Waikato District Health Board
Emergency Department Consultant, Dr C
Registered Nurse, RN D

A Report by the
Health and Disability Commissioner

(Case 16HDC01558)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Contents

Executive summary

1. This report concerns the care provided by Waikato District Health Board (DHB) to a man following elective major surgery at a hospital to remove a polyp. The man deteriorated postoperatively and was transferred to the Emergency Department (ED), but he later suffered acute cardiac failure and died. The Commissioner considered that the decision to perform the surgery at the non-tertiary level hospital, with the known risks and lack of staff, was misjudged, and should have been carried out at a more suitably equipped hospital.

2. Signs of infection, tachycardia, hyponatraemia, and fluid deficit were not responded to adequately. On a number of occasions, staff did not document Adult Deterioration Detection System (ADDS) scores satisfactorily, and senior staff were not contacted for advice when indicated and around the time of the man's transfer to ED. In relation to the care in ED, communication between the ED consultant and on-call cardiologist was poor, and further investigations should have been undertaken before myocardial infarction (MI) was ruled out. The man was returned to the surgical ward from ED inappropriately, and was not monitored for two hours. In addition, staff did not take steps to follow up with his surgeon regarding pain medication, and concerns about his return to the ward were not documented by staff.

Findings

3. The Commissioner found that Waikato DHB breached Right 4(1) of the Code. He considered that on a number of occasions during the postoperative period, the staff responsible for the man's care did not respond appropriately to concerning clinical signs, and that this illustrated a pattern of poor care for which Waikato DHB is responsible.

Recommendations

4. The Commissioner recommended that Waikato DHB apologise to the family and provide evidence of the implementation of a number of recommendations, including: (a) the policies and procedures in place, to ensure that complex and major surgery will not be undertaken at the hospital; (b) the criteria in place for the admission of acute and surgical patients to the hospital; and (c) the outcome of changing weekend rostering and staff handover processes since the events in this report.

5. The Commissioner also asked Waikato DHB to consider: (a) staff education and audits of MI diagnosis and treatment at the hospital; (b) how it could better share clinicians' workload outside of daytime work hours; (c) the institution of a step-down unit with higher nursing staff levels; and (d) whether an explicit follow-up plan is required for patients who are transported from ED back to the ward.

Complaint and investigation

6. The Health and Disability Commissioner (HDC) received a complaint from Mrs A about the services provided by Waikato District Health Board (DHB) to Mr B. The following issues were identified for investigation:

- *Whether Dr C provided Mr B with an appropriate standard of care between Days 1–5[1] 2016.*
- *Whether RN D provided Mr B with an appropriate standard of care on Day 5 2016.*
- *Whether Waikato District Health Board provided Mr B with an appropriate standard of care between Days 1–5 2016.*

7. The parties directly involved in the investigation were:

Mrs A	Complainant/Mr B's daughter
Dr C	Provider/Emergency Department (ED) consultant
RN D	Provider/registered nurse
Waikato DHB	Provider

8. Further information was received from:

Dr E	Cardiologist, Waikato DHB
Dr F	General surgeon, Waikato DHB
Office of the Coroner	

9. Also mentioned in this report:

RN G	Registered nurse
RN H	ED nurse
RN I	Registered nurse

10. Independent expert advice was obtained from ED physician Dr Sampsa Kiuru (**Appendix A**), RN Karla Martin (**Appendix B**), cardiologist Dr Ian Crozier (**Appendix C**), and general surgeon Professor Ian Bissett (**Appendix D**).

Information gathered during investigation

Introduction

11. This opinion relates to services provided at Hospital 1 to Mr B (aged in his late sixties at the time of these events) between Days 1–5. Mr B had a five-year history of diarrhoea and constipation, and on Day 1 underwent elective surgery to remove a polyp. In the following

[1] Relevant dates are referred to as Days 1–6 to protect privacy.

days he developed an ileus,[2] and on Day 5 he was transferred to ED. Sadly, Mr B suffered acute cardiac failure owing to underlying chronic ischaemic heart disease and abdominal sepsis,[3] and he died that night.

Hospital 1, Days 1–5

Surgery

12. In 2016, a general surgeon performed a colonoscopy on Mr B and located a large polyp, but was uncertain as to its exact location. A subsequent CT colonography indicated that the polyp was 10cm long and situated within the mid-ascending colon. At a follow-up appointment a few months later, another general surgeon placed Mr B on the waiting list for an elective laparoscopic right hemicolectomy[4] to remove the polyp, as it was thought to be contributing to his bowel symptoms.

13. On Day 1, Mr B was admitted to Hospital 1[5] for the surgery, which was performed by general surgeon Dr F. During the surgery, Mr B's polyp could not be palpated[6] in the bowel. Dr F proceeded with a colonoscopy,[7] which revealed a polyp 60cm from the anal verge[8] — a different location from that identified previously. Dr F performed an extended right hemicolectomy to remove the polyp.

14. At 9.40am on Day 2, Dr F reviewed Mr B and recorded: "[Observations] stable … Slight pain at present but coping okay … No flatus[9] is present … [Surgical] wounds clean." Dr F told HDC that Mr B had minimal pain, and his urine output was good and vital signs normal, and his laboratory investigations "were consistent with major surgery".

15. Dr F next reviewed Mr B at 8.20am on Day 3, and recorded that he had had "[t]rouble with dizziness [and an] episode of vomiting" the previous night, and that his abdomen was distended.[10] The clinical notes record that his observations were stable.

16. At 3.15pm it was recorded that Mr B's abdomen was "distended +++" and that his heart rate was 100–105bpm.[11] At 3.45pm it was recorded that Mr B's Adult Deterioration Detection System[12] (ADDS) score had increased from 0 earlier that day to 2,[13] owing to a heart rate of 110bpm. An ECG[14] was performed.

[2] A temporary and often painful lack of movement in the intestines, which can cause obstruction in the bowel. Most commonly, an ileus occurs following abdominal surgery. Symptoms can include constipation, loss of appetite, and nausea.
[3] A toxic condition resulting from the spread of bacteria from a point of infection.
[4] Surgical removal of part of the colon.
[5] A non-tertiary level hospital.
[6] Examined by touch.
[7] Intraoperatively.
[8] The lower edge of the anal canal that marks the junction of the anal canal and the external skin.
[9] Gas generated in the bowels.
[10] Enlarged or expanded.
[11] Beats per minute. A heart rate of 100bpm or more is considered abnormally fast.
[12] The ADDS aims to identify early deterioration in the condition of adult patients, so that they can be treated before terminal decline.

17. On Day 4, it was documented that Mr B vomited 1,650ml, was hyponatraemic[15] with a sodium level of 121, and that his C-reactive protein[16] (CRP) was elevated at over 270.[17]

18. Mr B's vital signs were taken at 3.45am on Day 5, but an ADDS score was not completed.

19. Nursing notes from approximately 6am on Day 5 record the following:

> "Vital signs stable ([Heart rate] remains 100–110). Vomiting initially — settled with IV … however nausea persists. … IV pethidine given (20mg) with good effect for pain. [Passed urine one small amount] early in shift. Phlebitis[18] scale 0.
>
> Very restless — up in chair [and] back to bed frequently. [Complains of] back pain more than wound pain. No new wound ooze. Reassurance ++ as anxious re: hallucination early in shift (visual — seeing words written on walls and pj's that are not there[])]."

20. Later that morning at about 10.30am, Dr F and Registered Nurse (RN) G reviewed Mr B. RN G recorded in the Colorectal Surgery Care Plan that Mr B was able to mobilise, he had low urine output, his surgical wound site was "looking fine", he had had a bowel motion, and a blood test was to be performed. She also documented that Mr B had an ADDS score of 1, but did not record this in the ADDS observation chart alongside other ADDS scores. RN G noted: "Reviewed by [Dr F] … Inform Doctor if any concerns."

21. Dr F told HDC that "clinically it appeared that postoperative ileus was resolving". Dr F provided no further care to Mr B.

22. Dr F told HDC:

> "[Mr B] appeared clinically improved and he felt better. He reported no further hallucinations after changing from tramadol to pethidine analgesia. … Vomiting had decreased, and nausea had responded to ondansetron and cyclizine medication. He was mobilizing well by himself. Vital signs were stable and urine output good over-night. Inflammatory marker improved (WBC[19] 8.4 and CRP 270). Clinically it appeared that postoperative ileus was resolving. … I expected to see [Mr B] to further improve."

23. Contrary to the above, in response to my provisional opinion, Mrs A stated: "Dad did not stop hallucinating when the tramadol was stopped, and this was pointed out by him as well as us."

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[13] ADDS scores range from 0–7. A score of 1–3 requires repeat observations within two hours, a review of oxygen delivery, and for staff to consider informing the nurse in charge. A higher score correlates with a greater level of deterioration in the patient.
[14] Electrocardiogram — a recording of the electrical activity of the heart.
[15] An abnormally low level of sodium in the blood that is typically marked by nausea, vomiting, headache, confusion, fatigue, and muscle cramps.
[16] A protein present in blood serum in various abnormal states.
[17] The normal range for sodium is 135–145, and a CRP result of over 10 is considered abnormal.
[18] Inflammation of a vein.
[19] White blood cell count.

24. Dr F further stated:

> "I had decided against CT scan because [Mr B] had clinically improved, he felt better, his abdomen was softer, his bowels had opened and WBC had normalized to 8.4. I had arranged for further blood tests and expected a decline in CRP to follow. For the same reasons I had not considered commencing I.V. antibiotic treatment. In the morning of [Day 5], [Mr B] had a very small vomit after taking oral medication. I stopped all oral medication and hoped he would have no further vomit. Nausea was well controlled and the abdomen felt softer after the bowel motion in the morning. For these reasons, I decided against an NG tube at this time point."

ED review on Day 5

25. At 6pm, RN D recorded that Mr B was tachycardic[20] with a heart rate of 144bpm, and that his ADDS score had increased to 3. At about 7pm, RN D performed an ECG, which was suggestive of acute myocardial infarction[21] (MI). RN D contacted the on-call ED senior medical officer (SMO), Dr C,[22] and requested that she review Mr B's ECG.

26. Dr C stated that RN D told her that Mr B did not have any chest pain. Dr C said that she understood that RN D was concerned that Mr B was having a heart attack. Dr C stated that she focussed her assessment of Mr B on MI, and asked RN D to obtain a further ECG, and to transfer Mr B to ED if this was concerning.

27. At 7.20pm, Mr B's ADDS score was noted to have decreased from 3 to 2, as his heart rate had reduced to about 130bpm. RN D obtained a further ECG and noted that this was concerning. Mr B was transferred to ED immediately. In response to my provisional opinion, Waikato DHB stated that RN D followed the correct pathway in referring Mr B to the ED SMO.

28. Dr C reviewed Mr B in ED at 7.30pm. She noted that he was alert and talkative, and had mild tachycardia but reported no chest pain. She performed an ECG and ordered blood tests, including a venous blood gas[23] (VBG) and a troponin[24] test. The VBG result was abnormal, together with an elevated lactate, a low sodium level, and an oxygen saturation of 46%. The troponin result was normal. Dr C did not conduct a second troponin test, and told HDC that in the absence of chest pain, there are no clear guidelines regarding the timing of such a test.

29. Dr C told HDC:

> "I thought [Mr B] was suffering from complications of his surgery. He had marked elevations of his inflammatory markers and had prolonged ileus. However, I understood [Mr B] had been assessed by his surgeon within a few hours of my

[20] A rapid heart rate.
[21] A heart attack.
[22] A locum doctor at the time of these events.
[23] Dissolved carbon dioxide and oxygen in the blood.
[24] A protein found in heart muscle fibres. A high troponin level in the blood may be a sign of a heart attack.

