

MidCentral District Health Board

A Report by the Health and Disability Commissioner

(Case 17HDC01347)



Health and Disability Commissioner
Te Toihou Hauora, Hauātanga

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Executive summary

1. This report considers the care provided to a man in his early fifties who was discharged from the Emergency Department of a public hospital with an undiagnosed pulmonary embolism.
2. During his time in the Emergency Department, despite being assigned a triage 3 priority categorisation, having an elevated troponin level, and requiring a repeat ECG, the man waited several hours for a medical assessment.
3. The house officer who assessed the man failed to consider pulmonary embolism as a diagnosis, and did not follow the DHB's Accelerated Chest Pain Pathway.
4. Owing to a shortage of staff and a high number of admissions to the Emergency Department, the house officer was not supervised adequately by senior medical staff. The man was not reviewed by senior medical staff before being discharged home.
5. Approximately five and a half hours later, the man collapsed at home and was taken back to the Emergency Department by ambulance. However, he suffered a cardiac arrest and died.

Findings

6. The Commissioner found that MidCentral DHB breached Right 4(1) of the Code by failing to:
 - a) Consider a pulmonary embolism as the cause of the symptoms;
 - b) Order a repeat troponin test and a further ECG;
 - c) Undertake a medical assessment in a timely manner;
 - d) Consider a differential diagnosis;
 - e) Think critically when the case was discussed at handover and with senior staff;
 - f) Ensure that an adequate medical assessment was undertaken;
 - g) Ensure that the house officer was supervised adequately by a senior medical officer;
 - h) Document patient history and clinical decision-making adequately; and
 - i) Ensure that there were adequate resources available to staff to enable them to meet the standard of care required in an emergency department in New Zealand.

Recommendations

7. The Commissioner recommended that MidCentral DHB audit the Emergency Department waiting times to check whether the times correlate to the triage code ascribed to presenting patients; provide an anonymised case study to staff for the purpose of staff training; and provide training to Emergency Department medical staff on diagnosis of pulmonary embolism, documentation, and supervision of junior staff.
8. The Commissioner also recommended that MidCentral DHB provide a concrete plan for corrective action on the issues identified by the independent report commissioned by the DHB, and apologise to the family.

Complaint and investigation

9. The Health and Disability Commissioner (HDC) received a complaint from Mrs A about the care provided to her husband, Mr A, by MidCentral District Health Board (DHB). The following issue was identified for investigation:
- *Whether MidCentral District Health Board provided Mr A with an appropriate standard of care in 2017.*
10. The parties directly involved in the investigation were:
- | | |
|----------------|-------------|
| Mrs A | Complainant |
| Mr A | Consumer |
| MidCentral DHB | Provider |
11. Further information was received from:
- | | |
|---|-------------------------------|
| Dr B | Registrar |
| Dr C | House officer |
| Dr D | Emergency medicine specialist |
| Accident Compensation Corporation (ACC) | |
12. Also mentioned in this report:
- | | |
|------|-------------------------------|
| Dr E | Emergency medicine specialist |
|------|-------------------------------|
13. Independent expert advice was obtained from an emergency medicine specialist, Dr Tom Jerram (Appendix A), and an emergency nursing practitioner, Mr Michael Geraghty (Appendix B).
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Information gathered during investigation

Background

14. Mr A, aged in his early fifties at the time of these events, presented to his general practitioner (GP) with a two-day history of chest pain and shortness of breath.
15. The GP was concerned that Mr A may have been experiencing a myocardial infarction,¹ so she gave him glyceryl trinitrate (GTN) spray² and aspirin, before sending him to the Emergency Department (ED) of the public hospital in an ambulance.

¹ A heart attack.

² Medication used to relieve chest pain (angina).

