting opioid pain medication. Mrs A's pain relief was changed to fentanyl, and Dr E planned to review her again in an hour's time.

52. At 6.45pm, Mrs A was noted to have had a drop in her systolic blood pressure, to 60mmHg, resulting in an EWS of 8. As per TDHB's EWS mandatory escalation pathway, the requirement for an EWS of 8–9 was to contact the registrar for a review. In addition, the pathway states that the ICU outreach team should be informed. However, neither of these actions occurred, and instead Dr E was contacted by the pager system to review Mrs A. At his review, he noted that her systolic BP had improved to 92mmHg, her pain was controlled, and her oxygen saturation had improved and she was no longer requiring supplemental oxygen.

53. Dr E discussed Mrs A with Dr C, who felt that Mrs A's pain was not out of keeping with the degree of inflammation as a result of her surgery. IV fluid was charted and administered.

54. Between 8.50 and 10.30pm, Mrs A's observations were taken every 15 minutes, and her EWS stayed around 7.

10.30pm review

55. At 10.30pm, Mrs A's heart rate increased to 130 beats per minute, and she required two litres of oxygen to achieve an oxygen saturation level above 95% (her levels were

[15] A bolus is a single, large dose of medicine.

documented to have been around 90–92%).[16] RN D discussed Mrs A's condition with Dr E, and asked whether Mrs A should be considered for the High Dependency Unit (HDU), but this was declined by Dr E.

56. Dr E told HDC that at this time, Mrs A's EWS was 5, and her blood pressure had remained above 90mmHg (92mmHg) following the fluids, and so he responded that HDU was not required at this point, as her observations and clinical picture were similar to when she was reviewed by the urology registrar, who had felt that she had an appropriate disposition.

57. On his review, Dr E noted that Mrs A was confused and incoherent, and that she had developed an acute change in her neurological symptoms, with no objective power in her left upper and lower limbs. He told HDC that he discussed Mrs A with the on-call medical registrar, who advised that he should request an urgent CT scan of the head.

58. Shortly after Dr E's review, it was discovered that Mrs A had a raised temperature of 38.5°C, and her EWS was 9. As per TDHB's EWS mandatory escalation pathway, the requirement for an EWS of 8–9 was to contact the registrar for a review of the patient, but this did not occur.

777 call

59. At 11.30pm, Mrs A had a sudden drop in systolic BP to 64mmHg. As per TDHB's EWS mandatory escalation pathway, a systolic BP of 64mmHg was in the "blue zone", and a 777 call was required. Dr E was informed of the situation by a nurse, and he instructed that a 777 call be placed.

60. The night shift medical registrar, Dr G, responded to the page and reviewed Mrs A. He documented: "[Mrs A] now appears sepsis with recent urological procedure." A plan was made to manage Mrs A's symptoms as sepsis, with fluid resuscitation and antibiotics, and transfer her to the HDU.

61. At 12.00am, blood cultures were taken and sent to the laboratory to determine a cause of infection.

62. TDHB's Case Review of these events (discussed below), notes that ICU coordinator RN I was one of the staff members who attended the page for the 777 call. She told TDHB that as she was walking down the corridor in the ward, the registrar (Dr G) was standing outside Mrs A's room, and he advised her that all had been resolved and that she need not attend. Dr G told HDC that he does not recall turning down assistance from the ICU nursing staff at the time of the 777 call.

Initial care in HDU

63. Mrs A was admitted to the High Dependency Unit (HDU) shortly after the 777 call, at around 12.30am on 15 Month4.

[16] A normal oxygen saturation level is usually 95% or higher.

64. At 12.45am, Dr G discussed Mrs A with the anaesthetic registrar, Dr F. Dr G told HDC that the outcome of this conversation was that Mrs A was still early in her fluid resuscitation and so she should be resuscitated with five litres of IV fluids first, and, if her systolic blood pressure remained below 80mmHg, he should contact Dr F again and he would review Mrs A at that time.

65. Dr F told HDC that he considered that Mrs A had not been resuscitated adequately, and therefore further fluid resuscitation was appropriate before any escalation of therapy should be considered, and that this is what he recommended. In contrast to Dr G, Dr F stated:

> "I do not recall specifying she needed to have 5L of fluid before she was reassessed. It is more likely I recommended that further boluses (up to 2L) should be given, while continuously reassessing her response throughout. [Dr G] agreed with my recommendation and was happy to instigate the plan without me needing to review [Mrs A]. I told [Dr G] to contact me again if there were any issues or concerns, or if [Mrs A] failed to respond to treatment."

66. The plan was documented in Mrs A's notes as:

> "[G]ive up to 5L of IV fluid stat & [illegible] — if still [systolic] BP [less than] 80 after 5L IVF then update and for consideration of vasopressors [medication used to raise severely low blood pressure] + arterial line."

67. TDHB's Case Review noted that ICU coordinator RN I felt that the level of concern conveyed during the registrar handover did not reflect how sick Mrs A actually was. RN I noted that in her experience, a presentation such as Mrs A's would commonly require a central line and noradrenaline.[17] RN I stated: "[D]espite recommending this, alternative peripheral treatments were actioned and escalation of care was too slow for [Mrs A's] level of deterioration."

68. Dr G completed a further formal review of Mrs A at 2.20am, when she was nearing the completion of her fifth litre of fluids. Dr G stated:

> "At that time [Mrs A] reported she was feeling much better than earlier that evening, but was becoming somewhat short of breath. Despite five litres of IV fluids her systolic BP was not persisting above 80 mmHg. On examination of her cardiorespiratory system she remained in sinus tachycardia [fast heart rate] of around 110–120 [beats per minute] and she now had expiratory wheeze."

69. Dr G noted that Mrs A was not responding to the fluid and was beginning to show signs of respiratory compromise, and so he contacted Dr F, as Mrs A was in need of additional cardiovascular support.

[17] A medication used to increase blood pressure.

70. Dr F told HDC that when he attended Mrs A, he "very quickly" assessed that she required vasopressor support, and he requested that a phenylephrine infusion[18] be initiated. Dr F said that he then endeavoured to insert an arterial line for ongoing blood pressure monitoring, but this was difficult and took some time. Once the arterial line had been sited, Dr F asked for an arterial blood gas sample be taken to look for any metabolic derangement[19] and to recheck for evidence of ischaemia[20]/hypoperfusion.[21]

71. Initially, as a result of the phenylephrine infusion, Mrs A's systolic blood pressure improved from 85 to 124mmHg between 2.52am and 4.00am. By 4.00am, her mean arterial pressure had also improved to 65mmHg. However, Mrs A's diastolic blood pressure was not responding well to the phenylephrine, and higher doses were needed to maintain her mean arterial pressure. In addition, the results of the arterial blood gas sample reported at 3.35am showed the development of a mild metabolic acidosis.[22]

72. At approximately 3.30am, Dr F contacted the ICU senior medical officer (SMO), an anaesthetic consultant, for advice. The SMO advised Dr F to insert a central line[23] and start a noradrenaline[24] infusion. The discussion was documented in Mrs A's notes as:

> "[Discussed with] [ICU SMO] -> advised for central line + noradrenaline … Plan -> 1) CVL [central venous line] + Norad[renaline] 2) continue [antibiotics]."

73. The central line was inserted by Dr F, and noradrenaline was started, sometime after this conversation and before 5.00am.[25] In response to the provisional opinion, Dr F told HDC that the infusion was started at 4.15am, as per the medication chart. The medication chart, under the heading "Date", notes the date of these events (16 Month4), although the correct 24-hour time for 4.15am would be 0415.

Subsequent events

74. On 16 Month4, the results of Mrs A's blood cultures were returned, and a diagnosis of fungaemia[26] was made. Mrs A was treated with antifungal medication, and was sedated, intubated, and ventilated. Over the following days, discussions were held with Mrs A's family about her diagnosis and poor prognosis.

75. Sadly, Mrs A continued to deteriorate, and died in hospital.

[18] A medication used to treat low blood pressure.
[19] Abnormal laboratory findings.
[20] An inadequate supply of blood/oxygen to part of the body.
[21] A reduced amount of blood flow.
[22] A condition in which too much acid accumulates in the body.
[23] A central venous line (a tube placed in a large vein in the neck, chest, groin, or arm to give fluids, blood, or medications or to take samples for tests quickly).
[24] Used to treat life-threatening low blood pressure.
[25] No time is recorded on the medication chart, but a note in the clinical records made by the ICU registrar at 5.00am indicates that noradrenaline had been started by that time.
[26] The presence of fungi or yeasts in the blood.