> assessment and that [the surgeon] was aware of his clinical and laboratory findings. In that context I was looking to assist with the specific query regarding [Mr B's] ECG."

Communication with cardiologist concerning ECGs

30. Dr C telephoned cardiologist Dr E at Hospital 2 to discuss Mr B's ECG results. Dr E told HDC that Dr C explained to him that Mr B had had a bowel operation, had no chest pain, and that she could not see any abnormality on the ECGs but wanted a second opinion. Dr E offered to review the ECGs of concern via text message.

31. Contrary to the above, in response to my provisional opinion, Dr C said that had she considered that the ECGs were all normal, she would have been unlikely to have contacted Dr E.

32. At 7.40pm, Dr E received a text message from Dr C with a comment stating: "1st ECG is pre-op, 2d was on surgical ward, 3d is done in ED just now (and clearly reassuring). No chest pain." Dr C sent an image of one ECG, which is timestamped 19.36.03hrs. Dr E told HDC:

> "As I only received 1 ECG done at 19:36hrs I replied 'only go the last ECG 1936 which is normal' reflecting to the question of ischemia[25] as there was no evidence of acute ischemia. The word 'go' should read 'got' which is a typo."

33. Dr C told HDC:

> "I numbered the ECGs — the ECG obtained pre-anaesthesia visit, the initial ECG the nurse had shown me, and the ECG on arrival to ED. I took images with my phone and sent them by text message. [Dr E] replied, 'only go the last one which is normal.' I interpreted this as 'only go with the last one which is normal'."

34. Waikato DHB told HDC that according to its records, one ECG was sent as per the text message, and there was no "pre-op" ECG as stated in Dr C's text message to Dr E.

ECG times

35. The DHB provided HDC with Mr B's ECG records from Day 5. Some of the records have a banner at the top stating "[HOSPITAL 1]" with a label showing Mr B's NHI, name, and address, and include the following: "[WARD] — 860AM [Dr F]." One record does not contain the label and banner, and states: "[HOSPITAL 1] A&E — WAIKATO DHB."

36. The ECG records time-stamped 19.04.45hrs, 19.05.23hrs, 19.05.41hrs, 19.38.58hrs, and 19.39.23hrs contain the "[HOSPITAL 1]" banner and the label. The ECG record time-stamped 19.36.03hrs includes the banner "[HOSPITAL 1] A&E — WAIKATO DHB" but no label.

37. The 19.38.58hrs ECG contains a handwritten note that states, "2d ECG [illegible] HDU," and "ACUTE MI". The 19.39.23hrs ECG is also identified as "ACUTE MI".

[25] Deficient supply of blood to the heart.

38. The 19.36.03hrs ECG contains a handwritten note that states, "Discussed [with] Cardiology [Hospital 2]. 3d ECG," and is identified as "Abnormal ECG".

39. Two ECGs are time-stamped close together (19.05.23hrs and 19.05.41hrs), both of which are identified as "Abnormal ECG", with the former also labelled "ACUTE MI".

40. Dr C told HDC:

> "On arrival to the department [Mr B] had a third ECG (witnessed and labelled 3rd ECG by myself at least several minutes, probably at least 10 minutes after the second one in HDU[26]). This was a different machine than prior and the times were not consistent."

Transfer back to ward

41. At 7.45pm, a nurse recorded Mr B's vital signs as a heart rate of 130bpm, oxygen saturation 96%, and temperature 36°C, and noted a pain score of 7/10. Mr B's ADDS score was not recorded. Dr C stated that because Mr B had no chest pain, the ECG concerns appeared to have resolved, and the troponin levels were normal, she concluded that there was no evidence of an acute MI. Dr C recorded her plan for Mr B to be transferred "[b]ack to [the] medicine ward HDU".

42. Dr C told HDC:

> "I felt the blood gases were consistent with the abdominal distention and ileus complicating his post-operative recovery and reflective of his overall illness rather than specific to the question of cardiac ischemia [and] I sent [Mr B] back to HDU. I expected him to be monitored closely, as HDU patients are, and to be notified if there were further concerns. I also asked the nurse to call the surgeon regarding his pain medication that they thought was causing hallucinations and had not helped his back pain."

43. Mr B was not transferred to HDU as requested by Dr C. ED nurse RN H documented that Mr B was "[t]o be returned to ward", and that "[Dr C] suggest[ed] [that the] surgical RN discuss analgesia[27] with [the] surgeon". However, there is no record that any staff contacted Dr F in relation to this plan.

44. In response to my provisional opinion, RN H stated: "I do not recall [Dr C] asking for the patient to be transferred to the [HDU]. If this had been requested then the patient would have gone there, as was standard procedure."

45. At approximately 8pm, Mr B was transferred to the surgical ward. RN D stated that she questioned Mr B's return with the ED staff, and initially declined his return to the surgical ward. She told HDC:

[26] Hospital 1 has a high acuity unit. In this report it is also referred to by those involved in the investigation as the HDU (High Dependency Unit).
[27] Pain relief medication.

> "I did not [accept] the patient but he was brought in to [the] ward by Ed staff. They very well knew the hospital has HDU for such patient care but he was brought to [the] ward."

46. However, the clinical records do not document RN D's concern about the suitability of Mr B returning from ED back to the surgical inpatient unit.

47. After Mr B returned to the ward, he telephoned his daughter, who spoke to RN D. Mr B's daughter, Mrs A, told HDC that her sister was informed by RN D that Mr B was "fine now". In contrast, Waikato DHB stated that RN D explained to Mrs A's sister that there had been ECG changes but that Mr B's vital signs were improving. No details of the telephone conversation are documented.

48. RN D took Mr B's vital signs at 10pm — the first to be taken since his return from ED. She noted that his heart rate was 134bpm and that he had a low urine output. Owing to these concerns, RN D recorded Mr B's ADDS score as 4. RN D also documented that Mr B was very restless and anxious, and was complaining of hallucinations.

49. In relation to the absence of documented recordings of vital signs or ADDS scores from 8–10pm on Day 5, Waikato DHB stated that expected nursing practice would be to undertake vital sign recordings as near to the time of transfer back to the ward as possible, in order to determine the frequency of further recordings and monitoring of potential deterioration. Waikato DHB accepted that the failure by RN D to document vital signs and ADDS scores in this situation was a departure from the accepted standard of care.

50. At about 10.40pm, Mr B started to vomit again, and collapsed suddenly. A cardiac arrest call was made, and there was evidence that he had vomited feculent[28] fluid greater than 3L in amount. CPR was attempted for 30 minutes but was unsuccessful, and Mr B died at 11.10pm.

51. Dr C stated:

> "I did not think [Mr B] was near death when I saw him. He reported being better, passing gas and bowel movements that day and was talking and moving well. I understood that even after I saw him he was moving around well and the collapse was sudden and unexpected. I was reassured that he had no chest pain and that the cardiologist had advised to go with the final ECG which was normal."

Further information

Dr C

52. Dr C told HDC:

> "This case has had me reflect heavily on my practise. [A] telephone call to the Surgeon in this case would have been useful and I regret not having done so. This was due in part to my understanding that she had seen him within a few hours of my assessment,

[28] Containing waste matter.

> I was seeing him for comment on his ECGs, and in part to the fact that I understood [Dr F] preferred not to be contacted at night."

53. Dr C stated:

> "Most discussion regarding possible transfers of patients is done with the Registrars, so it was outside the usual system for me to insist on discussion with the Consultant on call (and I have had occasions when such requests were rebuffed). I wish I had called [Dr E] back regarding his opinion on the prior ECGs. Since it had normalised, which would not have happened if it were an acute myocardial infarction, I felt it would be an imposition."

54. She further stated:

> "[A] repeat troponin would have been helpful. However, in an acute MI normalisation of the ECG is unusual and there are no guidelines for timing of repeat troponin in the absence of chest pain. Unfortunately, a repeat in the morning would have been too late to change the outcome in this case in any event, and since the death was not the result of a heart attack it may have been inappropriately reassuring."

Waikato DHB — Serious Incident Review

55. Waikato DHB conducted a Serious Incident Review, which found the following:

- The markers of an infection were missed — raised CRP, tachycardia, and hyponatraemia.
- Dr F was not contacted by ward or ED staff after Dr C had recommended that the nurse contact Dr F regarding the need for more effective pain relief.
- Mr B's fluid balance chart showed a deficit of 7,055ml from Day 1–Day 5. There was a significant imbalance of fluid input and output during his hospital stay, which appears not to have been addressed.
- Staff overlooked that Mr B had vomited 1,650ml on Day 4, as the focus was on improving his blood results.
- Mr B's ECGs showed changes that should have raised concerns for cardiac ischaemia, and close monitoring with medical review was required.
- There was a lack of after-hours specialist surgical input.
- It was not until Mr B's heart rate was greater than 110bpm that the ADDS score was increased, even though this should have occurred when the heart rate reached 90bpm.
- Mr B's family was not notified of his deterioration when he was taken to ED, and when they rang with concerns earlier that evening, the nurse reassured them that all was well, which meant that they were not present when Mr B died.

56. Waikato DHB stated that it was not able to resolve the matter of which ECGs were sent or received by Dr C and Dr E on the night of Day 5.

57. Waikato DHB's review of the incident also noted that a contributing factor to Mr B's deterioration was that Hospital 1 is a non-tertiary level hospital and provides surgical procedures to low-risk patients, and the expectation would have been that patients should have a trouble-free postoperative period. Waikato DHB stated that this expectation may have decreased staff recognition of warning signs, thus delaying treatment.

Further information

58. In relation to the level of experience Hospital 1 has in relation to laparoscopic surgery, Waikato DHB stated:

> "The general surgeons at [Hospital 1] have a long history of providing a laparoscopic surgery service since the 1990s. Staff at [Hospital 1] complete up to 500 laparoscopic procedures each year."

59. Waikato DHB also stated:

> "[I]n this case there was no surgeon on call, as it was a weekend and there is no surgeon on call [at Hospital 1]. The ED doctor is the only doctor on site and manages the emergency department as well as providing first on call for inpatients. The surgical team at [Hospital 2] may be contacted for referral or advice at any time.

60. In relation to Mr B's deterioration, Dr F told HDC:

> "If I had been informed, I would indeed have brought a surgical perspective to [Mr B's] deterioration and would have addressed the intra-abdominal sepsis. I would have commenced I.V. antibiotic fluids, placed [a nasogastric] tube[29] and [an in-dwelling catheter][30] and would have arranged for immediate transfer to Hospital 2 …"

61. Waikato DHB further stated:

> "There is no designated senior nurse on duty in the hospital after hours, but there is an on-call hospital manager that can be contacted for any advice. During this time there was a mix of clinical and non-clinical managers on-call."

62. Waikato DHB's ADDS "General Instructions" state that staff should record observations "[a]t a frequency appropriate for the patient's clinical state" and "[w]henever you are concerned about the patient". The ADDS observation chart states that when a patient has an ADDS score of 1–3, staff should repeat observations within two hours and consider informing the nurse in charge. When a patient's ADDS score is 4–5, the ADDS observation chart instructions state that the nurse in charge must be notified, observations are to be recorded at least every 30 minutes, and, if after hours, the ED SMO is to be contacted.

[29] A tube inserted through the nose into the stomach.
[30] A tube inserted into the bladder to allow drainage and measurement of output.

63. Waikato DHB told HDC that standard procedure for investigating MI is serial ECG and serial troponin testing, and noted that its Cardiac Chest Pain Pathway (CCPP) includes recommendation for a second troponin test at two hours after the first test. It stated that the CCPP is based on the presence of chest pain, and noted that Mr B told Dr C that he did not have any chest pain. However, Waikato DHB concluded that further troponin testing, clinical review with ECG, and ongoing assessment in ED was indicated owing to the abnormal ECGs.