Emergency Department, Day 1

16. Mr A arrived just after 5.00pm and was assigned a triage 3 priority categorisation,³ which indicated that he should be seen within 30 minutes of presentation. It was noted by the triage nurse that Mr A's chest pain did not radiate and was present when he took a deep breath.
17. At 5.16pm, an electrocardiogram (ECG)⁴ was performed. The results were reviewed by the ED registrar, Dr B, who requested that it be repeated 20 minutes later; however, this did not happen. At 5.20pm, Mr A was directed to the ED waiting area.
18. Following Mr A's arrival in the ED, eight triage Category 2 patients were seen before him. Of the further 24 Category 3 patients who presented after Mr A, three patients were children and were seen before him and referred to the Paediatric Team.
19. The DHB advised that patients who did not require a full examination or to lie on a trolley were able to be seen in the Sub Acute area, and three Category 4 patients were seen before Mr A in the Sub Acute area. The DHB said that Mr A was not able to be reviewed appropriately in the Sub Acute area, but this did not affect his care or disadvantage him.
20. Another set of vital signs⁵ was not recorded until 7.15pm. At 9.50pm, Mr A was taken to a clinical area, where his vital signs were again recorded and blood was taken for assessment.
21. An ED house officer, Dr C, was asked twice by nursing staff whether Mr A could be moved to the observation area (where there was a lower nurse-to-patient ratio), but she declined.
22. Dr C saw Mr A at 10.20pm. She recalled that at that time Mr A appeared well. She took a history of his chest pain and examined his left leg, and did not notice any sign of swelling. She considered indigestion as a possible cause of Mr A's non-radiating chest pain.
23. When Mr A's troponin⁶ level was found to be 31, Dr C's primary consideration was of acute coronary syndrome; however, she also considered a respiratory tract infection, given Mr A's low-grade fever. While Mr A was awaiting a chest X-ray, Dr C was again asked if he could be moved to the observation area. She again declined.
24. Dr C recalls that she discussed Mr A's chest X-ray, and her uncertainty around his diagnosis, with ED registrar Dr B. She recalls Dr B suggesting that Mr A could have an atypical respiratory tract infection. Following this, Dr C allowed the nurses to move Mr A to the observation area, with the intention that he undergo a repeat ECG and repeat troponin at around 2.30am.

³ Potentially life-threatening, potential adverse outcomes from delay of more than 30 minutes, or severe discomfort or distress.

⁴ A recording of the electrical activity of the heart.

⁵ Temperature, pulse rate, rate of breathing, and blood pressure.

⁶ A protein found in cardiac and skeletal muscles. Measurement of blood levels assists diagnosis of a heart attack or other heart-related conditions. A troponin of 31 meant that Mr A's level was slightly elevated.

25. An entry in the clinical notes made at 12.12am records the plan for Mr A to have a repeat troponin test and another ECG at 1.50am. However, a handover between the medical staff took place before this was able to occur. Dr C recalls that during the handover she discussed Mr A with her consultant supervisor, Dr D, and Dr B. Dr C advised HDC:

“At the doctor’s handover I discussed this case with both [Dr B] and [Dr D]. I cannot remember all the specifics of this discussion but I explained the presentation, that [Mr A] currently appeared well and was asymptomatic and that we thought he had two diagnoses, an atypical respiratory tract infection and possible ACS [acute coronary syndrome⁷] as his initial troponin had come back at 31.⁸ I was instructed by [Dr D] to find out what time [Mr A] had the worst of his chest pain and that if this had been >6 hours previously we could discharge him home without concern for ACS. I remember finding it odd that he may have a raised baseline troponin at a young age and I did stress in the discussion that his creatinine⁹ was normal and that he had no notable comorbidities.”

26. In relation to the advice given to Dr C, Dr B advised HDC:

“I have no recollection of any conversation taking place between myself and [Dr C] with respect to [Mr A] so I cannot comment in this regard.”

27. Dr D advised HDC:

“At handover, I remember [Dr C] stating she was sending [Mr A] home. After the 11:45pm handover I was asked by [Dr C] to review [Mr A’s] chest x-ray. I recall [Dr C] providing me with brief history of [Mr A] feeling unwell, and having chest pain that was not persistent or reproducible.