Further information

Mrs A's family

76. In his complaint to HDC, Mrs A's husband stated that he feels that Taranaki Hospital staff have not taken sufficient action to address the failure of the doctors to escalate Mrs A's care. In light of the doctors' inability to follow existing EWS policy, and TDHB's failure to attribute accountability, he is unconvinced that Taranaki Hospital will follow the new proposed guidelines for sepsis management.

TDHB

77. TDHB undertook a case review into the care provided to Mrs A through her DHB journey after her stent surgery and leading up to her death. The review identified the following issues in the care provided to Mrs A:

- Despite the EWS scoring system triggering a requirement for full escalation on 14 Month4, nurses did not call a pre-arrest, and instead contacted junior doctors. Responders then did not escalate Mrs A's condition to senior medical team members;
- Blood cultures were not taken when sepsis was first identified as a possible diagnosis at 4.15pm; instead, the first set of cultures was sent to the laboratory at 11.49pm that night;
- The reviewing registrar noted that there were no concerning factors upon reviewing Mrs A following EWS scores of between 8–10;
- There was a clear lack of urgency to escalate to ICU level of care from the ward-based level of care;
- When Mrs A was handed over to the HDU, there appeared to be a lack of urgency surrounding what appeared to nursing staff to be a case of septic shock;
- There was a high workload for junior doctors to manage a deteriorating patient without senior medical support. In addition, the registered nurse caring for Mrs A on the afternoon shift on 14 Month4 had three other patients;
- Organisational policy gives clear guidance for mandatory EWS escalation, and this was not followed appropriately;
- At the time of events, TDHB did not utilise any form of inpatient sepsis guideline to guide clinicians in the management of sepsis once sepsis had been identified;
- There is an issue of not calling for help from senior medical staff within the organisation — in both nursing and medical teams — and that needs to be addressed.

78. The review concluded that delays occurred in the inpatient setting with regard to the recognition of sepsis and escalation of care. It stated that while the prognosis associated with fungal septicaemia is very poor, earlier identification and intervention may have improved the outcome for Mrs A in this particular instance. TDHB noted that there are learnings from this review that will guide recommendations to improve future practice. These recommendations are discussed below, from paragraph 118.

Dr E

79. Dr E told HDC that he wishes to extend his deepest condolences to the family of Mrs A. He stated:

> "I would like for them to know that the actions I took on the evening of 14 [Month4] were with purpose, with care and with the best of my ability. I recognise that there were delays to the escalation of her care to a senior clinician and that sepsis was not identified immediately. I have learnt from this case and have taken active part in employing the [Taranaki] DHB sepsis pathways as they have been introduced …"

Dr C

80. Dr C told HDC that her understanding of the EWS system is that it is chiefly actioned by nursing staff. She said that where faced with an EWS of 10, the responsibility to place the peri-arrest call typically rests with the nurse, as usually the nurse is first to know the score. She stated:

> "In my experience, the EWS score is not a tool that is generally quoted between doctors on review. I have never received training in the use of the EWS system, and I don't know any doctor that has."

81. In response to this, TDHB stated that it was "somewhat surprised at this statement and strongly refutes the comment regarding no doctors had received training", and told HDC that training was provided to ward staff and house surgeons in 2017 and 2018.

Responses to provisional opinion

82. TDHB was provided with an opportunity to comment on the provisional opinion. TDHB stated:

> "Taranaki DHB accepts your finding that it breached Right 4(1) of the Code in respect of the services provided to [Mrs A]. We have already begun, and intend to continue, addressing the issues that are identified in your opinion and which Taranaki DHB itself identified through its own case review."

83. In conclusion, TDHB stated that it sincerely apologises for the identified shortfalls in Mrs A's care and the distress this has caused to her family.

84. Dr C, Dr E, Dr G, and RN D had no further comment to make. Dr B again wished to express his deepest condolences to the family.

85. Mrs A's family was provided with the "information gathered" and "changes made" sections of the provisional opinion, and told HDC that they had no further comments to make. They stated: "[T]he facts seem correct to our knowledge, the family feel strongly still that Base Hospital neglected [Mrs A] in their care of her."

Opinion: Taranaki District Health Board — breach

Introduction

86. Mrs A's stent insertion on 15 Month1 and subsequent recovery was routine and uneventful. Due to capacity issues at TDHB, Mrs A had to wait almost 12 weeks before treatment of her kidney stones. When her follow-up surgery was finally performed, sadly she developed sepsis, deteriorated, and died, after what had been a straightforward surgical procedure. I consider that in this case, there was a delay in the recognition (and therefore treatment) of Mrs A's sepsis, as well as a lack of escalation of her care to senior medical staff.

87. To assist my consideration of the care provided, I obtained expert urology advice from Dr Nadya York, and nursing advice from an intensive care nurse, RN Lynsey Sutton-Smith.

Care provided to Mrs A

Delay in obtaining date for follow-up surgery

88. Regarding Mrs A's stent surgery, my independent urology advisor, Dr York, considered that the standard of care was met. She advised that the standard treatment in the setting of Mrs A's initial symptoms would be urgent decompression of the collecting system, and that one of the ways of doing this was by insertion of a ureteric stent. Dr York stated: "[Mrs A's] management in this instance is consistent with published guidelines and meets the standard of care." Additionally, Dr York advised that the management plan and advice provided to Mrs A during her presentations to ED and at her outpatient urology appointment were appropriate.

89. After the placement of the stent on 16 Month1, Mrs A was referred for further surgery (ureteroscopy lithotripsy) to treat the kidney stones. The referral noted that the priority was "routine", and listed a clinically appropriate timeframe for the surgery as four weeks.

90. Between her first surgery and her follow-up surgery, Mrs A presented to TDHB EDs three times, with ongoing abdominal pain and discomfort. Despite the referral noting that a clinically appropriate timeframe for surgery was four weeks, Mrs A did not undergo the lithotripsy until 14 Month4 — almost 12 weeks after her stent placement.

91. Dr York was critical of the length of time Mrs A had to wait for her follow-up surgery, and noted that the lithotripsy was undertaken three months after the stent insertion.

92. TDHB told HDC that the reason Mrs A did not receive a lithotripsy earlier was "almost certainly" due to capacity. It stated that in 2019, the DHB had only one full-time urologist, and that even with two full-time urologists employed in 2021, it remains a challenge to deliver surgery within the Ministry of Health Guidelines. TDHB told HDC that "this is a known organisational risk and is currently being monitored by the surgical directorate".

93. Dr York advised:

> "[Mrs A] was waitlisted for definitive stone surgery (laser lithotripsy) to occur within 4 weeks. This is an appropriate booking form time frame for a patient with an indwelling ureteric stent, consistent with international guidelines …
>
> However, the *actual*[27] time [Mrs A] waited to have her surgery performed is beyond 4 weeks scheduled and beyond reasonable tolerance of 8 weeks. Delays to definitive stone treatment increase risks of stent irritation symptoms (as [Mrs A] experienced), stent encrustation, further stone growth and UTIs. This is an area of possible improvement for the DHB."

94. I agree with this advice, and note that the delay (three times longer than the listed clinically appropriate timeframe) resulted in Mrs A experiencing significant discomfort for many months, with no clear indication of when the follow-up surgery would occur. In addition, the delay allowed for an increased risk of complications, as noted by Dr York above. Only after three presentations to ED with ongoing pain was the surgery finally undertaken.

Failure to escalate care

95. After Mrs A underwent lithotripsy surgery on 14 Month4, she was transferred to the Post Anaesthetic Care Unit for recovery, before being transferred back to the surgical ward at 1.50pm. While on the ward, Mrs A was monitored using (among other things) an EWS. The pathway for the EWS escalation is outlined in TDHB's "Mandatory Escalation Pathway". Throughout Mrs A's post-surgical care, the EWS pathway was not adhered to on multiple occasions, and escalation was not actioned as per the pathway.

96. As early as 4.40pm, Mrs A was in a "pre-arrest" state as per her EWS of 10. Despite this, her care was not escalated by way of a 777 call, as per TDHB's policy, and the ICU outreach team was not contacted. There are differing versions of events in relation to whether Dr B knew about Mrs A's EWS score at this time. RN D told HDC that she asked Dr B if he wanted her to call a pre-arrest, but he said that he would review the patient first. RN D documented (at 8.50pm) that Mrs A's EWS was 10, and that Dr B was in attendance and had contacted the registrar. It is unclear whether this note refers to Dr B being aware of the EWS at 4.40pm, or whether the note is referring to Dr B's review at 5.05pm, after which he contacted Dr C.