64. Waikato DHB stated that Dr C was the only doctor on site at the time of the events that occurred on the evening of Day 5, and was responsible for running the ED and attending the ward for inpatient emergencies as required. Hence Dr C would have been under significant pressure without on-site surgical specialist support. Nevertheless, the DHB told HDC that consideration should have been given to the reason for Mr B's deterioration, and that "there should have been wider evaluation of the patient beyond the specific cardiac ischaemia issue".

65. In respect of the decision to return Mr B to the ward at 8pm, Waikato DHB noted that the ED had a substantial workload to manage, and that Mr B was already an inpatient under observation in the ward. It stated that patients with deteriorating observations should remain in areas of increased observations, which at Hospital 1 include the high acuity unit (which staff in this report refer to as the HDU) or ED, and concluded that it would have been safer to continue observation of the patient in ED for performing further troponin testing and ECGs. Waikato DHB said that Mr B could have been transferred to HDU, as recommended by Dr C.

Changes made since these events

66. Waikato DHB told HDC that since these events, RN D has completed training on the deteriorating patient, and has received education regarding escalation plans and the ADDS. Waikato DHB has since replaced the ADDS with the Early Warning Score (EWS) protocol.

67. As a result of its review, Waikato DHB implemented the following changes:

a) Development of a "Deteriorating Surgical Patient Pathway" for surgical patients at Hospital 1, which is linked to the EWS protocol and guides staff with regard to contacting surgeons.

b) Review of the ST-Elevation Myocardial Infarction (STEMI) guidelines and sepsis protocol.

c) Review of patient safety processes prior to major surgery, and implementation of stricter criteria for the admission of acute surgical patients who could become unwell. Patients now receive an additional review on a Friday, and those who may require tertiary services[31] over the weekend are transferred to Hospital 2.

d) Improvement of weekend rostering and staff handover processes.

[31] Specialist care.

e) An audit of the chest pain pathway used in ED.

f) Improvement of the standard of documentation.

68. In addition, a review of the surgical change process is under development.

ACC advice

69. A general surgeon, Dr Kenneth Menzies, provided external clinical advice to ACC in relation to Mr B's care. HDC obtained a copy of the advice.

70. In relation to markers of infection being missed, Dr Menzies stated:

> "The raised CRP is certainly indicative of infection and this was missed and not acted upon. His tachycardia and hyponatraemia may have been partially due to infection but were, in my opinion, more likely to have been the result of fluid and electrolyte imbalance. In my opinion there was evidence on [Day 4] that [Mr B] had a severe fluid and electrolyte imbalance. This was the result of his postoperative ileus with sequestration of a large volume of fluid within his gastrointestinal tract. This was manifest by his continual vomiting, his urine output remained poor and, in my opinion, there was no co-ordinated plan on that day to address his severe hyponatraemia (i.e. his serum sodium of only 121)."

71. In relation to the fact that Dr F was not informed of Mr B's deterioration on Day 5, Dr Menzies stated:

> "I agree that the surgeon should have been informed at this time. Instead, [Mr B] was transferred to ED so that he could be assessed by the ED SMO. It would appear, in retrospect, that the severity of his condition at that time was under estimated. He required intensive care but instead he was returned to the ward."

72. In relation to the fluid balance showing a deficit of 7,055ml between Days 1–5, and Mr B's vomiting on Day 4, Dr Menzies stated:

> "This in my opinion was very significant and it highlights a lack of continuity of care by appropriate surgical staff over this period. [Mr B] was seen each day postoperatively by [Dr F], however there were no other surgical staff, such as surgical registrars, who were available to deal with the consequences of his postoperative ileus. In my opinion he should have had an indwelling naso-gastric tube, particularly in view of the fact that he vomited a very large amount of fluid on [Day 4]. There does not appear to have been any adequate monitoring of his intravenous fluids so that the large deficit which did occur was being continually replaced."

73. In relation to Mr B's ongoing tachycardia, Dr Menzies stated:

> "[Mr B's] tachycardia first became evident on [Day 3]. This was not addressed. In my opinion the clinical indicators were such that he should have been transferred from [Hospital 1] to [Hospital 2] on [Day 4]."

74. In relation to the comment from the DHB that there was a lack of after-hours specialised surgical input, Dr Menzies stated:

> "In my opinion the decision to perform this bowel resection operation on [Mr B] in [Hospital 1] was unwise. There were no resident surgical registrars or surgical trainees who were able to monitor [Mr B] during the postoperative period and this, in my opinion, contributed significantly to his clinical deterioration on [Days 4 and 5]."

75. Dr Menzies further stated:

> "There was, in my opinion, a failure to provide treatment in a timely manner and if the factors which I have addressed had been treated appropriately, this would, on the balance of probabilities, have changed the outcome of this case.
>
> …
>
> In my opinion it was quite inappropriate for the surgery on [Mr B] to be undertaken at [Hospital 1]. The operation performed was a major bowel operation. It is well known that major complications can occur following such surgery. [Hospital 1] is not staffed by resident surgical registrars and this resulted in a lack of continuity of care during the postoperative period. As a consequence his fluid and electrolyte imbalance was not detected in a timely manner and was not appropriately treated. In my opinion, bearing in mind the surgical staffing of [Hospital 1], when there were signs of deterioration on [Day 4], a decision should have been made to transfer [Mr B] to [Hospital 2] for either high dependency unit or intensive care unit careful monitoring."

Responses to provisional opinion

76. Mrs A, Waikato DHB, Dr C, and RN D were given the opportunity to respond to relevant sections of my provisional opinion. Their comments have been incorporated into the report where appropriate.

Mrs A

77. Mrs A said that her family's accounts and timelines of her father's stay in hospital differ significantly from those of Dr F and other members of the hospital team, and that it seems that staff consistently minimised Mr B's pain. Mrs A stated:

> "The insistence that Dad was presenting well prior to his death by [Dr C] flies contrary to other accounts and particularly our own experience. When I last talked to Dad, from memory less than an hour before he collapsed, he was in considerable pain and could not stay on the phone because of this."

78. Mrs A also told HDC:

> "[Mr B] put his trust in the medical professionals around him and their assessment etc of his situation. The ability to observe a patient and be discerning of factors other than an answer to a closed ended pain question or rating and certain clinical parameters, surely is required in the hospital setting and regardless of a patient's status … It seems

that this ability was significantly lacking combined with all the other frankly overwhelming factors contributing to such an unnecessary outcome. Listening to and contacting and communicating with family — who can pass on vital information in this regard — is essential."

Waikato DHB

79. Waikato DHB acknowledged my provisional opinion and provided Dr F, Dr E, RN G, and RN H with sections of the report relevant to them for their opportunity to comment. Only RN H provided further comment, which has been incorporated into the report.

Dr C

80. Dr C accepted the provisional opinion and stated that since these events she has attended a course on communication.

RN D

81. RN D did not provide a response to my provisional opinion.

Opinion: Waikato DHB — breach

82. On Day 1, Mr B underwent major bowel surgery at Hospital 1. In the postoperative period, he stayed in the ward under the care of his general surgeon and nursing staff. There were no surgical registrars or other medical staff on the ward during this time. Mr B subsequently developed an obstruction of the bowel and showed other significant signs of deterioration, including tachycardia, hyponatraemia, elevated CRP, elevated white blood cells, and vomiting.

83. On the evening of Day 5, Mr B had a number of highly concerning ECG results. The only doctor available in the hospital was the ED consultant, who reviewed Mr B, had some limited and flawed communication with the on-call cardiologist, and chose not to call the general surgeon to discuss the patient's condition. The ED consultant referred Mr B to the HDU, but he was returned to the surgical ward and not monitored adequately. He died later that night.

Escalation of care prior to evening of Day 5

84. It is of significant concern that, as Waikato DHB has stated, there may have been decreased staff recognition of warning signs[32] because Mr B was regarded as a low-risk patient who was expected to have a trouble-free postoperative period. This perception may have contributed to the failure of staff to perform appropriate assessment and treatment at critical moments in Mr B's care, particularly following his deterioration. It is important that staff evaluate patient signs objectively — without being influenced by expectations about how a patient should recover — and respond accordingly, and be able to adjust treatment plans should a patient deteriorate unexpectedly.

[32] As noted at paragraph 57 of this report.

85. It is of concern that Mr B's major surgery took place at Hospital 1, which is intended only for low-risk surgical procedures, not major bowel surgery. Major elective surgical procedures should take place only when there are adequate resources and appropriate senior clinicians available to deal with any potential postoperative complications.

86. My expert advisor, general surgeon Professor Ian Bissett, advised:

> "There were subtle signs that all was not well in the 24 hours prior to [Mr B's] death. These include a markedly reduced serum sodium (121meq/L[33]) and a very high CRP (>270 all) on [Day 4]. This was associated with recurrent poorly controlled nausea and repeated vomiting. The features that may have reassured the medical staff were that there was only one recording of a temperature of 37.7°C and the white blood count although raised to 18 on the day after surgery returned to normal by [Day 4]."

87. ACC advisor Dr Menzies also noted a concern regarding Mr B's postoperative condition on Day 4, and considered that appropriate treatment was not implemented at that time. Dr Menzies said that Mr B's elevated CRP was a clear sign of infection but not acted upon by staff, and there was no coordinated plan to address his severe hyponatraemia. Dr Menzies stated that owing to the above matters and Mr B's persistent, unaddressed tachycardia, Mr B should have been transferred to Hospital 2 on Day 4.

88. Dr Menzies further stated that Mr B should have had a nasogastric tube inserted in response to his fluid deficit of 7,055ml during the postoperative period and his very large vomit on Day 4. That this did not occur illustrates the lack of continuity of care in this case, which Dr Menzies felt was in part due to the fact that there were no surgical registrars available to remain vigilant of Mr B's fluid balance and postoperative ileus. Overall, Dr Menzies was of the view that Waikato DHB staff failed to provide necessary treatment in a timely manner.

89. Professor Bissett advised that in relation to the care provided on Day 5, administration of antibiotics and decompression of the stomach with a nasogastric tube may have been effective. However, he also advised: "If [Dr F] attended the patient and assessed him as having improved then [Dr F's] management would be seen as reaching the expected standard of care of such a patient." I note that Dr F reviewed Mr B on each day of his admission, and would have had the opportunity to put in place an appropriate plan to address his increasing fluid deficit and significant vomiting.

90. I am concerned that the signs of deterioration were not acted on more promptly.

Day 5 — documentation

91. On Day 5 from 3.45am until 6pm, nursing staff completed Mr B's vital signs, but did not calculate his ADDS score during this time (with the exception of RN G during Dr F's review of Mr B at 10.30am, when the ADDS score was recorded on a separate document to the other ADDS scores).

[33] Milliequivalents per litre.

92. My expert, RN Karla Martin, advised:

> "The failure to consistently calculate and record the ADDS score impairs its utility as a tool to initiate early intervention and management of patient deterioration. However, documentation does show that nursing staff have consistently completed [Mr B's] vital signs and responded appropriately including contacting medical staff as necessary. This shows appropriate clinical assessment and concern. Due to this I am mildly critical of the incidences where staff failed to accurately calculate and record the ADDS score."

93. I am critical that there were a number of instances on Day 5 when staff did not document Mr B's ADDS score. I acknowledge my expert's comment that in this case nursing staff took appropriate action in relation to Mr B's vital sign observations between 3.45am and 6pm. The errors occurred across multiple staff on this day, and reflect a pattern of failure. I consider that the DHB must improve its performance to avoid such documentation lapses in future.