We looked at the chest x-ray together. There was an infiltrate obscuring the right hemidiaphragm. The appearance was non-specific and could have been consistent with early pneumonia in the right clinical setting. We agreed that [Dr C] was going to wait for the bloods and see if they reinforced a possible diagnosis of pneumonia and I encouraged her to treat for this if she felt it was indicated.”

28. At 12.30am on Day 2, Dr C saw Mr A again and noted that he was pain free, that the worst of his pain had occurred at 3pm (more than seven hours earlier), and that he was happy to go home.

29. Mr A was then discharged at 12.39am.

Collapse and re-presentation, Day 2

30. At 6.40am, Mrs A called 111 after hearing a “thud” and finding Mr A unresponsive on the bathroom floor of their home. Mrs A advised the ambulance crew that Mr A had been at

⁷ Acute coronary syndrome refers to a number of conditions that cause sudden, low blood flow to the heart.

⁸ An elevated level.

⁹ A chemical waste product produced by muscle metabolism.

the ED the previous day and had been diagnosed with a chest infection. The ambulance crew obtained Mr A's vital signs and noted that several were abnormal, so they commenced cardiac monitoring.

31. Mr A had two further periods of unconsciousness, which lasted approximately 30 seconds. He was transferred from his house to the ambulance on a carry chair. During the journey to hospital, he experienced a further period of unconsciousness, with increasing shortness of breath, pallor, and central cyanosis.¹⁰
32. Mr A arrived at the ED at 7.48am and was seen by an ED doctor, whose impression was that Mr A was experiencing a pulmonary embolism. She noted that Mr A was agitated and cyanosed, sweaty, hypoxic,¹¹ hypotensive,¹² and tachycardic.¹³
33. At 8.00am, Mr A suffered a cardiac arrest. CPR¹⁴ was started immediately, and Mr A was given two doses of alteplase.¹⁵ The ED doctor noted that despite this, Mr A had no pulse and no detectable electrical activity of the heart. No cardiac activity could be detected on ultrasound, and at 8.14am Mr A was declared deceased.

Clinical supervision

34. In relation to the clinical supervision she received, Dr C advised:

"I did receive firm advice throughout that evening, given with confidence and assurance, from both [Dr B] and [Dr D]. I was reassured enough by their confidence to ignore my unease about the diagnosis which I felt did not add up, where signs and symptoms had been attributed to two separate diagnoses. These two diagnoses were discussed at handover, I noted the working diagnosis of an atypical respiratory tract infection and that I was also concerned about ACS due to the raised troponin. This discussion resulted in the decision to send [Mr A] home without a second troponin depending on the timing of the worst of his chest pain. I remained uneasy but remember thinking that my senior colleagues must know something I don't. I also remember noting when asked that [Mr A] appeared well with a very good end-of-the-bed-o-gram¹⁶ and asymptomatic while he was in the department which I believe reassured my seniors as much as it had me."

35. Dr D advised that owing to workload, both adequate supervision of junior doctors and assessment of patients by senior medical officers were compromised. He stated:

"I did not see [Mr A] or assess him. I relied on the brief information that [Dr C] provided to me. I agree with Dr Jerram¹⁷ that there is a significant difference

¹⁰ A bluish or purplish discoloration of the skin caused by insufficient oxygen in the blood.

¹¹ Below normal level of oxygen in the blood.

¹² Low blood pressure.

¹³ A rapid heartbeat.

¹⁴ Cardiopulmonary resuscitation (artificial respiration and heart compression).

¹⁵ A medication used to treat an acute heart attack.

¹⁶ An overall impression of a patient rendered by a clinician from the end of the patient's bed.

¹⁷ Dr Jerram provided independent expert advice to HDC.

between reviewing a case with a junior doctor and having a brief discussion in which the RMO presents only the information that they feel is relevant. Because of the workload it is not possible for FACEMs¹⁸ to review every case that the junior doctors see. I can't help but feel that the department and MidCentral District Health Board did not support [Dr C] as much as we should have. While the signs of pulmonary embolism in this case were not obvious or severe, I feel that if I or another FACEM had reviewed the case in its entirety then different decisions would have been made."