97. In contrast, Dr B told HDC that he was not contacted or updated by nursing staff regarding the worsening EWS, and that "at no stage were concerns about [Mrs A's] observations raised" with him. In particular, he noted that he was not told about the EWS being 10, nor was any need for a pre-arrest call suggested to him.

98. I acknowledge these differing versions of events, and with the evidence available I cannot determine whether or not RN D did inform Dr B of Mrs A's pre-arrest status. However, the DHB policy is clear that "anyone may place a 777 pre-arrest call", and I consider that RN D

[27] Emphasis in original.

should have made the call regardless. I note that now, as a more experienced nurse, RN D accepts that a 777 call should have made, with support from senior nursing staff.

99. Regarding the failure to action Mrs A's EWS at 4.40pm, my independent intensive care nurse advisor, RN Lynsey Sutton-Smith, advised that this was a missed opportunity to trigger escalation to the ICU outreach team. In addition, noting the failure to place a 777 call at this time, she stated that the process of escalation and the EWS policy was not followed, and she considers this to have been "a significant deviation from the standard of care".

100. At 5.05pm, during Dr B's review, Mrs A's EWS score was around 8–9. As per TDHB's EWS mandatory escalation pathway, the requirement for an EWS of 8–9 was to contact the registrar for a review, and for the registrar to undertake a review within 20 minutes. In addition, the ICU outreach team should have been informed. While Dr B discussed Mrs A with Dr C, there is no evidence that the ICU outreach team was contacted at this time.

101. At 6.45pm, Mrs A was noted to have had a drop in her systolic blood pressure, to 60mmHg, resulting in an EWS of 8. Instead of contacting the registrar for a review, nursing staff contacted house officer Dr E. Then, despite Mrs A becoming febrile with an EWS of 9 shortly after 10.30pm, her care was not escalated to a registrar, as required by the DHB's pathway.

102. I consider that these were all missed opportunities for senior medical input into Mrs A's care and management. Despite Mrs A's deterioration, which initiated a pre-arrest call at 11.30pm, Mrs A did not receive any input from a senior medical officer until approximately 3.30am the following morning.

103. My independent urology advisor, Dr York, agrees with TDHB's review finding that there were delays in appropriate escalation of Mrs A's care and involvement of senior clinicians. Dr York advised:

> "This is a significant departure from accepted practice and a breach of the DHB's own Mandatory Escalation Pathway. [Mrs A] was reviewed frequently by the junior medical staff that night. The issue of escalation to a more senior physician review and a higher level of care when the patient scored EWS 10, failed to improve or continued to deteriorate is where improvements could be made. Neither the surgical nor medical consultant was made aware of patient deterioration that evening. Nursing staff also did not contact senior clinicians to escalate their concerns."

104. RN Sutton-Smith considers that several systems aspects may have contributed to these failures. In particular, she noted the following:

- From the individual staff statements, there seems to be confusion around whose responsibility it is to place 777 calls;
- Dr C suggested that the responsibility of escalating an EWS and placing 777 calls chiefly lies with the nursing staff because they are the ones who calculate it most often, and, in

her experience, the EWS tool is not one used by doctors in their reviews, nor are they trained in its use;

- Even though Dr B stated that he was unaware of Mrs A's EWS being 10 because he was not informed by the nurses, the EWS is documented clearly on the vital signs chart;
- RN D did not place a 777 pre-arrest call because she assessed Mrs A as being rousable to voice and nothing had changed with her observations. RN Sutton-Smith suggested that this may indicate a lack of awareness of the intended purpose of a 777 call, and that perhaps the wording in the escalation process and policy (pre-arrest) is counter-intuitive and counter-productive, in that only patients who are deemed to be in a pre-arrest state merit a 777 call — when this is not the case. The intent of a 777 call is to reduce mortality and prevent cardiac arrest in response to a deteriorating patient;
- There were multiple instances where nursing staff appear not to have been listened to — when RN D asked whether a 777 call should be made at 4.40pm, when RN D asked whether an HDU transfer should be made at 10.30pm, when RN I was sent away from the 777 call, and when her suggestion that noradrenaline be started earlier in the HDU was not actioned.

105. In addition, TDHB noted that the workload for 14 and 15 Month4 was high for junior doctors to manage in addition to a deteriorating patient without senior medical support, and that RN D was caring for three other patients on the evening of 14 Month4.

106. RN Sutton-Smith advised that the lack of EWS escalation and failure to follow the policy in this case "was the fault of all the team members involved (nurses … house officers, registrar)". She stated:

> "The decision to place a 777 call does not lie solely with the RN, anyone can place a 777 call — nurse, doctors, coordinators, managers. Education to the medical/surgical team(s) should be given on the EWS policy so they understand the process of escalation."

107. It is clear that there was confusion amongst TDHB staff around the appropriate escalation procedures regarding an EWS, as well as the 777 process, which I have highlighted above. I accept my expert's comments that this was the responsibility of all the team members involved, including the nurses, house officers, and registrars. As noted in TDHB's review, these failures indicate a systemic issue of not calling for help from senior medical staff within the organisation, in both nursing and medical teams, and this is an issue that needs to be addressed at an organisational level.

108. I consider that the failure of staff to escalate Mrs A's care appropriately and initiate senior medical input into her care resulted in Mrs A not receiving appropriate management for her condition. This included the failure to recognise and respond appropriately to sepsis in a timely manner, as discussed below.

Failure to recognise and respond to sepsis appropriately

109. Sepsis was first identified as a potential cause of Mrs A's symptoms at 4.15pm on 14 Month4. However, this was only one of the potential diagnoses listed, and Mrs A was treated with IV antibiotics (which had been commenced before the surgery and had been continued), supplementary oxygen, pain relief, and fluids.

110. Despite multiple reviews by house officers and registrars, further investigation into sepsis as a possible cause was not undertaken until 12.00am, when blood cultures were taken. In addition, despite Mrs A's lack of improvement in the HDU, support by way of a central line and noradrenaline was not started until somewhere between 3.30am and 5.00am the following day.

111. RN Sutton-Smith advised that once admitted to the HDU at 12.30am, Mrs A's blood pressure was under 80mmHg systolic from the time of the arrest call to the time when she was assessed for consideration of inotropic support at 2.20am. While not a peer of these clinicians, RN Sutton-Smith stated:

> "Both the anaesthetic registrar and medical registrar acknowledge [Mrs A] will likely require cardiovascular support, but both felt she was early in her fluid resuscitation and would reassess things after 5 Litres of fluid. Whilst I acknowledge this may be common practice on ward level patients (and with the benefit of the whole case in hindsight) I am not sure waiting for 5 Litres to be given represents timely management especially given the precariousness of [Mrs A's] post-operative course already."

112. Additionally, Dr York considers that earlier recognition of sepsis with aggressive fluid resuscitation and inotropic support could have limited the severity and duration of the hypoperfusion (reduced blood flow) Mrs A experienced as a result of sepsis.

113. I concur. Sepsis is a potentially life-threatening condition that necessitates prompt and at times aggressive treatment. Despite it being identified as a potential cause of Mrs A's symptoms as early as 4.15pm on 14 Month4, appropriate investigations (blood cultures) were not sought until 12.00am, and treatment by way of inotropic support did not occur until sometime between 3.30am and 5.00am the following day — around 12 hours after the initial suspicion was raised. I note that TDHB's review also identified issues with the delay in sending for blood cultures, and the lack of urgency surrounding what appeared to nursing staff to be a case of septic shock.

114. While I acknowledge that subsequently it was discovered that Mrs A had fungaemia — noted in TDHB's review as being associated with a very poor prognosis — I consider that there were missed opportunities for earlier identification and intervention that may have improved the outcome for Mrs A. Of note, TDHB did not utilise any form of inpatient sepsis guideline at the time of events. Such a guideline would have assisted its staff in the management of sepsis once sepsis was identified, and may have resulted in timelier identification and intervention.