Day 5 — deterioration and ED care

94. Mr B's health deteriorated on the evening of postoperative day four, Day 5. RN D obtained two concerning ECGs and transferred Mr B to ED at 7.30pm for investigation of a possible heart attack. Dr C reviewed Mr B. She understood that he had been assessed by Dr F earlier that day, and that Dr F was aware of Mr B's clinical findings, which included elevated inflammatory markers and a prolonged ileus. In that context, Dr C's focus was on assisting with the specific concern regarding Mr B's ECGs. She noted that he was alert, talkative, and without chest pain, and that he had stable observations but with mild tachycardia. Dr C performed troponin and VBG tests, as well as a further ECG. She stated that as Mr B had no chest pain, the ECG concerns appeared to have resolved, and troponin levels were normal, she concluded that there was no evidence of an acute MI. She recommended that Mr B be transferred to HDU for further observation, but instead he was returned to the surgical ward.

ECG timing

95. The time-stamping of the ECGs taken on the ward and in ED appear to be incorrect. Dr C informed HDC that the timings of the two ECG machines on the ward and ED "were not consistent", and the 19.36hrs ECG (identified as "Abnormal ECG") occurred 10 minutes after the ones taken in the ward. I have concluded that the 19.38hrs and 19.39hrs ECGs occurred on the ward prior to Mr B's transfer to ED, and that the ECG time-stamped 19.36hrs occurred later in ED.

Communication between ED consultant, cardiologist, and surgeon

96. Dr C telephoned cardiologist Dr E for a second opinion on the ECGs, and sent him a text message that stated, "1st ECG is pre-op,[34] 2d was on surgical ward, 3d is done in ED just now," and an image of one ECG, which is time-stamped 19.36.03hrs. Dr E responded, "Only go the last ECG 1936 which is normal," which Dr C interpreted as saying that only the

[34] Mr B did not have an ECG taken preoperatively.

19.36hrs ECG should be relied on, and the previous ECGs should be disregarded. Unfortunately, Dr E intended to say, "Only got the last ECG 1936," which would have indicated to Dr C that Dr E had not received the three ECGs she intended to send. Dr C was reassured by Dr E's response, thinking that he had viewed the most recent ECG and the previous concerning ones.

97. Dr C told HDC that a telephone call to Dr F in this case would have been useful, and the reason she did not telephone was in part her understanding that Dr F preferred not to be contacted at night. Dr C also said that she wishes that she had called back Dr E regarding his opinion on Mr B's ECGs, and that she chose not to as she felt that it would be "an imposition" on Dr E.

98. Professor Bissett advised that had Dr F been informed of Mr B's deterioration that evening, "[Dr F] would have brought a surgical perspective and the issue of intra-abdominal sepsis may well have been addressed". Dr Menzies agreed that Dr F should have been informed at this time.

99. Dr C thought she had sent three ECGs to Dr E, and she was reassured by the specialist's text reply — which she understood was in relation to multiple ECGs — and interpreted it to mean "only go with the last one which is normal". The spelling error in the text and subsequent miscommunication between Dr C and Dr E was unfortunate. As Dr C was seeking specialist advice on which to base Mr B's treatment plan, she should have ensured that Dr E received full and accurate information, so that reliable advice could be given. However, the information Dr E received was incomplete. Dr C used the cardiology advice she received on the ECGs as a partial basis for her conclusion that there was no evidence of acute MI, and it is of concern that the errors may have affected the treatment provided to Mr B.

100. I also note Dr C's comments that she was reluctant to call Dr F and Dr E for their opinions on Mr B's presentation to ED. The surgical team at Hospital 2 and the after-hours on-call hospital manager at Hospital 1 could have been contacted for advice at any time, and, furthermore, clinical documentation from Dr F's review of Mr B on the morning of Day 5 said to "[i]nform doctor if any concerns". There is no evidence to suggest that senior clinicians were contacted by staff around the time of deterioration, when doing so could have enhanced the chances of Mr B receiving the follow-up care he needed. This is of significant concern, and indicates that either staff were not informed adequately about senior clinicians' availability and how to contact them, or did not feel able to contact senior staff when needed.

101. Patient well-being is primary. Clinicians should not hesitate to contact the appropriate staff if they have any concerns regarding a patient's condition. In instances where clinicians perceive that a senior clinician would not wish to be contacted for whatever reason, I expect staff at all levels to prioritise patient safety over their own comfort, and to call senior or specialist staff to ensure appropriate patient management. The culture of the organisation must ensure that any member of a care team feels uninhibited to raise concerns with senior or specialist clinicians in the presence of patient deterioration. As

such, I am critical that Dr C did not telephone Dr F or Dr E (for a second time) during Mr B's time in ED for their opinion on his condition and treatment plans. I note that Dr C agrees that making such contact would have been appropriate.

Assessment of MI and ischaemia

102. My expert advisor, ED physician Dr Sampsa Kiuru, advised that appropriate steps were not taken to rule out MI or ischaemia.

103. Dr Kiuru advised that Mr B's ECGs were extremely concerning, particularly the two taken on the ward immediately prior to ED transfer. Dr Kiuru advised:

> "In my professional view, there are significant dynamic ECG changes concerning for myocardial ischemia in the ECGs provided. … The ECGs from the ward [time-stamped] at 19:05:23, 19:05:41, 19:39:23 and HDU at 19:38:58 are worrisome for myocardial ischemia/infarction. … [W]hen reviewing ECG, it is imperative to compare to previous ECGs (in this case from the ward), and the acute dynamic changes should have raised concern for myocardial ischemia/infarction."

104. Dr Kiuru advised that it was not appropriate to rely on telephone advice in isolation from the cardiologist.

105. Dr Kiuru further advised that in order to exclude MI confidently, the standard of care was to repeat a blood troponin level hours after the initial test, obtain an ECG at a later date, and organise further review of the patient. He advised that there were clinical concerns and multiple ECGs suspicious for MI that were not considered adequately. Dr Kiuru considers that the decision to declare Mr B free of underlying MI was premature and represents a significant departure from the standard of care.

106. I note Dr Kiuru's advice that Dr C should not have relied so heavily on Dr E's text comment, and that there was still an evident risk of MI, which should have led Dr C to plan for further troponin and ECG testing. Dr C recorded her plan for Mr B to be sent to HDU, where she understood he would receive the necessary follow-up care and be monitored closely. I consider that Dr C should have taken additional steps to reassure herself with regard to Mr B's MI concerns, and should have been more proactive in putting in place the plan for Mr B to receive additional troponin and ECG assessments. I am concerned that this did not occur.

Assessment of other clinical concerns

107. Dr Kiuru advised that although a review for possible MI was requested, there were multiple significant clinical concerns that should have prompted further investigation. These included significant unexplained tachycardia, increasing pain, elevated CRP and lactate, hyponatraemia, and hypoxia. Dr Kiuru advised that together these symptoms "constitute significant concern for alternate diagnoses", and that the most appropriate place to investigate Mr B's condition further would have been ED. However, he also noted that there would likely be a "significant range of practice and opinion around whether the patient should have been investigated and treated further while in the ED, or [whether] it was fine to return the patient to the ward for further work-up at a later time".

108. Dr Kiuru advised that burdening a sole ED doctor with ward patients can lead to clinical risk, and that there should be better sharing of the clinical workload. Nonetheless, he advised that it would have been useful if Dr C had called the surgeon prior to Mr B's transfer. As noted above, Professor Bissett and Dr Menzies agree that contacting Dr F at this time would have been beneficial.

109. Dr C was the only doctor in the ED responsible for the care and any inpatient emergencies, and I further note that Dr C was not asked to conduct a comprehensive assessment of Mr B, but to assess him for MI. My expert advisor considers that Dr C should have initiated further investigation in ED because of the outstanding clinical concerns, but also noted that there would be no clear accepted standard of practice in this situation. I am mindful that Dr C stated that the reason she sought to address only the concern regarding the ECGs and possible MI was because of her understanding that Dr F was aware of, and managing, the postoperative clinical concerns. I also note that Dr C's plan was for Mr B to be monitored closely in the HDU. Nevertheless, I consider that it would have been safer to continue observations in ED for a broader evaluation of Mr B's clinical condition. Waikato DHB stated that it agrees with this.

Lack of explicit follow-up plan and transfer back to ward

110. Dr Kiuru advised that a patient with deteriorating observations or an unclear presentation should not be transferred back to the ward, but should remain in an area of increased observation, such as an HDU, where the patient will be observed closely. He further advised that when a patient is transferred back to the ward, there should be an explicit follow-up plan in place.

111. Dr C recorded her plan for Mr B to be transferred to HDU for close observation, yet she was neither aware nor informed by staff that this did not occur, and instead Mr B was transferred back to the ward. Furthermore, Dr C did not record an explicit follow-up plan for Mr B's care — with the exception of the need to address Mr B's pain — when she planned to transfer him from ED.

112. I am critical of the failure to coordinate Mr B's care appropriately and to transfer him to HDU, where his condition could have been monitored closely. The lack of an explicit plan further reduced the chance of Mr B receiving the follow-up care he required.

Day 5 — care in ward after ED assessment

113. When Mr B was transferred back to the ward from ED at 8pm, his heart rate was in excess of 130bpm, his temperature was approximately 36°C, his oxygen saturation was 96%, and his pain score was 7/10. ED nurse RN H documented in the clinical notes that Dr C suggested that RN D contact Dr F with regard to Mr B's analgesia. However, RN D did not contact Dr F.

114. RN D told HDC that she did not accept Mr B back to the ward, but that he was brought there by ED staff. RN D said that she had questioned the suitability of Mr B being returned to the surgical inpatient unit, and initially declined return of Mr B to the ward, but this was not documented. As stated above, Waikato DHB told HDC that the on-call hospital

manager could have been contacted after hours for advice regarding any concerns about patient placement.

115. RN D also did not document her telephone discussion with Mr B's daughter following his return to the ward.

116. RN D recorded Mr B's vital signs at 10pm, two hours after his return to the ward.

117. RN D told HDC that she does not remember details relating to whether she contacted Dr F regarding pain relief, and the reasons why she did not document vital signs until 10pm, or document details of her telephone discussion with Mr B's daughter after his return from ED.

Return to surgical ward from ED

118. My expert advisor, RN Karla Martin, was critical that Mr B was accepted back onto the ward environment when the signs and symptoms that caused RN D to seek a medical review for him remained.

119. I note that RN D stated that she did not accept Mr B back onto the ward, but that he was brought there by ED staff, who were also aware that the hospital has an HDU for patients who require close observation. In these circumstances, given RN D's level of concern about Mr B's return to the surgical ward, it would have been appropriate for her to seek support and advice from the on-call hospital manager.

Monitoring

120. RN Martin advised:

> "I am critical that [RN D] has not documented any vital signs until 10.00pm. As per the ADDS general instructions — you should do observations whenever you are concerned about the patient and as a peer I would expect vital signs to have been recorded on [Mr B's] return to the ward [at 8pm]. This would have allowed clarification with the ED nurse if [RN D] had concerns about [Mr B]. My colleagues and I would see this as a moderate departure of care."

121. RN Martin further advised that when Mr B returned to the ward, owing to his vital signs, pain, and poor urine output, he "required continual vital sign monitoring including a visual cardiac rhythm". RN Martin said that such monitoring would have been consistent with expected standards, and that there is no evidence to suggest that such monitoring was available on the surgical ward.