Staffing

36. When Mr A arrived in the ED, there was one FACEM on duty and another FACEM on call. There was also one senior registrar, one non-training registrar, and two second-year house officers. During the night shift, which commenced at 10.00pm, there was one FACEM on call, one registrar, and one senior house officer.
37. Two nurses and a clinical nurse specialist were sick but had been replaced for the afternoon shift with two experienced nurses and another clinical nurse specialist. The DHB told HDC that the nursing numbers were at the expected level for the afternoon/evening shift.

Further information — MidCentral DHB

38. MidCentral DHB has acknowledged that there were a number of shortcomings in the care provided to Mr A. MidCentral DHB accepted that Mr A was not seen by an ED doctor within 30 minutes of admission (as required by his allocated Category 3 triage code), and instead waited for more than five hours for a medical assessment, as a result of the high workload. MidCentral DHB acknowledged that the delay was not consistent with Mr A's triage score and was below the acceptable standard indicated by the Australasian College of Emergency Medicine. MidCentral DHB also acknowledged that the ECG undertaken shortly after admission was not repeated.
39. After Mr A was assessed by Dr C, he was sent for a chest X-ray, his case was discussed with senior medical staff, and ultimately he was discharged. MidCentral DHB acknowledged that this course of events was unacceptable.
40. MidCentral DHB provided a report of an external assessment of the ED. The assessment arose because of concerns by the Clinical Directors of the ED, including a lack of space within the ED, a shortage of staff, absence of an effective ED IT system, and a lack of support from some inpatient teams. The report was completed in December 2016 and made a number of recommendations, most notably the following:
 - Deficiencies in staffing should be addressed.
 - ED patient records should be made on the main hospital electronic record, so that they can be accessed easily by inpatient teams.

¹⁸ A Fellow of the Australasian College of Emergency Medicine — a senior medical officer who has completed the Australasian College of Emergency Medicine training programme.

- An investigation should take place to understand common reasons for delays in patients being seen by inpatient teams, and for delays in patients being transferred to an inpatient area.
- The limited availability of monitoring equipment in the ED should be addressed urgently.
- A fast-track service to reduce overcrowding and waiting times should be implemented.
- ED registrars and senior medical officers should be involved at the time of triage in order to help identify and expedite necessary investigation and/or emergent treatments.

41. MidCentral DHB advised HDC that in light of these recommendations, and as a result of its review of Mr A's treatment, changes have been made to its ED service, including the following:

- The introduction of digital whiteboards so that all staff can more easily see and follow the status of each patient in the Emergency Department.
- Implementation of an Action Plan (which addresses the physical facility, staffing, quality of documentation and information technology, equipment, treatment of high-risk patients, models of care, early recognition of serious events, the overall culture of the service, evaluation of surge capacity, and clinical governance).
- Renovation work to the waiting area and sub-acute area to provide three dedicated triage rooms, which will enable full secondary assessments to be undertaken.
- Working with a consultancy firm to achieve the requirements of the Action Plan.

42. MidCentral DHB asked external emergency medicine specialists to review the care and treatment provided to Mr A. Having considered the accounts of those involved in Mr A's care, the emergency medicine specialists' report concluded:

“[The] lack of time to provide considered reflection and advice by senior staff to the house officer involved in the case, working in an emergency department overwhelmed by case load, is the principle underlying reason for the missed diagnosis.”

43. MidCentral DHB also advised that the Director of the ED reviewed Mr A's admission and prepared a report for the Coroner, which noted:

“The diagnosis of pulmonary embolism can be notoriously difficult to make, but it seems in this case several red flags were either not recognised or were ignored, and there was no synthesis of the information available to clinicians of the time of [Mr A's] initial presentation on [Day 1]. Pulmonary embolism does not seem to have been considered as a possible diagnosis despite the constellation of symptoms and signs that suggested its possibility: pleuritic chest pain in combination with shortness of breath, sinus tachycardia, incomplete right bundle branch block on ECG, and raised troponin in a patient without known heart disease. Despite [Mr A's] lack of infective

symptoms, the diagnosis of chest infection was made based on minor chest x-ray findings and nonspecifically raised C-reactive protein.