Conclusion

115. I have carefully considered the extent to which the deficiencies in Mrs A's care occurred as a result of individual staff action or inaction, as opposed to systemic and organisational issues. The problems that arose with Mrs A's care were not the result of isolated incidents involving one or two staff members — they began at the time Mrs A was referred for her follow-up surgery, and involved at least six different staff members, both doctors and nurses. In addition, I note that the majority of the doctors involved were of a junior level.

116. As set out above, Mrs A's follow-up surgery to treat her kidney stones was delayed significantly, and, after the surgery, she became increasingly unwell and died of septic shock secondary to fungaemia. While I acknowledge that surgery brings with it an inherent risk of post-surgical complications, I consider that there were missed opportunities for TDHB's staff to recognise and respond to Mrs A's post-surgical complications appropriately. I consider that TDHB did not provide services to Mrs A with reasonable care and skill, for the following reasons:

- The time Mrs A waited to have her second surgery performed was beyond the four weeks scheduled and beyond the reasonable tolerance of eight weeks. This contributed to Mrs A experiencing significant and prolonged pain, and increased the risk of stent encrustation, further stone growth, and UTIs;
- Appropriate escalation in response to Mrs A's EWS was not actioned on multiple occasions as per TDHB's EWS mandatory escalation pathway, and there appears to have been confusion by staff as to their escalation responsibilities;
- There were instances where the appropriate professional concerns of nursing staff about Mrs A's condition appear not to have been taken into account and responded to by TDHB doctors;
- There was a lack of senior medical staff involvement in Mrs A's care until 3.30am on 15 Month4; and
- There was a delay by multiple TDHB staff in recognising and responding appropriately to Mrs A's sepsis, which quickly turned into septic shock. At the time of the events, TDHB did not have in place a policy to assist staff in this regard.

117. The above failures involved numerous individuals across the DHB, and I consider this to be a service delivery failure for which, ultimately, TDHB is responsible. Accordingly, I find that TDHB breached Right 4(1)[28] of the Code of Health and Disability Services Consumers' Rights (the Code).

[28] Right 4(1) stipulates: "Every consumer has the right to have services provided with reasonable care and skill."

Changes made since events

TDHB

Sepsis Ready Programme

118. Since these events, TDHB has engaged with external providers — the New Zealand Sepsis Trust and the Health Quality & Safety Commission — to support the implementation of an identification and management programme to improve treatment of sepsis in its patients. TDHB said that it is the pilot site to refine and implement the "Sepsis Ready Programme", the premise being early intervention and treatment.

119. In response to the provisional opinion, TDHB noted that this programme's success has been acknowledged by both partner agencies, and serves as a template for other DHBs to adopt. It stated that the DHB's work in introducing initiatives to improve the detection and treatment of deteriorating patients has resulted in a marked improvement in TDHB's response to those cases. In particular, TDHB noted that over the past two years, there has been a significant reduction in the number of cardiac arrest calls (defined as the patient without a pulse) and an increase in the number of 777 pre-arrest calls in TDHB hospitals.

120. TDHB also told HDC that the telephonists (who issue the emergency notifications of pre-arrests and cardiac arrests to medical and nursing staff following 777 calls) now send this notification as an "arrest alert" so that responders respond to all patients on the premise that they are all in full cardiac arrest. TDHB provided HDC with a chart showing that pre-arrest alert events are being notified much more frequently than prior to these changes, and that the pre-arrest alerts reflect situations where patients are less severely ill and their predicament more easily remedied. TDHB stated:

> "Cardiac arrests are occurring much less frequently over time because patients who are deteriorating are being identified and attended to before they reach a full cardiac arrest stage."

Patients At Risk (PAR) service

121. The PAR service was introduced at TDHB in November 2019. It supports nursing and medical staff in the identification and care coordination of deteriorating patients. TDHB told HDC that PAR nurses are very experienced ED and/or ICU nurses, and that the PAR Clinical Nurse Specialist:

- Provides nursing support for EWS as per the EWS chart escalation pathway;
- Provides support for any clinical concern about a deteriorating patient;
- Follows up on ICU discharges to the ward;
- Facilitates interdisciplinary communication;
- Carries out deteriorating patient rounding;
- Provides acute care education; and
- Attends all 777 calls.

EWS policy and staff education

122. In January 2020, TDHB updated its EWS policy to reflect the implementation of the national standardised New Zealand EWS (NZEWS[29]). With the establishment of the NZEWS, TDHB carried out an extensive education campaign and roll-out programme for its staff, including new nurse orientation and a deteriorating patient and CPR (cardio-pulmonary resuscitation) study day with emphasis on the EWS system. TDHB told HDC that this training is mandatory for its nursing staff every three years. In addition, there are unit-based simulations and study days where EWS is also emphasised, and, on almost a weekly basis, TDHB undertakes a two-hour session in the skills laboratory designated to the practice of patient assessment, early recognition, and management, which includes cardiac arrest and resuscitation.

123. In response to the provisional opinion, TDHB noted that the following initiatives were also undertaken:

- A Medical Grand Round was led by the Health Quality & Safety Commission on the Deteriorating Patient Programme, covering the deteriorating patient and use of the EWS system; and
- Following the Medical Grand Round, a two-hour workshop on patient deterioration was hosted by the Health Quality & Safety Commission for registrars, house surgeons, ICU nurses, and allied groups such as physiotherapists.

Recommendations

124. I recommend that TDHB:

a) Provide evidence that all recommendations made in its case review have been implemented. This evidence is to be provided to HDC within six months of the date of this report.

b) Randomly audit whether the Sepsis Ready Programme is being adhered to for 30 patients who met the sepsis criteria within the last six months, and report the results of the audit to HDC within ten months of the date of this report. Where the audit results do not show 100% compliance, TDHB is to advise what further steps will be taken to address the issues.

c) Provide evidence of its EWS education campaign and roll-out programme for staff (as detailed in paragraph 122), as well as an update on any further training that has since been provided to both nursing and medical staff on the new EWS protocol, and an outline of future plans for training on this topic. This information is to be provided to HDC within four months of the date of this report.

[29] https://www.hqsc.govt.nz/assets/Deteriorating-Patient/PR/Vital_sign_chart_user_guide_July_2017_.pdf

d) Amend the training provided in (c) to ensure that it covers the EWS protocol around escalation, including to whom care is to be escalated and by whom, if not already covered. Evidence that this has been done is to be provided to HDC within four months of the date of this report.

e) Roll out a "speaking up for safety" campaign to all nursing staff, to ensure that nurses are supported, taught, and encouraged to place a 777 call or amplify their concerns around patient management to senior medical staff. As part of this campaign, TDHB should promote awareness or develop a process or pathway for nurses to contact senior doctors directly in appropriate circumstances, such as a lack of response from house officers and registrars. Evidence that this has been done is to be provided to HDC within six months of the date of this report.

   In response to the provisional opinion, TDHB stated that it had intended to introduce a "speaking up for safety" and "Promoting Professional Accountability" campaign in 2020, but this was delayed because of the COVID-19 pandemic. TDHB said that it intends to roll out this campaign to all health professionals, not only nurses, within the next six months.

f) Noting the issues outlined in this report around the communication between nursing staff and doctors, consider what further changes TDHB could make to address these concerns and ensure that the professional knowledge and expertise of both nurses and doctors is considered appropriately when decisions are made about care of patients. The outcome of this consideration, and any changes made as a result, are to be sent to HDC within four months of the date of this report.

g) Consider changing the terminology from "pre-arrest" to a term (appropriate for the outreach/PAR system set up at Taranaki Base Hospital) that the teams are more comfortable using, and that better indicates the context in which a 777 call should be made, as per RN Sutton-Smith's suggestion. The outcome of this consideration is to be provided to HDC within four months of the date of this report.

h) Provide an update to HDC on the DHB's ability to deliver urology surgery within the Ministry of Health Guidelines, along with any changes that have since been made (or any proposed future changes) to improve these timeframes, within four months of the date of this report.

i) Provide a written apology to Mrs A's family for the breach of the Code identified in this report. The apology is to be sent to HDC, for forwarding to Mrs A's family, within three weeks of the date of this report.

Follow-up actions

125. TDHB will be referred to the Director of Proceedings in accordance with section 45(2)(f) of the Health and Disability Commissioner Act 1994 for the purpose of deciding whether any proceedings should be taken.