122. I accept this advice. RN D referred Mr B to ED, and she was concerned about the appropriateness of Mr B's return to the ward, and that his symptoms remained unresolved. I am highly critical that no monitoring and observations were performed when Mr B returned to the ward. RN D should have increased the frequency of monitoring and documented this, in accordance with the ADDS policy. This information would have clarified the concerns RN D had about Mr B's condition, and alerted her to the need for senior advice about his care.

Pain relief

123. RN Martin advised:

> "I am critical that [Mr B] has a pain score of 7/10 and the ED senior medical officer had advised the RN to contact the surgeon regarding the need for more effective pain relief. This was not done. My colleagues and myself would find this a moderate departure of care."

124. I am concerned that RN D did not follow up with Mr B's surgeon, Dr F, in regard to Dr C's instruction for him to have more effective pain relief when this was indicated. I note that RN D had access to the clinical notes, which clearly indicate Dr C's advice for the surgical nurse to follow up with Dr F about Mr B's analgesia.[35] I am critical that RN D omitted to contact Dr F regarding this issue following Mr B's return from ED.

Telephone call with family

125. In respect of the telephone conversation between RN D and Mr B's daughter following his transfer back from ED, RN Martin noted the lack of documentation around the information given at this time.

126. It is a concern that RN D did not document important details of her telephone discussion with Mr B's family following his transfer back from ED, including in relation to the content, date, and time of the conversation.

Conclusion

127. As a healthcare provider, Waikato DHB is responsible for providing services in accordance with the Code. It has a responsibility to support its staff with systems that guide and support good decision-making and promote a culture of safety. In addition, clinicians need to communicate well, and ensure that concerns are escalated appropriately. I consider that the care provided to Mr B by staff at Waikato DHB was suboptimal.

128. I have concerns that such high-risk surgery was undertaken at Hospital 1. Dr Menzies advised that it was inappropriate for a major bowel operation to have been performed there — (1) because of the known major complications that can occur following such surgery; and (2) because the hospital was not staffed by surgical registrars to monitor Mr B postoperatively, which Dr Menzies considers contributed to a lack of continuity of care. Professor Bissett also indicated that it would have been important for Hospital 1 to ensure that it had the expertise for managing laparoscopic colonic surgery, prior to undertaking the procedure. Waikato DHB stated that its surgeons have a long history of providing laparoscopic surgery, and that the procedure is commonly performed there. In this case, the decision to perform Mr B's major surgery at Hospital 1, with the known risks and lack of staff, was misjudged, and instead the surgery should have been undertaken at a larger, more suitably equipped hospital, such as Hospital 2, where Mr B could have been cared for appropriately.

[35] As noted in paragraph 43 of this report, the relevant clinical file entry stated: "[Dr C] suggests surgical RN discuss analgesia with surgeon."

129. There were a number of occasions on which Hospital 1 staff responsible for Mr B's care did not respond appropriately to concerning clinical signs during the postoperative period. This appears to have been a result of staff not evaluating patient signs objectively, and being influenced by an incorrect expectation. Further:

a) There was a lack of adequate and timely intervention to address Mr B's signs of infection, tachycardia, hyponatraemia, and fluid deficit.

b) On a number of occasions, staff did not document ADDS scores to monitor Mr B's deteriorating condition.

c) There was a failure to contact specialist and senior staff for advice when this was indicated. Dr F was not contacted for a surgical perspective on Mr B's management around the time of his transfer to ED. The on-call hospital manager was also available and was not contacted.

d) Communication between Dr C and Dr E was suboptimal.

e) Further investigations should have been undertaken before ruling out MI, including additional troponin and ECG testing. It would have been prudent to continue observations in ED for a wider review of Mr B's clinical condition, or to have put in place an explicit follow-up plan for his care upon transfer from ED.

f) Mr B was not transferred from ED to HDU, where appropriate monitoring could continue — as instructed by Dr C — and instead he was transferred to a surgical ward.

g) Mr B was not monitored during the two hours following his transfer back to the ward at 8pm on Day 5.

h) Staff did not seek Dr F's advice regarding pain medication following Mr B's return to the ward.

i) Concerns about Mr B's return to the ward from ED were not documented, nor were details of the telephone call with Mr B's family around that time recorded.

130. Taken together, these failures show a pattern of poor care by multiple staff, with the result that Mr B's deteriorating condition was not identified and responded to in an appropriate manner. Accordingly, I find that Waikato DHB failed to provide services to Mr B with reasonable care and skill, and breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code).[36]

131. I acknowledge that Waikato DHB has implemented a number of changes since these events, as outlined above in paragraphs 67–68.

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

Recommendations

132. I recommend that Waikato DHB:

a) Provide a written apology to Mr B's family. The apology is to be sent to HDC within four weeks of the date of this report.

b) Within three months of the date of this report, detail and provide evidence of:

i. Policies and procedures in place that ensure that complex and major surgery will not be undertaken at Hospital 1.

ii. The criteria in place for the admission of acute surgical patients to Hospital 1, and the nature of the additional clinical review patients receive on Fridays.

iii. The outcome of changing weekend rostering and staff handover processes since the events in this report.

iv. The action taken towards improving the standard of documentation across Hospital 1.

v. A copy of the updated STEMI guidelines.

vi. The audit of the chest pain pathway used in Hospital 1 ED.

vii. Any other actions that the DHB has taken to improve surgical services at Hospital 1.

133. I recommend that Waikato DHB give consideration to the following recommendations, and report back to HDC on the outcome of it consideration, within three months of the date of this report:

a) Consider further staff education and audits of myocardial ischaemia diagnosis and treatment at Hospital 1.

b) Consider how the DHB could better share clinicians' workload outside of daytime work hours, including instituting: (i) a back-up doctor to be available on call to assist when a high number of patients are waiting to be evaluated; and (ii) an on-call ward doctor who can manage patients outside regular day shifts.

c) Consider instituting a step-down unit with higher nursing staff levels, so that clinically unstable patients could be observed more frequently in close proximity to the ED.

d) Consider whether an explicit follow-up plan is required for patients who are transported from ED back to the ward, including contact details for responsible clinicians.

Follow-up actions

134. A copy of this report will be sent to the Coroner.

135. A copy of this report with details identifying the parties removed, except the experts who advised on this case and Waikato DHB, will be sent to the Medical Council of New Zealand, and it will be advised of Dr C's name.

136. A copy of this report with details identifying the parties removed, except the experts who advised on this case and Waikato DHB, will be sent to the Royal Australasian College of Surgeons.

137. A copy of this report with details identifying the parties removed, except the experts who advised on this case and Waikato DHB, will be sent to the Nursing Council of New Zealand, and it will be advised of RN D's name.

138. A copy of this report with details identifying the parties removed, except the experts who advised on this case and Waikato DHB, will be placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix A: Independent advice to the Commissioner

The following expert advice was obtained from ED physician Dr Sampsa Kiuru:

"Dear HDC,

I have been asked to provide an opinion to the Commissioner on case number [16HDC01558], and I have read and agree to follow the Commissioner's Guidelines for Independent Advisors.

My clinical training and background is in both Emergency Medicine and Rural Hospital Medicine. I trained initially in Emergency Medicine and gained my fellowship with Australasian College of Emergency Medicine (ACEM) in 2006. As my work experience over the past 15 years has been mostly in New Zealand rural and regional hospitals, I became a fellow of the Division of Rural Hospital Medicine in 2014. Since 2014 I have been working solely in rural hospitals. I also teach rural trainees and doctors trauma and emergency care through the Otago University's Rural Postgraduate Program.

I have reviewed all the documents provided. Including the letter of complaint dated […], WDHB's response dated […] and all the referenced documents. Also the clinical records from WDHB covering the period from [early] 2016 onwards and [Dr C's] emailed comments to HDC.

Brief Factual Summary

This case relates to the unexpected death of [Mr B] on [Day 5] following elective surgery at [Hospital 1] on [Day 1]. The post-mortem records cause of death as acute cardiac failure due to chronic ischemic heart disease and abdominal sepsis.

During his admission, [Mr B] was primarily cared for on the general surgical ward. Initially, he appeared to be recovering well from surgery. However, he developed postoperative ileus and his stay on the ward was prolonged.

On [Day 5], [Mr B] was transferred to the Emergency Department (ED) after his condition deteriorated (ADD score 3, HR 144) and a nurse obtained an abnormal ECG, suggestive of myocardial infarction. The nurse contacted the on-call senior medical officer who asked that a further ECG be obtained, and if this was suspicious, [Mr B] should be transferred to the ED.

On arrival to the ED (at 7:30pm) [Mr B] was reviewed by [Dr C] who described him in the notes as 'alert, talkative' and 'comfortable' with 'zero chest pain'. [Mr B's] observations were described as 'stable', although further tachycardia was noted. A further ECG was arranged by [Dr C]. The results of this were sent to a cardiologist at [Hospital 2] who advised that the middle ECG could be disregarded. [Mr B] remained tachycardic for the remainder of his stay in the ED. After acute myocardial infarction was ruled out, [Mr B] was returned to the ward (approximately 8pm).

At 10pm [Mr B] had a BP of 135/75, HR 134, was complaining of hallucinations and was restless. His urine was also very concentrated. At 10:35pm [Mr B] started vomiting and then collapsed suddenly. CPR was unsuccessful, and after 30 minutes it was discontinued. [Mr B] passed away at 11:10pm.

Expert advice requested — referral instructions

Please review the enclosed documentation and advise whether you consider the care provided to [Mr B] at [Hospital 1] Emergency Department was reasonable in the circumstances, and why.

In particular, please comment on:

1. Whether myocardial infarction was appropriately ruled out? Was it appropriate to rely on the advice provided by the cardiologist?
2. Whether other diagnoses should have been considered or investigated at this point?
3. Whether it was appropriate to return the patient to the ward at 20:00.

For each question, please advise:

a. What is the standard of care/accepted practice?
b. If there has been a departure from the standard of care or accepted practice, how significant a departure do you consider this to be?
c. How would it be viewed by your peers?
d. Recommendations for improvement that may help to prevent a similar occurrence in future?

1. Whether myocardial infarction was appropriately ruled out?

I do not think myocardial infarction or ischemia was appropriately ruled out in this case, specifically for two reasons.

— In order to rule out a myocardial infarction, there has to be two troponin tests done hours apart from each test. Only one troponin test was performed at 19:34 on [Day 5], at the time of the ED evaluation of the patient. A second test would have been required hours later to confidently exclude myocardial infarction. The laboratory notes this in their results page as well, advising that within 12hrs of symptom onset, myocardial necrosis is not excluded.

— In my professional view, there are significant dynamic ECG changes concerning for myocardial ischemia in the ECGs provided. As ischemia is a dynamic process, frequently multiple ECGs are performed during any suspicious clinical care period. Occurrence of dynamic changes from one ECG to another indicates possible cardiac instability. No one ECG can be seen in isolation. It is unclear, which ECGs were communicated to cardiology. The ECGs from the ward at 19:05:23, 19:05:41, 19:39:23 and HDU at 19:38:58 are worrisome for myocardial ischemia/infarction.

> Even if the ECG communicated with cardiology (at 19:36:03) was less worrisome, which [Dr C] called normal, the follow-up ECG 2.5 minutes later was significantly different. Furthermore, when reviewing ECG, it is imperative to compare to previous ECGs (in this case from the ward), and the acute dynamic changes should have raised concern for myocardial ischemia/infarction.

Was it appropriate to rely on the advice provided by the cardiologist?

I do not consider it appropriate to rely in isolation on a phone advice from a cardiologist. Even if the cardiologist was not concerned about the ECG provided, there were significant clinical reasons for concern of myocardial infarction/ischemia with the dynamic ECG's changes. Nor can myocardial infarction solely be excluded from a single ECG, even if the one ECG appears normal.

a. What is the standard of care/accepted practice?