The documentation of medical decision making on [Day 1] was poor. There was no documentation of the following: an interpretation of [Mr A's] ECG, [Dr B's] discussions with her seniors, a list of differential diagnoses, the rationale for accepting as unremarkable an abnormal ECG in combination with raised troponin, the rationale for not repeating the troponin and ECG, the rationale for not pursuing these abnormalities further with a d-dimer¹⁹ or hospital admission, and documentation of reassessment. Additionally, there was no reason given for the administration of omeprazole²⁰ and Acidex,²¹ both medications used for gastroesophageal reflux disease. Neither [Mr A's] GP's notes nor paramedic's notes were documented in the medical record. No mention is made of tachycardia²² documented by his GP and by paramedics."

44. MidCentral DHB provided its Accelerated Chest Pain Pathway Procedure, which states (in part):

"Patients with suspected chest pain of cardiac origin should be assessed to exclude STEMI,²³ or a clear alternative diagnosis (eg aortic dissection,²⁴ pulmonary embolism,²⁵ pneumothorax,²⁶ pericarditis,²⁷ pancreatitis,²⁸ pneumonia,²⁹ or cholecystitis³⁰), or any significant red flags (crescendo angina,³¹ haemodynamic instability,³² ischaemic³³ changes on the ECG, positive hsTnT³⁴ or a recent cardiology review within the last 30 days). Any patients with STEMI, or a clear alternative diagnosis or significant red flags outlined above should be exited from the Accelerated Chest Pain Pathway."

45. The full procedure, in which pulmonary embolism is noted as a clear alternative diagnosis, is included as Appendix C: Accelerated Chest Pain Pathway.

¹⁹ A blood test used to help to rule out the presence of a serious blood clot.

²⁰ A medication used to inhibit stomach acid secretion.

²¹ A medication used to treat symptoms of gastro-oesophageal reflux such as acid regurgitation, heartburn, and indigestion.

²² Rapid heartbeat.

²³ ST-Elevation Myocardial Infarction (STEMI) — a serious heart attack.

²⁴ A tear in the wall of the major artery that carries blood out of the heart.

²⁵ A blood clot caught in an artery in the lungs.

²⁶ A collapsed lung.

²⁷ Inflammation of the lining around the heart.

²⁸ Inflammation of the pancreas.

²⁹ Inflammation of the lung.

³⁰ Inflammation of the gall bladder.

³¹ Heart-related chest pain that occurs with increasing frequency, intensity, or duration.

³² Instability of blood pressure, which can lead to inadequate blood flow to organs.

³³ Inadequate blood supply.

³⁴ High-sensitive Troponin T (hsTnT) — a blood test used to assist diagnosis in patients with chest discomfort.

ACC advice

46. ACC sought advice from an emergency medicine specialist, Dr E, in relation to the treatment provided to Mr A.
47. Dr E said that although Mr A's pulmonary embolism was not obvious, there were clues as to the diagnosis. Dr E stated:

"In my professional opinion the diagnosis of pulmonary embolism should have been considered as a cause of [Mr A's] shortness of breath. [Mr A's] abnormal troponin tests [were] ignored and should have been a clue to the diagnosis. A D-Dimer test should have been ordered and a consultation with the internal medicine service should have been ordered."

Response to provisional opinion

48. Mrs A was given an opportunity to respond to the "information gathered" section of the provisional opinion. She advised HDC that she did not have any further comments to make.
49. MidCentral DHB was given an opportunity to respond to the provisional opinion. The DHB's comments have been incorporated in the "information gathered" section of the opinion.