126. In response to the provisional opinion, TDHB asked that I reconsider my proposed referral to the Director of Proceedings. It stated that the DHB has accepted my findings against it, and, with some minor comments, has accepted the extensive recommendations. TDHB submitted that it has already undertaken, or has committed to undertake, significant steps to address public health and safety concerns arising from this matter, and it will be held to account for those steps moving forward. TDHB suggested that remedies available in the Human Rights Review Tribunal would not take matters further, and that there is little more to be gained from a referral to the Director of Proceedings.

127. I have carefully considered these submissions. While I accept that TDHB has proven its commitment to changes and learnings as a result of this event, I consider that the numerous failures in this case paint a very concerning picture at a systems level, and that there is a high public interest in holding TDHB accountable for the failures identified in the services it provided to Mrs A. I therefore consider it is in the public interest to refer this matter to the Director of Proceedings.

128. A copy of this report with details identifying the parties removed, except the experts who advised on this case and the names of Taranaki DHB, Hawera Hospital, and Taranaki Base Hospital, will be sent to the New Zealand Sepsis Trust and the Health Quality & Safety Commission, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Addendum

129. The Director of Proceedings decided to issue proceedings in the Human Rights Review Tribunal.

Appendix A: Independent clinical advice to Commissioner

The following expert advice was obtained from urology surgeon Dr Nadya York:

"Dear Commissioner,

Thank you for your request to provide clinical advice about the care provided by Taranaki Hospital to the late [Mrs A] from 15 [Month1] to 16 [Month4] (HDC Ref No: C20HDC00333). In preparing the advice on this case to the best of my knowledge I have no personal or professional conflict of interest. I have read and agree to follow the Commissioner's Guidelines for Independent Advisors.

I am a consultant Urological surgeon. After receiving my FRACS (Urol) qualification in 2015 I have obtained further 2-year sub-specialty fellowship training in kidney stone surgery (Endourology) at Indiana University, Indianapolis, USA. I am now a practising surgeon in Auckland, with kidney stone surgery as my predominant interest.

Background:
On 15 [Month1], [Mrs A] presented to Hawera ED with abdominal pain suspected to be kidney stones. She was subsequently transferred to Taranaki Base ED for further investigation. A JJ ureteric stent was inserted the following day, and [Mrs A] was discharged with plans to follow up for a lithotripsy.

On 13 [Month4], [Mrs A] presented to Taranaki Base Hospital complaining about ongoing pain. She underwent lithotripsy and stent insertion on 14 [Month4]. When she returned back to the surgical ward, her condition deteriorated. The possible cause of [Mrs A's] deterioration was identified as sepsis and she was later transferred to the High Dependency Unit.

The commissioner has requested that I advise whether I consider the care provided to [Mrs A] by Taranaki District Health Board reasonable in the circumstances and why. I have reviewed the information on file: Referral from the Nationwide Health and Disability Advocacy Service dated 17 February 2020; Taranaki DHB's response dated 14 April 2020; Clinical records from Taranaki DHB covering the period from 15 [Month1] to 16 [Month4]; DHB response to the complaint on 06 December 2019. In particular I was asked to comment on the following questions as set out below:

Q1. *Whether the management of [Mrs A's] obstructing proximal ureteric stone, on 15/16 [Month1], was consistent with accepted practice?*

[Mrs A] was diagnosed an obstructing 8x4mm left mid ureteric stone on a CT Abdomen on 15 [Month1]. She was noted to have E. coli UTI and had fevers preoperatively. The presence of an obstructing ureteric stone in the context of fevers or infection is a urological emergency. The standard treatment in this setting would be urgent decompression of the collecting system. This can be achieved by either a JJ ureteric stent (performed in the operating room) or a nephrostomy (by the interventional

radiology service). [Mrs A] underwent insertion of left ureteric JJ stent on 16 [Month1], this is the appropriate management and is a standard of care. Notably, in the context of urinary infection, acute treatment of stone itself (with laser lithotripsy) is contraindicated. Thus, placing a ureteric stent only, with a later planned stone treatment surgery, is very appropriate. [Mrs A's] management in this instance is consistent with published guidelines and meets the standard of care[1].

Q2. *Whether appropriate priority was given to the scheduling of [Mrs A's] subsequent surgery (ureteroscopy and lithotripsy). Please consider whether it was appropriate that when she re-presented to TBH with acute symptoms two months later (13 [Month4]), she had yet to be assigned a procedure date?*

There are two questions here. The first is whether [Mrs A's] booking form was filled with appropriate clinical priority time frame. [Mrs A] was waitlisted for definitive stone surgery (laser lithotripsy) to occur within 4 weeks. This is an appropriate booking form time frame for a patient with an indwelling ureteric stent, consistent with international guidelines[2]. In my department (Auckland DHB) a similar patient would be booked with the expectation of surgery being done within 4 weeks of stent insertion with tolerance of up to 8 weeks. Thus, [Mrs A's] elective booking form was completed appropriately. I also note the booking forms (x 2 in fact) were completed within two days of stent insertion which is excellent practice as it allows the patient to go on the waitlist as soon as possible.

However, the *actual* time [Mrs A] waited to have her surgery performed is beyond the 4 weeks scheduled and beyond the reasonable tolerance of 8 weeks. Delays to definitive stone treatment increase risks of stent irritation symptoms (as [Mrs A] experienced), stent encrustation, further stone growth and UTIs[3]. This is an area of possible improvement for the DHB.

Q3. *Whether the urological management advice provided to [Mrs A's] Hawera Hospital ED clinicians, when she presented on 26 [Month3] and 08 [Month4], was clinically appropriate?*

During [Mrs A's] presentation to Hawera ED on 26 [Month3] advice from Urology Reg (as per discharge summary, page 212 of hospital records) stated '… *stent cannot be removed until she has her kidney stone lasered. Pain is likely from stent irritation. Recommend adding Doxazosin for symptomatic relief'. '… [Dr H] will try to organize getting her into Urology clinic this Wed* ...' This advice is appropriate in [Mrs A's] situation and meets the standard of care. Removal of stent without treating ureteric stone would result in recurrence of kidney obstruction and risk significant sepsis once

[1] https://uroweb.org/guideline/urolithiasis/#3 Section 3.4.2

[2] https://www.baus.org.uk/_userfiles/pages/files/Publications/Acute%20ureteric%20colic%202018.pdf pg. 60. I note level of evidence is 4 (expert opinion) with grade of recommendation C (absence of clinical studies of good quality).

[3] Ureteral stenting and urinary stone management: a systematic review. Haleblian, G et al. J Urol 2008 Feb;179(2):424–30

again, just like [Mrs A's] experience in [Month1]. The pain described in GP and ED notes would be consistent with stent irritation symptoms. Up to 85% to 90% of stented patients reported irritative voiding symptoms, including frequency, urgency, dysuria, flank pain, suprapubic pain and hematuria. An alpha-blocker (Doxazosin) can be useful in managing stent symptoms[4]. A plan to book patient for urgent clinic review is very sensible and reasonable.

During [Mrs A's] presentation to Hawera ED on 08 [Month4] [Dr H] was again contacted *'… unfortunately {pt} still does not have a date for surgery. Suggest ongoing pain killers, may require frequent ED admissions for stronger pain relief …'.* In [Dr H's] clinic letter on 01 [Month4] she mentions arranging an elective surgery date for [Mrs A] with an elective booking clerk. This can take several days to put in place. I note on this ED presentation again *'… patient's only issue is pain*'. As above, [Mrs A's] symptoms appear typical of stent irritation. There was no evidence of sepsis at this stage, and intercurrent UTI was appropriately treated with antibiotics. The advice given is appropriate.

Q4. *Whether [Mrs A's] management plan, following her outpatient review by the Urology registrar on 01 [Month4], was clinically appropriate?*

[Dr H] was a Urology registrar who saw [Mrs A] on 01 [Month4]. Her letter summarises patient progress to date, including patient symptoms and rationale for avoiding stent removal without treating underlying stone. [Dr H] also mentions contacting booking clerk … by email to expedite her surgery. [Dr H] outlines stent management plan and appropriately prescribes further antibiotics. A safety net of repeat presentation to ED if her pain worsens is mentioned. I commend the excellent quality of [Dr H's] documentation, well above the usual for her level as a registrar. The advice and management plan provided are clinically sound.