The standard of care would have been in my professional opinion, to at least repeat a blood troponin level and ECG at a later date and plan to review the patient. I do not agree that acute myocardial ischemia was ruled out at the time of ED evaluation to an accepted standard of practice.

— The Cardiac Society of Australia and New Zealand have resources that describe high risk features in a patient being evaluated for chest pain. These include transient ST segment elevations. The standard of care follow-up plan would be to repeat the ECG and troponin testing in 6–8 hours.

Please see page 909. (Chew DP, Scott IA, Cullen I, French JK, Briffa TG, Tideman PA, Woodruffe S, Kerr A, Branagan M, Aylward PE. National Heart Foundation of Australia & Cardiac Society of Australia and New Zealand: Australian clinical guidelines for the management of acute coronary syndromes 2016. Heart, Lung and Circulation. 2016 Sep 1;25(9):895–951.)

b. If there has been a departure from the standard of care or accepted practice, how significant a departure do you consider this to be?

There has been a departure from the standard of care. I would rate the departure as significant, as there were clinical concerns and multiple suspicious ECGs for myocardial ischemia that were not taken into consideration. Decision to declare patient free of underlying myocardial ischemia was premature.

c. How would it be viewed by your peers?

In my professional view, my rural hospital peers would agree that further troponin testing and clinical review with further ECG would have been the standard of care in a rural hospital.

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

— Alerting the patient's specialist ward doctor of any patient requiring urgent ED evaluation.

— Further education and audits of myocardial ischemia diagnosis/treatment at [Hospital 1].

— Patient with deteriorating observations or unclear clinical presentations should remain in an area of increased observation, not transferred back to ward. For example, our rural hospital has a HDU area, where such patients would be observed closely.

— Team based decision making, where nursing concerns would be taken into consideration, when transferring back to a lower level of care.

2. Whether other diagnoses should have been considered or investigated at this point?

First, I would like to state, that context of the work environment matters here. It was a Saturday evening in a [non-tertiary level] hospital, and the Emergency Department was likely busy with patients. Having a background of both Emergency Department and rural hospital medicine, I can appreciate that it can be challenging to find the time and effort to evaluate fully a ward patient, while your ED is full. I do not know the staffing numbers or the degree of workload at [Hospital 1], but can empathise with the situation. Where do the responsibilities lie and what was the clinical question provided to the ED doctor? My observation is that ED doctor was to assess patient for possible myocardial ischemia, not asked to evaluate the patient fully.

That said.

I do think that other diagnoses should have been considered at this time. Presentation was of an ill patient. There were multiple significant clinical concerns that should have prompted further evaluation. For example:

— Increasing heart rate and significant unexplained tachycardia.

— Increasing pain.

— Elevated CRP and lactate (3.9).

— hyponatremia (119)

— Hypoxia

In combination these constitute significant concern for alternate diagnoses, which should have been examined further.

a. What is the standard of care/accepted practice?

The standard of care comes down to the question asked of the ED doctor. I have provided an answer to the question of myocardial ischemia in the previous question.

Because I feel that the ED doctor was specifically asked to evaluate for myocardial ischemia, accepted care of evaluating patient further is more difficult to answer.

However, I do consider there is a humanistic/ethical obligation to evaluate the patient further. ED doctor obtained a Venous Blood Gas (VBG) and troponin levels while in the emergency department and the VBG was significantly abnormal. Patient had elevated lactate and clinically significant hyponatremia. Patient's clinical presentation with abnormal vital observations and clinically important hyponatremia, accepted practice would have been to investigate and treat further when patient was in the emergency department. The blood test results are not noted in the doctor's notes, but ward nurses record them as checked.

b. If there has been a departure from the standard of care or accepted practice, how significant a departure do you consider this to be?

I think there is a minor departure from accepted practice for not following up on the results of clinician requested blood tests, and investigating the patient presentation further while in the ED.

c. How would it be viewed by your peers?

This comes down to how my peers would see the ED doctor's clinical responsibility. If he was not expected to fully evaluate the patient, then there is no clear standard of practice breach. I would think there is significant range of practice and opinion around whether the patient should have been investigated and treated further while in the ED, or it was fine to return the patient to the ward for further work-up at a later time.

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

— Better communications. If the surgeon had called the ED doctor and informed the ED doctor better of the patient's background and requested a full review, outcome could have been different. This also opens to the communications loop, which the ED doctor could close later on after his evaluation.

— Better sharing the workload outside of daytime work hours. I think burdening a sole ED doctor with ward patients can lead to clinical risk, as in this case, and there should be better sharing of clinical workload. A back-up doctor to be called in to help when certain amount of patients are waiting to be evaluated, or a separate ward doctor of call, that can review and manage patients outside regular dayshifts.

3. Whether it was appropriate to return the patient to the ward at 20:00.

I do find it inappropriate to transfer the patient back to the ward, after 30 minutes in the ED department. Reviewing the patient clinical notes, there is a worrisome trend of unexplained increasing pain, heart rate, elevated lactate and CRP rise. Although the patient was brought to ED for review of his ECGs, and larger clinical review may not have been asked of the ED clinician, there were multiple unaddressed concerns. The appropriate and safe approach would have been to observe the patient in ED.

a. What is the standard of care/accepted practice?

In my opinion, the standard of care would have been to keep the patient in the ED under close observation and arrange for serial ECGs and a follow-up troponin. Personally I would have repeated the troponin in 6 to 8 hours and the following morning, as there was high clinical concern for underlying ischemia with his ECGs.

Also, as there were multiple, significant vital observation derangements, accepted care would have been to make some clinical treatment plan to treat the patient while in the ED for observation. For example, addressing his fluid status in light of the hyponatremia and significant tachycardia should have been performed within the next 6–8 hours.

b. If there has been a departure from the standard of care or accepted practice, how significant a departure do you consider this to be?

I find the departure from accepted practice here minor. The patient required clinical treatment, stabilisation, follow-up, and laboratory testing to be performed. The most appropriate place would have been in the ED.

c. How would it be viewed by your peers?

My peers would agree that follow-up troponin testing would have been required and that the patient required clinical stabilisation prior to moving back to the ward. Otherwise there is significant variation in what facilities rural hospitals have for observation units outside the ward. Therefore, in some places the patient possibly would have been transported back to the ward for follow-up testing, such as the troponins. The distance here plays a part as well, between the ED and ward. If they are next to each other and appropriate nursing staffing is available, then in rural context, an observation in the ward could be a consideration.

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

— Requiring an explicit follow-up plan for patients transported back to the ward. For example, who to call etc. Here a phone-call to the surgeon would have been useful before transfer.

— Maybe having a step-down unit with higher nursing staff levels, that could observe more clinically unstable patients, rather than using ED beds for this? Would allow sicker patients to be observed more closely. Close to the ED?

Sincerely Yours,

Dr Sampsa Kiuru
M.D. FACEM, FDRHMNZ”

Dr Kiuru provided the following further expert advice on 26 September 2019:

> "Have reviewed my statement, [Dr C's] statement and the ECGs. Again, I do not feel that I should amend my advice at this point.
>
> If I was supervising a registrar my clinical questions in this case would be:
>
> 1. How do all the ECGs compare to each other? What are the concerns? Are there changes and what implications do they have on clinical management? Clearly the ward nurses were worried about the patient having myocardial ischemia/AMI, and therefore the expectation is that the registrar clearly addresses this question.
>
> I would like to know what [Dr C] thinks of the other ECGs? In her statements, she does not directly state what she thinks of each individual ECG, nor compares the ECGs to the first one from [Day 3]. She relies on the advice of cardiology. As I say in my advice, there are dynamic changes that are very concerning for ischemia/AMI.
>
> Again, when I review the ECGs, especially the 2 immediate ones from the ward (19:39 &19:38), I would be extremely concerned about this patient.
>
> I hope that helps, and happy to help as required.
>
> Regards, Sampsa"

Appendix B: Independent advice to the Commissioner

The following expert advice was obtained from RN Karla Martin:

"Thank you for the request that I provide clinical advice in relation to the complaint on case number 16/01558 concerning the care provided by [Hospital 1] to the late [Mr B]. 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 have a Bachelor of Nursing Degree and a Post Graduate Certificate in Intensive Care Nursing. I registered in December 1998. I have worked for 18 years in general Intensive Care/High Dependency Care and coordinate in the Acting Charge Nurse role when required. My experience includes: Nursing patients from a variety of medical and surgical areas including: trauma, neurological, multi organ failure, organ transplantation, sepsis, elective postoperative cases and cardiac surgery.

I have reviewed the documents on file: the received complaint from [Mrs A], Executor of [Mr B's] estate, Waikato DHB's responses, [Dr F's] response and [Mr B's] Clinical records including the 'ERAS Colorectal Surgery Care Plan'.

Throughout this report I have applied the following professional standards:

Nursing Council of New Zealand (2012) Code of conduct.
Nursing Council of New Zealand (2007) Competencies for registered nurses.

Provided factual summary

On [Day 1] [Mr B] presented to [Hospital 1] for an elective laparoscopic right hemicolectomy to (at that stage) remove a 10cm polyp in the mid-ascending colon. Ahead of surgery, a planned fleet enema was not actioned because it was 'too late' to do this.

[Dr F] performed the surgery. Intra-operatively, a colonoscopy identified a polyp 60cm from the anal verge (and in a different location to that identified by the CT imaging) for removal. Accordingly, an extended right/subtotal colectomy was performed with anastomosis between the terminal ileum and descending colon.

Initially, [Mr B] was perceived to be recovering well from surgery. The ward round notes from [Day 2] record that [Mr B's] observations were stable, and the surgical wound was clean. While there was 'slight pain', [Mr B] was 'coping okay'.

On [Day 3], [Mr B] was reviewed again. His observations were stable, but he was described as having trouble with diarrhea overnight, and one incident of vomiting. His abdomen was noted to be somewhat distended.

At about 3pm on [Day 3], [Mr B's daughter] called the ward with concerns her father was confused. [Mr B] was seen by nursing staff shortly after this conversation. His

abdomen was described as 'distended' +++' and his pulse was between 100–105 beats per minute. His other observations were stable, although there was decreased urine output. A doctor was contacted who advised it was not necessary to perform an ECG. However, a short while later, an ECG was performed after nursing staff agreed that [Mr B] appeared delirious.

On [Day 4], [Mr B] was seen again by Dr F. The notes record that [Mr B's] heart rate had risen to 120 beats per minute that morning, and his oxygen saturation had reduced. A plan was made for further IV fluids to be administered to him.

Nursing notes from [Day 5] record the following:

> 'Vital signs stable (HR remains 100–110). Vomiting initially settled with IV, however nausea persists. … IV pethidine given (20mg) with good effect for pain. (Passed urine one small amount) early in shift. Phlebitis scale 0.
>
> Very restless — up in chair and back to bed frequently. C/o back pain more than wound pain. No new wound ooze. Reassurance ++ as anxious re: hallucination early in shift (visual — seeing words written on walls and pj's that are not there.
>
> NB: urine sent to lab @ 0645 for urine culture as requested.'

The nursing notes from 7.30pm record further deterioration in [Mr B's] condition:

> 'Vital signs — ADD score — 3 — HR = 144.
>
> Output 300ml in whole day. Pt had only some ice cream and jelly. Vomited 200mls. Cyclizine given with good effect. C/o of back pain. Pethidine given with no effect. Obs done — increased HR — ECG done that showed Acute MI. Immediately contacted ED. Shifted patient to ED. IV fluid ongoing. FBC monitored and recorded at 1930'.