Opinion: MidCentral DHB — breach

50. Mr A's time in the ED was all the more unfortunate given that prior to his admission, MidCentral DHB was on notice of a number of concerns in relation to staffing levels, resources, and the culture of the service overall.
51. District health boards are responsible for the operation of the clinical services they provide, and can be held responsible for any service failures. In addition, they have a responsibility for the actions of their staff, and an organisational duty to facilitate continuity of care. This includes ensuring that appropriate resources are available, junior staff are provided with adequate support, and all staff communicate effectively. It also requires appropriate systems to be in place to ensure that necessary tests (and repeat tests) are undertaken and test results are monitored, even in circumstances in which workloads are high.
52. The failure to provide Mr A with a more timely and comprehensive medical assessment is well outside the standard of care that should have been met in this case.

Lack of timeliness of review and inadequate medical assessment

53. Dr C failed to consider pulmonary embolism as a diagnosis, and the omission was not rectified by her seniors, as no other doctor assessed Mr A. My expert emergency medicine

specialist advisor, Dr Tom Jerram, opined that the assessment of Mr A in the ED was inadequate for a number of reasons, and fell outside the standard of care required in a New Zealand ED. Dr Jerram noted:

“Any presentation to the Emergency Department with shortness of breath, chest pain, and tachycardia should always prompt consideration of pulmonary embolism. Further history and examination findings (such as leg swelling) should have been sought and documented. There is no evidence that a differential diagnosis was considered and no medical decision making note. The failure to address the abnormal troponin result is particularly concerning ...

At an absolute minimum a repeat troponin was indicated, and given other features strongly suggestive of pulmonary embolism, a raised troponin should be taken as a sign of right ventricular strain & thus a marker of severity. Similarly, the incomplete right branch bundle block on the ECG should have been considered when synthesising the features of this presentation. This ECG finding can be a normal variant, but in context with breathlessness, tachycardia and pleuritic pain,³⁵ should have led to the consideration of pulmonary embolism. This is particularly true when the ambulance ECG is taken into account.”

54. Dr Jerram stated that the basis upon which Mr A was discharged was an error, and not supported by any guideline, including MidCentral DHB’s Accelerated Chest Pain Pathway. As noted, MidCentral DHB accepts that the decision to discharge Mr A was inappropriate.
55. Dr Jerram’s advice accords with that provided by Dr E to ACC. Dr E was critical of the treatment provided by the treating doctors at the public hospital, particularly in so far as they failed to conduct/repeat the necessary tests and consider pulmonary embolism as a diagnosis.
56. I agree with Dr Jerram and Dr E in this regard. Pulmonary embolism should have been considered as a diagnosis, and had an adequate assessment of Mr A been undertaken, including a repeat troponin and a D-Dimer test, a more accurate clinical picture is likely to have emerged.
57. Given that Mr A was assigned a triage category of 3 upon his arrival in the ED, he should have been assessed medically within 30 minutes. The fact that this did not occur, and that Mr A was left without monitoring for several hours, is of great concern, and a failure on the part of MidCentral DHB.
58. When Mr A was finally assessed, there were a number of deficiencies in the care provided by Dr C, who discharged him without conducting an adequate assessment of his symptoms, without considering differential diagnoses, and without documenting her decision-making adequately. Dr C has acknowledged that in hindsight she should have considered a diagnosis of pulmonary embolism, and that her clinical notes regarding the care of Mr A were inadequate.

³⁵ Sudden and intense sharp, stabbing, or burning pain in the chest when inhaling and exhaling.

59. As a junior house officer, Dr C's conduct must be viewed in light of the systemic and resource issues identified, including a shortage of medical staff and the associated high workload for doctors in the ED. Nevertheless, I am critical that Mr A was not assessed in a timely manner in accordance with his triage category, and that when he was assessed, the assessment was inadequate. I am also critical that Dr C did not make her apprehensions known to her seniors, even though she had concerns about Mr A's diagnosis and she felt uneasy about the decision to send Mr A home.

Supervision

60. Dr C was an inexperienced house officer, whose decisions regarding Mr A's care were not supervised adequately. Senior doctors are obliged to recognise the inexperience of their staff and to make enquiries about patients accordingly. Dr Jerram advised:

“[I]t would not be fair to hold a junior doctor to blame for systemic issues, though it does appear that [Dr C] would benefit from some education around decision making in the Emergency Department.”