Q5. *The DHB identified delays in appropriate escalation of [Mrs A's] care, and involvement of senior clinicians, following [Mrs A's] deterioration after surgery on 14 [Month4]; do these issues represent a departure from accepted practice and, if so, how severe are these departures?*

Following the operation [Mrs A] was noted to be in pain and was reviewed by house officer ([Dr B]) at 16:15 on 14 [Month4]. I note excellent quality of patient review, plan and documentation by [Dr B]. However, [Mrs A's] EWS score at 16:40 and again at 16:50 was 10. This should have prompted a pre-arrest 777 call as per the Mandatory Escalation Pathway. I agree with the DHB case report that delays in appropriate escalation of [Mrs A's] care and involvement of senior clinicians have occurred. This is a significant departure from accepted practice and a breach of the DHB's own Mandatory Escalation Pathway. [Mrs A] was reviewed frequently by the junior medical staff that night. The issue of escalation to a more senior physician review and a higher level of care when the patient scored EWS 10, failed to improve or continued to

[4] The beneficial effect of alpha-blockers for ureteral stent-related discomfort: systematic review and network meta-analysis for alfuzosin versus tamsulosin versus placebo. Kwon JK et al. BMC Urol. 2015; 15: 55.

deteriorate is where improvements could be made. Neither the surgical nor medical consultant was made aware of patient deterioration that evening. Nursing staff also did not contact senior clinicians to escalate their concerns. Earlier recognition of sepsis with aggressive fluid resuscitation and inotropic support could have limited the severity and duration of hypoperfusion [Mrs A] had experienced.

Q6. *Are there any additional issues with [Mrs A's] management not identified in the DHB Case Review?*

Not in my opinion.

Q7. *Please comment on the remedial measures outlined in the DHB Case review — are these adequate and appropriate? Do you have any additional recommendations in this regard?*

I agree with the DHB recommendation of developing an inpatient sepsis guideline/ pathway for nursing and medical staff as well as an intensive education campaign in conjunction with this. The Mandatory Escalation Pathway process could be highlighted as a part of this.

Discrepancy in booked (4 weeks) vs. actual (almost 3 months and in the context of ongoing pain and repeated presentations) timeframe for surgery could be addressed by the DHB. I can only assume this is due to workforce issues, access to operating theatres and other similar systemic difficulties. This is an area of potential improvement.

Q8. *A significant concern raised by the complainant was how [Mrs A] developed the sepsis which led to her eventual death. Do you believe this has been adequately, and accurately, addressed in the correspondence from the DHB to [Mrs A's] family?*

The DHB case report outlines patient factors that increased the risk of sepsis in [Mrs A] (Section 2. Contributing factors — Patient factors). Further, detailed description of risk factors and events timeline is included in the DHB response to the complaint on 06 December 2019. I agree with this assessment and consider it a fair reflection of the events. To summarise and clarify, the risk factors for sepsis in this case are cumulative and include:

— Presence of a kidney stone, acting as a foreign body nidus for infection
— Preoperative UTIs, including E. coli. I note these were appropriately treated with antibiotics at the time of surgery. I note multiple courses of antibiotics that, while clinically appropriate in this case, do increase the risk of both antibiotic resistance and fungal infection[5].

[5] Grigoriou O, Baka S, Makrakis E, et al. Prevalence of clinical vaginal candidiasis in a university hospital and possible risk factors [J] European Journal of Obstetrics & Gynecology and Reproductive Biology. 2006;126(1):121–125

— Diabetes with suboptimal glucose control (HbA1c 57mmol/mol in [Month1], although I note this improved to 48mmol/mol on 09 [Month4] indicating excellent control)
— Prolonged duration of indwelling ureteric stent, as discussed in Q2[6]
— Instrumentation of the urinary tract (in this case ureteroscopy, laser and stent reinsertion) [6]

[Mrs A's] operation started at 11:45 on 14 [Month4]. The operation itself only lasted 45 mins in total, well within reasonable time frame for the amount of stone present in the ureter and kidney. Any intervention on the urinary tract, including ureteroscopy carries a small risk of urosepsis. This is because irrigation and instrumentation required to laser the stone can inadvertently spread any microbes present in the urine into systemic circulation. Prolonged operations will therefore increase this risk, but [Mrs A's] operation was not prolonged. Preoperative antibiotic administration helps reduce the risk. I note preoperatively IV antibiotics (IV Gentamicin 160mg as well as continued IV Augmentin) were administered as is the standard of care[7].

I would like to comment specifically with regard to development of fungal sepsis. I note antifungals were not administered perioperatively. The urine culture taken on 13 [Month4] was not reported in its entirety until 12:28 on 15 [Month4] (the day after surgery). This is typical as urine cultures often take 2–3 days to grow. Furthermore, even if yeast has been reported at the time of surgery, there is a variation in whether perioperative antifungal treatment would be recommended, and for how long. The presence of yeast in urine is frequently a colonizer or a contaminant (particularly in the presence of epithelial cells, suggesting contamination) and does not typically require treatment[8]. There is low quality of evidence for administering antifungals at the time of urological surgery and this is not uniformly practised [9]. International urological guidelines do not routinely recommend covering for fungal infections at the time of urological surgery. I conducted an informal poll of consultant infectious diseases specialists presented with anonymized patient scenario. 3/9 specialists would not recommend antifungal treatment at the time of surgery in a patient with preoperative urine growth of yeast. The remaining 6/9 specialists would recommend treatment with Fluconazole. Again, formal urine results were not yet published at the time of surgery in [Mrs A's] case so this discussion is academic. Furthermore, [Mrs A's] cultures taken on 14 [Month4] eventually grew C. Glabrata requiring particularly high Fluconazole dose (MIC) to be effectively treated. Given the absence of confirmed urinary yeast at the time of the operation, together with variation in prescribing antifungals even with a confirmed yeast in the urine, I consider preoperative antimicrobials choice appropriate

[6] Ureteral stenting and urinary stone management: a systematic review. Haleblian, G et al. J Urol 2008 Feb;179(2):424–30
[7] https://uroweb.org/guideline/urolithiasis/#3 Section 3.4.8.1
[8] Jacobs DM et al. Overtreatment of Asymptomatic Candiduria among Hospitalized Patients: a Multi-institutional Study. Antimicrob Agents Chemother 2017 Dec 21;62(1):e01464-17.
[9] Pappas PG et al. Clinical practice guideline for the management of candidiasis: 2016 update by the Infectious Diseases Society of America. Clin Infect Dis 2016 62:e1–50

and meeting the standard of care. [Mrs A] unfortunately went on to develop systemic fungaemia with C. Glabrata isolated from blood cultures. This is a rare complication with poor survival rates.

Q9. *Do you have any additional comments or recommendations?*

I extend my condolences to [Mrs A's] family. Undoubtedly both her suffering and death and the extended investigation process have been very difficult for them.

Thank you for the opportunity to provide this expert opinion. Please contact me if you have any other questions.

Kind regards

Ms Nadya York BHB, MBChB, FRACS (Urol)
Consultant Urological Surgeon"

Appendix B: Independent clinical advice to Commissioner

The following expert advice was obtained from RN Lynsey Sutton-Smith:

"Independent Advice on HDC Case C20HDC00333

I, Lynsey Sutton-Smith (MNclin, RNdip) have been asked to provide an opinion to the Commissioner on case number C20HDC00333.

I have read and agree to follow the Commissioner's Guidelines for Independent Advisors.

I am a Clinical Nurse Specialist working within an urban tertiary level Intensive Care Unit (ICU). I qualified in the UK in 1996 and have worked in the ICU at my current DHB for 16–17 years. I am a senior expert RN practising as a Clinical Nurse Specialist (CNS) with extensive experience in ICU nursing, achieving Masters in Nursing (distinction) in 2012. I am also a part time PHD student with the University of Otago researching long term outcomes for critically ill patients and 'Post Intensive Care Syndrome'. I have published several papers in the medical & nursing literature around clinical practice quality improvement projects and have a clinical interest in quality of care, audit, and research in the Intensive Care Unit.

Expert advice requested:

Please review the enclosed documentation and advise whether you consider the nursing care provided to [Mrs A] by Taranaki District Health Board was reasonable in the circumstances, and why.

Please comment on:

1. The adequacy of the care provided to [Mrs A] by the nursing staff at Taranaki District Health Board.
2. The appropriateness of the application of the EWS policy by nursing staff.
3. Whether you consider that there are any additional issues with [Mrs A's] management by the nursing staff not identified in the DHB Case Review.
4. The appropriateness of the policies and pathways provided by Taranaki District Health Board.
5. Any other matters in relation to the nursing care in this case that you consider warrant comment/amount to a departure from the accepted standard of care.