Shortly after this, [Mr B] was taken to ED to be reviewed by the on-call senior medical officer. [Mr B] was returned to the surgical ward a short while later. At about 10.40pm a cardiac arrest call was made. [Mr B] was pronounced dead at approximately 11.30pm.

1. The adequacy of care provided to [Mr B] by nursing staff during his admission at [Hospital 1].

I note that there is clear documentation of vital signs on the Adult Deterioration Detection System (ADDS) on all shifts. This is appropriate and expected. I note that on the night shift of [Day 4] going into [Day 5] from 3.45am, [Mr B's] ADD score is not completed. The failure to consistently calculate and record the ADDS score impairs its utility as a tool to initiate early intervention and management of patient deterioration. However, documentation does show that nursing staff have consistently completed [Mr B's] vital signs and responded appropriately including contacting medical staff as necessary. This shows appropriate clinical assessment and concern. Due to this I am

mildly critical of the incidences where staff failed to accurately calculate and record the ADDS score.

Consistent with accepted standards, entries in [Mr B's] clinical notes are signed, time and dated and included a clear plan.

Nursing documentation indicates that pain, nausea and vomiting appear to have been an issue for [Mr B] during his stay. There is evidence that the nursing staff consistently informed the medical team of [Mr B] experiencing pain and nausea and appropriately administered the prescribed medications.

I note that [Mr B] received intravenous fluids as prescribed and there is good evidence of appropriate wound and clinical assessment.

Overall I consider that the care provided to [Mr B] by the nursing staff to be of an appropriate standard and care.

2. Did nursing staff respond appropriately to [Mr B's] abnormally high heart rate on [Days 3–5] and any deterioration to his condition?

The nursing staff responded promptly and appropriately to [Mr B's] change in heart rate (HR) and initial changes in condition. Documentation shows that [Mr B's] HR was consistently above 100 in the time between [Day 3] and [Day 5].

On [Day 3] [RN I] has documented that she has contacted the Senior House Officer (SHO) in regards to an increase in HR from the 90's to 105 BPM and was advised not to do an ECG at that stage. As per the Adult Deterioration Detection System (ADDS), [RN I] repeated [Mr B's] observations two hours later. This is captured in her documentation at 3.30pm with her assessment of [Mr B] and the plan, HR 111 BPM; low urine output and nauseated *SHO will review*. 5 minutes later [RN I] has documented that she has noted confusion and has advised the SHO of this. At 3.45pm [RN I] has documented that an ECG was done and [Mr B] had an ADDS score of 2 due to his elevated HR and low urine output. Her documentation includes, SHO reviewing and pm nursing staff aware. My colleagues and I would view the documentation from [RN I's] assessment, response and documentation to be consistent with accepted standards and appropriate. On [Day 5] at 7.00pm, RN D documented [Mr B's] ADDS score = 3. HR 144, pt had no chest pain and urine output was 300mls for the whole day. Documentation also reports that an ECG was done which showed an acute myocardial infarction and they immediately contacted the ED SMO. I would see this as an appropriate standard of care. [Mr B] was shifted to Emergency Department (ED) Senior Medical Officer (SMO). In my opinion, the standard of nursing care provided at this stage was appropriate.

As the ED SMO was busy and unable to review [Mr B] on the ward he was transferred to the ED. ED nurse documentation reports Dr is aware that [Mr B] has a HR of 130–140, presence of back pain with pain score 7/10 and plan is for [Mr B] 'to be returned to the ward'. ED nursing documentation reports [Mr B] *is up and down out of bed in*

pain and is clammy. [Mr B] had been on oxygen in ED. It is recorded at 7.20pm on his vital signs chart that his oxygen saturations were 95% on 2L oxygen. At 1945 [Mr B] had oxygen saturations of 96% on room air.

[RN D] documents his return to the ward at 8.00pm. I am critical of [Mr B] being transferred back to the surgical ward when his heart rate and pain control were outside normal parameters. In my opinion, the signs and symptoms that caused [RN D] to seek a medical review of [Mr B] still remained and I question why she accepted [Mr B] back to the ward environment. The responses obtained from the ED and [RN D] do not advise as to whether they voiced concerns or whether [Hospital 1] has senior nursing support in the evenings/nights for nursing staff to escalate concerns about patient placement.

I am critical that [RN D] has not documented any vital signs until 10.00pm. As per the ADDS general instructions — you should do observations whenever you are concerned about the patient and as a peer I would expect vital signs to have been recorded on [Mr B's] return to the ward. This would have allowed clarification with the ED nurse if [RN D] had concerns about [Mr B]. My colleagues and I would see this as a moderate departure of care.

In my opinion, due to his vital signs, recorded back pain and poor urine output, [Mr B] required continual vital sign monitoring including a visual cardiac rhythm at this stage. Such monitoring would be consistent with expected standards. There is no evidence that such monitoring was available on the surgical ward. In such circumstances it would be expected that the requirement for continuous monitoring be recognized and implemented prior to transfer from the ED. I note that in response to [Mr B's] low oxygen saturations, oxygen was commenced at 2L via nasal prongs. This is an appropriate intervention.

I note that [RN D] has received further education and support regarding the ADDS and escalation plan since [Mr B's] demise. I consider this appropriate.

3. The adequacy of communication between nursing staff and [Mr B's] family in response to deterioration in his condition.

I am concerned that there is conflicting information in regards to when a conversation was had with [Mr B's] family in regards to his deterioration on Saturday [Day 5]. On page 11 of the Tabular timeline completed by […] it states that *Pt rang family re transfer to ED; nurse spoke with daughter who said pt normally anxious/nervous.* In the Waikato DHB serious Incident Review Report it states that *family not notified of father's deterioration when he was taken to ED but were reassured by the nurse that all was well when they rang with concerns on Saturday evening*.

From the clinical notes there appears to be a lack of documentation around information given and this may have contributed to the family's concerns. However, I do note that [RN I] has documented on [Day 3] that [Mr B's] daughter phoned and the RN asked [Mr B's] permission if she could give her information over the phone. I

would see this as good practice documenting the conversation had with [Mr B's] daughter and seeking permission from [Mr B] prior to providing details.[1]

I am critical that there is no documentation by [RN D] in regards to the conversation had between the nurse and family when [Mr B] had contacted them in regards to his transfer to ED. It is accepted practice amongst peers and myself that all family conversations are documented. This includes date and time of the conversation/ meeting, who was involved and what was said. In my experience such documentation is part of expected practice.

4. The adequacy of clinical observations recorded by nurses involved in the care of [Mr B].

Based on my review I consider that nursing staff adequately monitored and recorded [Mr B's] observations.

I note that vital signs — heart rate, temperature, blood pressure, respiration rate, oxygen saturation and urine output are regularly recorded by the nursing staff and at an appropriate frequency. This is consistent with accepted standards of practice.

There is evidence of appropriate and regular wound and intravenous luer assessment and care. Further, staff were reviewing [Mr B's] abdomen in relation to distention and recording this. There are accurate fluid balance charts with evidence of nursing staff noting and escalating incidences of low urine output. IV fluids were prescribed but there was a significant imbalance of input and output during [Mr B's] hospital stay. Nursing staff have documented on [Day 1] that [Mr B's] urine output was only 30mls/hr and his target was 35mls/hr so they left the indwelling catheter (IDC) in at 6.00am for review in the mane [(morning)]. The IDC was removed at 8.00am despite urine output being low. Post removal of [Mr B's] IDC when [Mr B] was found to have poor urine output, nursing staff used the bladder scanner to assess the volume of urine retained and have documented this. This is appropriate.

The Enhanced Recovery after Surgery (ERAS) pathway for Colorectal Surgery Care Plan was completed each day. [Mr B] often had variances in his condition and nursing staff wrote in his clinical notes as well as completing the ERAS pathway each shift.[2] In my opinion the nursing documentation was consistent with accepted standards.

5. The adequacy of relevant policies and procedures in place at [Hospital 1] at the time of the events, and developed since then, as they relate to nursing care.

I am critical that [Mr B] had a pain score of 7/10 and the ED senior medical officer had advised [RN D] to contact the surgeon regarding the need for more effective pain relief. This was not done. My colleagues and myself would find this a moderate departure of care. It is promising to see that a surgical 'patient deterioration pathway' has been developed for surgical patients at [Hospital 1] with regard to contacting

[1] Nursing Council of New Zealand (NCNZ), *code of conduct for nurses*. (Wellington: NCNZ, 2012)
[2] Nursing Council of New Zealand (NCNZ), *code of conduct for nurses*. (Wellington: NCNZ, 2012)

surgeons and that this should encourage staff to seek input from medical staff for any patient concerns in the future.

Waikato DHB has since replaced ADDs with the New Zealand Early Warning Score (NZEWS).

6. Any other matter I consider relevant to comment on.

I would recommend that peer medical advice be sought on the standard of care and oversight provided to [Mr B]. It is documented that by [Day 2] [Mr B] showed signs of ileus — 'abdomen soft, slightly distended and tender, nausea and vomiting (treated with anti emetics)'. Blood results indicated low sodium (121) and elevated CRP >270 and weight gain of 4.3kgs more than pre admission weight. From my experience an abdominal x-ray could have been requested and signs of infection were missed — tachycardia, temp, low sodium and elevated CRP. I note from [Waikato DHB] that surgical patients who may require tertiary services over the weekend are now transferred to [Hospital 2] to enhance monitoring. I would also suggest that peer medical advice is sought in relation to [Mr B's] care in the ED on [Day 5].

Karla Martin (RcpN, PG Cert)"

Appendix C: Independent advice to the Commissioner

The following expert advice was obtained from cardiologist Dr Ian Crozier:

"My name is Ian George Crozier;

I am a registered medical practitioner (10770) and cardiologist.

I have been requested to provide an opinion as to whether I consider the care provided to [Mr B] by the Waikato DHB and/or [Dr E] was reasonable in the circumstances and why.

I have previously given an opinion regarding 3 ECG recordings on [Mr B] between [Days 1–5] in 2017.

I am at most only professionally acquainted with [Dr E]. I do not believe I have any conflict of interest to declare.

Clarification of the opinion required from yourself 18 April 2019

We are requesting your advice to determine if the standard of care provided by cardiologist [Dr E] was adequate in the circumstances, and if not, why. We are seeking your advice on the basis that he received only 1 ECG, the one included in the latest request for advice. I would ask that you please disregard information provided to you prior to the current request.

Documents provided:

- Health and Disability Commissioner's request for advice.
- The single ECG that was viewed by [Dr E].
- Text messages and ECG from a cell phone.
- [Dr E's] letter 15 June 2017.
- Letter from [Waikato DHB].
- The complaint

Timeline as provided by HDC and [Dr E's] letter;

[Day 1];

[Mr B] attended [Hospital 1] for elective surgery.

[Day 5];

His condition deteriorated and an ECG was taken while he was on the ward. On the basis of this ECG, [Mr B] was transferred to [Hospital 1's] Emergency Department (ED) where a further trace was obtained by ED senior medical officer [Dr C].

[Dr C] has stated that she sent the aforementioned ECGs — along with a third ECG that had been taken earlier that night — by text message to cardiologist [Dr E] who was located at [Hospital 2] to be reviewed remotely.

'I called [Hospital 2] and asked to speak to the Cardiology Consultant and was put through to [Dr E] and told him briefly that I was seeing a post-operative patient with ECG changes and no chest pain and asked if he would review the ECGs. I numbered the ECGs for his benefit. I took images of the ECGs with my phone and sent them by text message to [Dr E] for his advice.'