61. I agree that some of the deficiencies in the standard of care provided to Mr A need to be viewed in light of the fact that Dr C was not supervised adequately, and that Mr A was not reviewed by a senior medical officer.

62. Dr Jerram further advised:

“This was a relatively classical presentation of Pulmonary Embolism, and the raised troponin level was a clear red flag that went unaddressed. The anchoring bias that appears to have happened is a common error for junior doctors in the Emergency Department, and underlines the importance of senior supervision ... It is extremely likely that if [Mr A] had been reviewed by a FACEM or other senior emergency clinician there would have been a different decision. In order for this to reliably happen, adequate staffing and resourcing is a prerequisite.”

63. In relation to staffing, Dr Jerram informed HDC:

“While SHOs make up a significant proportion of the ED workforce in New Zealand, they should not be expected to manage patients without direct supervision, and will inevitably have gaps in their knowledge. According to Australasian College of Emergency Medicine guidelines an Emergency Department the size of [this] would have 2 FACEMs, 3 other senior decision makers (such as registrars or non-specialist career medical officers), and a number of SHOs on for an evening shift. It is generally expected that RMOs would average 1 patient seen per hour in an Emergency department.

In order to adequately supervise RMOs, the FACEM in charge of the shift should have minimal clinical workload (ie patients they are solely responsible for), in order that they can safely supervise junior staff and oversee the department.”

64. As noted, the staffing in the ED when Mr A arrived was as follows: one FACEM on duty and another FACEM on call, one senior registrar, one non-training registrar, and two second-year house officers. During the night shift on Day 1, which commenced at 10.00pm, there was one FACEM on call, one registrar, and one senior house officer.
65. I agree that adequate supervision of junior doctors and adequate staffing and resourcing are necessary for the effective operation of an ED. The staffing of the ED fell below the level considered appropriate. The staffing level and workload on the evening of Mr A's presentation were contributing factors in the poor care provided to him.

Inadequate documentation

66. As noted, Dr C also failed to document her decision-making and discussions with her seniors adequately.
67. Additionally, my expert emergency nurse practitioner, Mr Geraghty, advised that as far as the nursing standard is concerned, the documentation was poor and not in line with the relevant policies in place at the DHB at the time.
68. I agree that the standard of documentation by the nursing staff and Dr C fell below the required standards, and I note that this deficiency has been accepted by MidCentral DHB.

Failure to repeat ECG

69. The lack of adequate documentation and communication between staff regarding the need to repeat the ECG contributed to Mr A's poor standard of care.
70. Mr Geraghty advised that there was no rationale for not repeating the ECG, and that this decision reflects a departure from the expected standard outlined in the DHB's policy. I agree. It was intended that the ECG be repeated, and the fact that this did not occur compromised the care provided to Mr A.

Conclusion

71. Although MidCentral DHB has carried out a full assessment of the issues in this case, inadequate clinical staffing and the associated level of medical supervision is an underlying concern. Having carefully considered the information provided by MidCentral DHB, as well as the expert advice provided to HDC, I am critical that the care provided to Mr A was deficient because of the failure to:
- a) Consider a pulmonary embolism as the cause of Mr A's symptoms;
 - b) Order a repeat troponin test and a further ECG;
 - c) Undertake a medical assessment of Mr A in a timely manner;
 - d) Consider a differential diagnosis;
 - e) Think critically when the case was discussed at handover and with senior staff;
 - f) Ensure that an adequate medical assessment of Mr A was undertaken;

- g) Ensure that, as a junior doctor, Dr C was supervised by a senior medical officer adequately;
 - h) Document patient history and clinical decision-making adequately; and
 - i) Ensure that there were adequate resources available to staff to enable them to meet the standard of care required in an emergency department in New Zealand.
72. I am also critical that as a result of the above failures, Mr A was discharged inappropriately.
73. Several clinical errors were made, and these were in the context of an ED that was under resourced and under pressure that evening. These are systemic issues that must be addressed by MidCentral DHB.
74. I find that MidCentral DHB breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code) by failing to provide services to Mr A with reasonable care and skill.