The following documentation has been provided by the HDC and reviewed thoroughly by myself:

- Referral from the Nationwide Health and Disability Advocacy Service dated 17 February 2020.
- Taranaki DHB's response dated 14 April 2020 and attachments.
- Taranaki DHB's response 22 April 2021 and attachments.

- Clinical records from Taranaki DHB covering the period from 15 [Month1] to 16 [Month4].
- Clinical monitoring/observation sheets for PACU, ward and ICU
- All nursing, medical, surgical (& Urological) written entries of progress notes/shift reports whilst in hospital from post operatively to death.
- The timeline and initial review of events provided by [the person who completed the DHB's case review] of her hospital journey from presentation to death.
- Individual accounts of care and decision making from the professionals themselves.
- Hospital EWS and escalation policy

Background to the complaint:

On 15 [Month1], [Mrs A] attended the ED at Hawera Hospital complaining of abdominal pain suspected to be kidney stones. She was subsequently transferred to the ED at Taranaki Base Hospital for further investigation. A JJ Stent was inserted the following day, and [Mrs A] was discharged with plans to follow up for a lithotripsy. On 13 [Month4], [Mrs A] again presented to the ED at Taranaki Base Hospital complaining about ongoing pain. She was admitted to the Surgical ward on the 13 [Month4] at 1445.

APPROPRIATENESS AND APPLICATION OF EWS POLICY

Timeline of post-operative events:

[Mrs A] was admitted to PACU 1230 post operatively 14 [Month4]. She was transferred to the ward at 1400pm after a stable period in PACU. The first set of observations taken @ 1400pm on the ward, showed she was stable, afebrile, HR Normal, RR12, SP02 98%, normotensive BUT pain 8/10. The first EWS was 3. From that point on, [Mrs A] deteriorated needing close monitoring and interventions at several time points and up until recognition of critical illness and transfer to HDU/ICU nearly ten hours later.

1425 to 1600 hours:

[Mrs A] was diligently monitored with observations taken at 1455, 1510, 1520, 1600 hours as per the EWS policy. EWS calculated each time was between 4–5. Appropriate nursing management at that time was to alert the house surgeon and treat pain, distress, and fever which was done. [Dr B] (house officer) came to review the patient at 1615. The diagnosis of pain related tachycardia was made predominately with a secondary query of early sepsis (ongoing management focussed on pain as the cause rather than sepsis). Appropriate interventions as stated by the policy were to include more regular pain relief and notify house surgeon if pain unresponsive to analgesia. This was completed. Nursing observations and patient assessment continue to be completed diligently.

1620 to 1640 hours:

[Mrs A's] EWS increased from 4 to 6, then 10 over this time frame and this represents the first 'opportunity' where her care could have been escalated by the team.

> The EWS escalation pathway states when the EWS is 6–7 that a further House Officer (HO) review should be completed within 60 mins. This was diligently done by [Dr B] who attends again at 1705. He appropriately escalates this to the Urological Registrar ([Dr C]). They also attend and provide a thorough review at 1730. Both [Dr B] and [Dr C] provide in their statements that appropriate escalation was completed at that time as the patient was being managed appropriately. This is in keeping with the EWS escalation policy.

> The escalation pathway when the EWS became 6 should also have involved a discussion with the shift coordinator and Clinical Nurse manager. I see from [RN D's] statement that she did discuss the overall case with her coordinator (and later discussed the patient's high EWS with the DNM at the time they were rounding). I wouldn't expect any written entries in the patient notes at this point by the coordinator or manager, however it is difficult to know what their role was, once they were informed of the patient's instability. Their role should be clarified in the EWS pathway at what point they should actively involve outside escalation.

At 1640 hours:

The EWS suddenly increases from 6 to 10 (over a ten-minute time frame). As part of the mandatory escalation plan and hospital policy when the EWS is 8–9, the ICU outreach team should have been called/informed, I can see no evidence in the notes that this was done. If this was done, and just not documented in the patient's notes then this needs to be addressed in future patient documentation. However, if this was not done, this is a moderate departure from the process and standard of care. That call could have been an opportunity for/trigger for escalation by the ICU outreach team (or at least an outside review of the patient case and for ICU to know about the patient). This could be the role of the nursing ward coordinator or the duty nurse manager to ensure this is done in future.

When the EWS was 10, a 777 call should also have been placed. [RN D] recognised the requirement to put out a 777 call but does not. She states this is because, A) she understands the patient was already going to be reviewed by [Dr B] — which he does at 1705 and B) she asks [Dr B] if she should put out a 777 call which he declines, stating he wants to review the patient first. [RN D] states 'she was reassured they were appropriately managing her on the ward, and she trusted their judgement and clinical skills'. Despite this, the process of escalation and the EWS policy was not followed. This is a significant deviation from the standard of care.

What is the standard of Care?

The New Zealand Early Warning Score Vital Sign Chart User Guide (HQSC, 2017) has clear guidance on escalation (point 3.4. Escalating care): '*The actions corresponding to the trigger indicating the most severe level of deterioration must be taken. Rapid response calls (triggered by an individual parameter in the blue zone or total EWS 10+) should be made even when senior clinicians are already at the bedside. This is important*

for role-modelling and normalising a culture of calling for help. Care should also be escalated based on clinical concern or worry, regardless of a patient's vital signs or NZEWS. This includes bypassing the usual escalation process and making a rapid response call when seriously concerned.'

The mandatory escalation plan is a process to ensure deteriorating patients are recognised early and managed appropriately by an experienced outreach team before the patient reaches extremis. This timely review also offers a fresh perspective to a situation, where teams may have become overwhelmed and are failing to see potential red flags as to impending deterioration. The overall impression from [Mrs A's] case is that there were considerable concerns raised by the nurse, the house officer and the registrar, there was diligent monitoring, care and observation by the nurse and timely regular reviews by the medical team overseeing her care.

There are several system contributory aspects that may have impacted on this:

From the personal statements, there seems to be confusion around whose responsibility it is to place 777 calls. [Dr C] suggests the responsibility of escalating EWS/placing 777 calls, solely lies with the nursing staff because they are the ones who calculate it most often and 'the EWS tool is not one used by Doctors in their reviews nor are they trained in their use'.

The policy clearly states that '*anyone may place a 777 — pre-arrest call if they are seriously concerned about a patient, irrespective of vital signs or EWS. Always consider activating a 777 — pre-arrest call. This will ensure a response'*. The policy covers medical and nursing staff.

Other potential contributory aspects:

- [Dr B] states in his personal account that he was not aware of the EWS being 10 because he was not informed by the nurses. The EWS is clearly documented on the vital signs chart however.
- Lack of education or awareness around EWS scores and escalation for the medical staff as stated by [Dr C].
- [RN D] states she knew she should have placed a 777 pre-arrest call out but does not because she 'assesses the patient to being rousable to voice and nothing had changed with her observations'. I suggest this may also be due to a lack of awareness of what the 777 call is intended. Perhaps the wording in the escalation process and policy (pre-arrest) is counter intuitive and counterproductive, in that only patients who are deemed in a pre-arrest state are worth a 777 call. Because [Mrs A] was not at the point of pre-arrest (but was sick) at that first EWS trigger, a 777 call was not placed. However, had the escalation plan/policy terminology been less restrictive to those 'about to arrest', perhaps the team would have felt more comfortable placing a 777 call out. For example, if the words 'medical emergency team' (or terminology

appropriate for the Taranaki Hospital outreach team) were used instead of pre-arrest in the policy documentation may enable teams to think about the 777 call differently.

RECOGNITION OF PATIENT DETERIORATION:

On reviewing the notes and clinical accounts, it is clear there are several distinct periods of deterioration and several red flags throughout [Mrs A's] stay up until her admission to the HDU/ICU. For example, there are fluctuations in her EWS, clear drops in Blood pressure at several time points, intractable pain with little (it seems) relief from analgesia, a sudden increase in tachycardia around 2115, a new oxygen requirement and a new onset of delirium. Through all these distinct deterioration(s) there are reviews by the house officers and discussions with [Dr C]. At one timepoint [RN D] asks [Dr E] to review (which they do) and asks if the patient is appropriate for a HDU review. This is declined by [Dr E], but a medical registrar review is requested. Given the red flags and lack of improvement overall, an ICU review was very appropriate. I can see in [Dr E's] statement that he recognises with hindsight this should have been done.