[Dr E] reported:

That there was a brief telephone conversation at 19:30hrs with [Dr C]. 'He has had a bowel operation and was in some sort of post of' (?sic) 'bowel obstruction. The patient has had no chest pain but an ECG was performed as he looked unwell showed ?ischemia. Except for sinus tachycardia (consistent with systemic unwellness) [Dr C] couldn't she' (?sic) 'any abnormality and wanted a second opinion. I offered to review the ECGs of concern in the form of a PXT due to our location.

At 1940hrs ([Day 5]) I received a PXT of 1 ECG with the comment from [Dr C] stating "*1st ECG is pro-op (pre-op), 2nd was on surgical ward, 3rd done in ED just now (and clearly reassuring). No chest pain"*. As I only received 1 ECG done at 19:36hrs I replied "only go the last ECG 1936 which is normal" reflecting to the question of ischaemia as there was no evidence of acute ischaemia. The word go should read "got" which is a typo.'

[Dr C] interpreted [Dr E's] text response as 'only go with the last one which is normal' meaning the other ECGs could be clinically disregarded.

ECG

[Day 5] 19:36:03

[Hospital 1] A&E — Waikato DHB

No patient identified.

Handwritten;

'Discussed c Cardiology Waikato

3rd ECG'

Computerised analysis reported on ECG;

Sinus tachycardia

Possible Left atrial enlargement

Nonspecific ST abnormality

Abnormal ECG

My Interpretation:

Sinus tachycardia 131 beats per minute

Left atrial enlargement.

Otherwise normal ECG.

Specific advice required:

Please advise whether I consider the care provided to [Mr B] by Waikato DHB and/or [Dr E] was reasonable in the circumstances, and why.

In particular, please comment on:

[Dr E]

1. The appropriateness of the clinical assessment, decisions, and actions on the basis of the information available to him at the time of the above events.

I agree with [Dr E's] interpretation of the ECG. Therefore his care was consistent with the standard of care.

2. Any other matters in this case you consider warrant comment.

Based on both the single ECG seen by [Dr E] and the clinical scenario, there was no suggestion of an acute cardiac problem that contributed to his condition or that required treatment.

However with regard to the typographic error in the text go for got;

> 'only **go** the last ECG 1936 which is normal reflecting to the question of ischaemia as there was no evidence of acute ischaemia'

Which was interpreted by [Dr C] as

> 'only go with the last one which is normal' meaning the other ECGs could be clinically disregarded.

The miscommunication was unfortunate, but in my opinion, did not significantly alter his care.

The normal subsequent ECG was reasonable evidence that acute cardiac intervention was not indicated in a post-operative patient without chest pain. Therefore in my opinion, did not significantly alter his care.

Ian Crozier
Cardiologist"

Appendix D: Independent advice to the Commissioner

The following expert advice was obtained from general surgeon Professor Ian Bissett:

"I am Ian Peter Bissett, Professor of Surgery at the University of Auckland, and a consultant Colorectal surgeon at Auckland City Hospital. I am vocationally registered with the New Zealand Medical Council, no 10996, and am a Fellow of the Royal Australasian College of Surgeons as well as past President of the Colorectal Surgical Society of Australia and New Zealand. I am a practising colorectal surgeon with a strong general surgical background; I am the previous Unit Head of the Colorectal Unit and the past Director of the Colorectal Pelvic Floor Clinic at Auckland City Hospital.

This expert advice is based on the documents provided by the HDC including:

1. The letter of complaint dated […],
2. Waikato District Health Board's response dated […]
3. Copies of the clinical [notes] from Waikato DHB from [early] 2016
4. A copy of the CTC dated [early 2016],
5. Copies of the laboratory results from Waikato DHB,
6. A copy of the post-mortem report by […], dated [2016].

SUMMARY OF EVENTS

[Mr B] underwent a colonoscopy [in] 2016 by [a general surgeon], as investigation of lifelong symptoms of irritable bowel syndrome with no significant recent change. The colonoscopy was based on his age and his lifelong symptoms. During the procedure it was difficult to proceed as far as the transverse colon because of the tortuous nature of the bowel. [The general surgeon] noted what he thought was a large polyp on a stalk that gave him the impression that it could be intussuscepting along the bowel. He was unable to get adequate views of the area nor do a biopsy so he referred [Mr B] for a CT Colonography which was performed on the following day. This investigation identified a large mobile pedunculate lipomatous polyp that was in the mid ascending colon. It measured 104 x 51 x 75 mm.

[Mr B] was next seen [a few months later] by [another general surgeon]. He noted the large polyp and recommended a right hemicolectomy, commenting that [Mr B's] long-standing symptoms could have been related to intermittent obstruction. He also noted that apart from a hernia repair performed the previous year he had no other medical problems. He also recorded that he had discussed multiple different possible complications with the patient.

On [Day 1] [Mr B] was admitted at [Hospital 1] for an elective right hemicolectomy to be performed laparoscopically. The surgery was performed by [Dr F] and initially involved a repeat colonoscopy. This identified the large polyp 60 cm from the anal verge. This polyp appeared to be more distal than expected from the CT

colonography. [Dr F] then proceeded to perform a laparoscopic extended right hemicolectomy with an ileo-descending anastomosis. I presume that this was because the polyp was causing intussusception of the bowel.

On [Day 2] [Mr B] was recovering well from surgery and was assessed by [Dr F] at 9:40 that morning. The following day ([Day 3]) [Mr B] complained of poor sleep overnight and an episode of vomiting. His observations were noted to be stable and abdominal examination revealed slight distension with some lower abdominal tenderness. The patient was encouraged to eat and drink as tolerated. It was noted that evening that the patient was mobilising independently through the ward and he was comfortable when settled.

At 8 AM on [Day 4] the patient was visited again by [Dr F] [who] noted that the patient did not have a fever, had a heart rate of 120 and was complaining of hiccups and nausea. It was noted that the patient's abdomen was soft [and there] was tenderness around the wounds and that the patient had passed some flatus but no bowel motion. Later that day the registrar recorded that the labs results showed a sodium of 121 and that the CRP had risen to greater than 270. Patient had ongoing vomiting. He was noted to be sitting alert in the chair. These findings were reported to [Dr F]. Patient was noted to have minimum pain and was encouraged to drink, the intravenous fluids were continued and opiates were stopped. That evening the nurse noted that his observations were stable but the patient was very tired and complaining of nausea. He was noted as not being confused at that point in time. Two further vomits are also recorded.

At 6 AM on [Day 5] [Mr B] had a heart rate of 100–110 and he was noted to have vomited during the night but that this had settled with intravenous Zofran and cyclizine. He was still noted to be nauseated. There is no record of a visit or assessment by any medical staff before 7 PM during that day. At 7 PM [Mr B] was noted to be more unwell with a heart rate of 144 and only 300 mils of urine passed throughout the day. He had vomited 200 mils. He was complaining of back pain and an ECG was performed. He was shifted to the Emergency Department for assessment there. The ECG was reviewed and the change was thought to be of uncertain significance in this setting of no chest pain. It was also noted that the patient's oxygen saturation had decreased. His further ECG suggested an acute ischaemic change. On examination he was noted to be alert and talkative and seemed comfortable with stable observations apart from a mild tachycardia and no concerning findings on abdominal examination. A repeat ECG in the emergency department was reviewed by the cardiology consultant and considered to be normal with no evidence of acute myocardial infarction. At 8:15 that evening patient was noted to be confused with some hallucinations and an increased heart rate up to 140 bpm. The patient was returned to the ward and at 10 PM was noted to have a heart rate of 134, a low urine output and an oxygen saturation of 86% on air, the patient was very restless and anxious.

At 11:20pm the patient got up went to the toilet and came back to bed then started vomiting and collapsed. A cardiac arrest call went out at 11:25 PM. [Mr B] at this stage was unconscious and had vomited about 3 L of dark fluid. CPR was instituted but intubation was difficult because of copious vomiting in the patient's throat. Intubation was only achieved at 11:55 PM. CPR was continued for 30 minutes, but the patient did not recover and died around midnight.

A coroner's post-mortem was performed [two days later]. The pertinent findings were acute cardiac failure, abdominal sepsis and chronic ischaemic heart disease. Although the patient had vomited profusely prior to his cardiac arrest there is no mention of aspiration of vomit in the respiratory tract. The intra-abdominal sepsis included purulent fluid around the liver and fibrinous exudate over the terminal ileum. A perforation of the small intestine could not be identified and there was no demonstrable anastomotic leak.

EXPERT OPINION

[Mr B] died four days following an extended right hemicolectomy. There were intra-abdominal signs of sepsis without any clear contamination of the abdominal cavity by bowel contents. The likely causes of this sepsis are either a subphrenic abscess resulting from contamination of the abdominal cavity at the time of surgery or a microscopic perforation of the anastomoses. There were subtle signs that all was not well in the 24 hours prior to [Mr B's] death. These include a markedly reduced serum sodium (121meq/L) and a very high CRP (>270 all) on [Day 4]. This was associated with recurrent poorly controlled nausea and repeated vomiting. The features that may have reassured the medical staff were that there was only one recording of a temperature of 37.7°C and the white blood count although raised to 18 on the day after surgery returned to normal by [Day 4]. By the morning of [Day 5] the patient was restless with confusion and hallucinations. The vomiting was still ongoing and should have triggered the placement of a nasogastric tube and consideration of a CT scan. I am concerned that there may not have been any medical staff assessment on that day as there is no medical note during the morning and no mention in the nursing notes that a visit occurred (this was a Saturday morning).

<u>Particular issues:</u>

1. The decision to perform [Mr B's] surgery at [Hospital 1] initially.

[Mr B] was assessed prior to surgery as being relatively fit. He had no known comorbid conditions. He would appear to have been a good candidate for surgery at [Hospital 1] provided they have the expertise for managing laparoscopic colonic surgery.

2. The changing nature of the surgery. In view of the results of the intraoperative colonoscopies should transfer to [Hospital 2] have been considered?

Having undertaken an anaesthetic and colonoscopy at [Hospital 1] and identifying what sounds like an intussusception of a lipomatous tumour I think proceeding to the

planned surgery (even though this was a little more extensive than initially planned) was the appropriate decision.

3. The standard of the follow-up period provided to [Mr B] by [Dr F and team] (nursing advice is being obtained separately), based on both versions of events.

It is clear that [Dr F] assessed [Mr B] post operatively on [Days 2, 3 and 4]. It is unclear from the hospital notes whether [Dr F] visited on the morning of [Day 5]. [Dr F's] report however indicates that [Dr F] did assess him and thought that his condition was improving on the morning of [Day 5]. In my view assessment of the patient was essential in view of the ongoing vomiting, the low serum sodium (a sign of sepsis in the setting) and a markedly elevated CRP. Had a CT been performed on the morning of [Day 5] it may have identified the purulent fluid around the liver but the postmortem findings suggest that a repeat laparotomy may not have been therapeutic. However, administration of antibiotics and decompression of the stomach (3L of vomit is noted at the time of cardiac arrest) with a nasogastric tube may however have been effective. If [Dr F] attended the patient and assessed him as having improved then [Dr F's] management would be seen as reaching the expected standard of care of such a patient. It is difficult in retrospect for me to accurately assess the patient's condition.

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

The management of the deterioration of the patient on the evening of [Day 5] appears to fall short of the expected standard of care. The operating surgeon was not notified of the deterioration and those attending the patient were more focused on the ECG and its interpretation than the overall patient condition. Had [Dr F] been informed [Dr F] would have brought a surgical perspective and the issue of intra-abdominal sepsis may well have been addressed. It is conjecture as to whether this would have altered the outcome.

In future there needs to be clearly stated lines of communication between the acute junior staff and the consultant primarily caring for the patient especially when the deterioration is unexpected and unexplained.

I hope this report is of assistance to the Commissioner in this enquiry.

Yours sincerely

Ian Bissett"