Mostly the points have been covered by [the DHB's reivew] in [the] synopsis around the poor recognition of early sepsis, and I offer nothing further to this. I can see the DHB response in providing education around sepsis recognition as part of the Raise the flag programme.

777 CALL AND ESCALATION OF INOTROPIC SUPPORT

At 2330 a 777 call was made and attended by ICU coordinator ([RN I]). I cannot find a personal statement from [RN I]; however, I see in the timeline summary (verbal communication with [the person who completed the DHB's case review]) that she had been advised at the time of the 777 call by a registrar (medical registrar [Dr G]?) that [Mrs A] had improved, and she need not attend. I am concerned that [RN I] was 'ushered away' from a situation that should have had a critical care expert nurse overview and assessment. [RN I] wouldn't have been aware of the preceding events on the ward, but the team were. I acknowledge that the patient had medical staff in attendance and [Mrs A] was being managed, and she was transferred to ICU in a reasonably timely manner. However, at this stage in [Mrs A's] care, she almost certainly should have had a review from someone with an Acute/Critical Care. [RN I] could also have ensured the patient was reviewed by herself to ensure that the team were not missing vital steps to ensure patient safety. The practice standard (albeit not written into the National EWS policy) is that PAR nurses are expected to ensure they discuss the case and events with the nurse at the 777 call so that any red flags are picked up and escalated. From the timeline summary it suggests that [RN I] did enter the ward to go see the patient but did not physically enter the patient's room (because she was ushered away). If this is not the case, and [RN I] made sure the patient was safely managed by ensuring she observed the patient and discussed what was happening with the team and the nurse on the ward, then this is appropriate action. However, if she did not, this is a moderate departure from normal practice. I suggest the role of the attending ICU PAR nurse could

be clarified so that all patients who trigger a 777 are assessed by them and a discussion is had with the team and nurse caring for the patient to ascertain the patient's status and ongoing safety before leaving.

[RN I] receives the patient into the HDU and notes how unwell [Mrs A] appears (confused, grey). [RN I] is concerned that inotropic support had not been escalated in a timely manner. I support [RN I's] perspective on this. Once admitted to the HDU at 00.30 [Mrs A's] blood pressure is under 80 systolic from the time of arrest call to the time that she was assessed by the anaesthetist for consideration of inotropic support at 0220 (by the night medical registrar). Both the anaesthetic registrar and medical registrar acknowledge [Mrs A] will likely require cardiovascular support, but both felt she was early in her fluid resuscitation and would reassess things after 5 Litres of fluid. Whilst I acknowledge this may be common practice on ward level patients (and with the benefit of the whole case in hindsight) I am not sure waiting for 5 Litres to be given represents timely management especially given the precariousness of [Mrs A's] post-operative course already. **Why did the team not consider starting inotropes earlier alongside fluid resuscitation?** (and I ask this with acknowledgment of hindsight and the case in front of me).

The anaesthetic registrar reviews at 0230 and inotropic support is started first with Phenylephrine subsequently changed to Metaraminol (around 0445). The observation chart shows at 0300 hours Systolic blood pressure slowly improves, to 83 mmHg, 93 mmHg at 0330, and 109 mmHg around 0330–0400am. However, because of the low diastolic blood pressure, mean arterial pressure (MAP) was slow to improve (noted from written entries in the notes). Both vasopressors were escalated to very significant levels over a period from anaesthetic review (0230) to 0730 when Noradrenaline was started. Overall, this took around 5 hours in the ICU (7 hours from first documented low BP). I note throughout this period she was regularly reviewed by registrars and receiving ongoing fluid boluses and regular observations recorded. However, I am not certain as to why she did not get her femoral central venous line (CVL) placed and noradrenaline started as soon as phenylephrine failed to rescue the MAP? I also cannot see when or if the ICU SMO was aware of the complexity of the case and the ongoing issues the teams had had with [Mrs A] (specifically the blood pressure). I can see lots of registrars involved, but not the ICU SMO. This was another departure in standard care and a missed opportunity by (any) of the registrars involved and the coordinator to escalate management.

I note in the timeline summary that [RN I] had suggested a CVL, and noradrenaline should be placed but this was not actioned. [RN I] also felt that escalation of therapy was too slow by the medical team overseeing her care in ICU. If [RN I] was concerned, she should have escalated her concern to the SMO in charge of the ICU also (it is not clear if this was done from the notes provided).

I see on the sepsis/hypoperfusion pathway that this outlines the use of peripheral pressors (one or the other) then escalate to noradrenaline. It is unclear if the sepsis

pathway was rolled out and in-place before [Mrs A's] case, or if this is the result of this enquiry (I suspect it is the latter, as the date on the pathway is Feb 2021). In that case, the sepsis pathway and education is much needed. Please continue the work around sepsis awareness and management in the ICU and ward area including education of nursing and medical teams.

Summary

I can see from the accounts and patient progress notes that [Mrs A's] post-operative course was complex. I can see the health professionals on the ward (Doctors and Nurses) involved in [Mrs A's] care were attentive, diligent in their observations and very focussed on managing her deterioration and pain. At the early stage of her post-operative course on the ward, there were two departures in her management. First was the poor recognition of early sepsis (which appears to have been addressed in other reviews) and second was the lack of EWS escalation and of not following the policy. However, this was the fault of all the team members involved (nurses, DNM, house officers, registrar). The decision to place a 777 call does not lie solely with the RN, anyone can place a 777 call — nurses, doctors, coordinators, managers. Education to the medical/surgical team(s) should be given on the EWS policy so they understand the process of escalation.

By ensuring everyone in the team can speak up when they see potential patient deterioration will ensure patient safety is upheld. I see at least two timepoints where [RN D], the ward RN, asks if there should be escalation (first when she asks the Doctor if she should put a 777 call out, and second when she asks if there should be a HDU call made). At the time perhaps these requests were not made overtly, and her clinical concerns were not expressed with sufficient vigour. However, if [RN D's] concerns were ignored — twice — this is not acceptable.

The third departure in [Mrs A's] care relates to the length of time it took to get a CVL placed, and noradrenaline started. I note when [Mrs A] was admitted to the ICU, [RN I's] (the coordinator and PAR nurse) suggestion to escalate inotropic support was ignored. I am concerned that twice in this case, the nursing voice was not heard by the medical team in relation to escalation — first when she was on the ward, second in the ICU. It is unclear why this was so from reading the notes and the summary of the case. However, I would urge the ISBAR and standing up for safety project continues to be rolled out/taught (if it has not been done already) to ensure the nurses are supported to verbalise and amplify their concerns. Finally, the senior nursing team/coordinators need to feel supported so they can escalate their concerns around patient welfare to their ICU SMO colleagues overseeing the unit, 24 hours a day. This support should come from the senior charge nursing team and senior ICU medical team.

Overall Recommendations

> Training is given to medical and nursing staff on the EWS and the protocol around escalation, who to escalate to and by whom (or repeated if this has already been done).

> Ensure the DHB considers how nurses are supported, taught, and encouraged to place a 777 call or amplify their concerns around patient management. A 'speaking up for safety campaign' if one has not already been rolled out at Taranaki DHB should be completed and attended by all teams.

> Consider changing the terminology from 'pre-arrest' to something [that is appropriate for the outreach/PAR system set up at TBH] that the teams may be more comfortable using and activating in similar incidences.

> Clarify the role of the attending PAR nurse and how the DNM can escalate clinical concerns.

> Continue to roll out and educate All areas on the sepsis pathway.

> Ensure the senior nurses who coordinate feel comfortable to escalate concerns to the ICU SMO on for the unit 24/7.

My condolences to [Mrs A's] Whānau at this difficult time.

Yours Sincerely

Lynsey Sutton-Smith (MNclin, RNdip)"

The following further expert advice was obtained from RN Lynsey Sutton-Smith:

"1) SMO involvement — I now can see the statement that an ICU SMO was contacted. Yes that does change the advice and it is clear that escalation to SMO level was conducted.

2) Noradrenaline start time — Yes you are correct the 1615 alludes to the date on the medication chart. However, irrespective of the med chart entry, if there is clear documentation noting that Norad was started at 5 am then it will have been (I can clearly see that in the written entry).

This does change the initial advice given which now clarifies that best practice was followed around the escalation to an SMO and the starting of noradrenaline in a more timely manner was conducted.

I have nothing further to add about these two points."