Recommendations

75. I recommend that MidCentral DHB:
- a) Conduct an audit of the Emergency Department to identify waiting times and whether these times correlate to the triage code ascribed to presenting patients.
 - b) Provide training to Emergency Department medical staff on diagnosis of pulmonary embolism, documentation, and supervision of junior staff, and provide evidence of the training to HDC.
 - c) Provide an anonymised case study to staff, based on the care provided to Mr A, for the purpose of staff training.
 - d) In consultation with the Clinical Director(s) of the Emergency Department, work to address and rectify the issues identified by the external report. A concrete plan for corrective action (or steps already taken as a result of the implementation of the Action Plan already devised) is to be provided to HDC.
 - e) Provide a written apology to Mr A's family for the breach of the Code identified in this report. The apology is to be sent to HDC within three weeks of the date of this report, for forwarding to Mr A's family.
76. MidCentral DHB is to provide a report to HDC on the matters contained in paragraphs (a) to (d) above, within three months of the date of this report.

Follow-up actions

77. A copy of this report with details identifying the parties removed, except the experts who advised on this case, will be sent to the Technical Advisory Service, ACC, and the Health Quality & Safety Commission, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix A: Independent advice to the Commissioner — Dr Tom Jerram

“Complaint [Mr A] (dec)/[The public hospital] (MidCentral District Health Board)

Ref C17HDC01347

Thank you for your request to review the above complaint.

In doing so I have reviewed the documents sent to me including:

- Your letter dated [2017]
- Letter of complaint dated [...]
- Clinical records from MidCentral District Health Board covering the period [Day 1–2]

I am currently a Fellow of the Australasian College for Emergency Medicine since 2011 and work full time as an Emergency Medicine Specialist at Nelson Hospital Emergency Department. I am also a Senior Clinical Lecturer with the Otago University Christchurch School of Medicine. I have read the HDC guidelines for expert advisors. I have reviewed the persons and entities in this case, and can see no conflicts of interest.

Referral instructions

I have been asked by the Commissioner to give an opinion on whether the care provided to [Mr A] by the Emergency Department and MidCentral [DHB] was reasonable in the circumstances, and why.

In particular, I have been asked to comment on:

1. The reasonableness of the assessments performed on [Mr A] whilst at the Emergency Department on [Day 1]
2. The appropriateness of the decision to discharge [Mr A] on [Day 1]
3. Any other matters in this case that I consider warrant comment

Case summary

[Mr A] was seen by [his GP] on [Day 1] with a presenting complaint of breathlessness and chest pain. She subsequently referred him to [the] Emergency Department for further assessment, with an accompanying referral letter. In this she documents a 2 day history of chest tightness and breathlessness, especially on exertion. She makes note of tachycardia, and is concerned about the possibility of a cardiac problem. An ambulance was called at 16:12, and [Mr A] was transported to the ED. The ambulance record notes tachycardia at 106 beats per minute, and an ambulance ECG was taken, which was notable for an incomplete Right bundle branch block and T wave inversion in V1–2.

[Mr A] arrived at the ED at 17:11, and was first assessed by a triage nurse very shortly afterwards. He was assigned an Australasian triage category 3, meaning he should be

assessed by a doctor within 30 minutes. An ECG was performed at 17:16. This was reviewed by a doctor (an ED registrar), who documented 1mm ST elevation V2–V6, and documented a request for repeat in 20 min. The ECG also revealed an incomplete right bundle branch block (as per the Ambulance ECG), which is not commented on. The T wave inversion in lead V2 seen on the ambulance ECG had resolved. The repeat ECG does not seem to have happened at any stage in his ED visit. The triage nurse documented a brief assessment, where she noted the pain to be worse with taking a big breath (ie pleuritic). He was then apparently put in the ED waiting area. It is unclear whether he was on a bed or chair at this point. He next had a set of observations at 19:15 which were all normal apart from a heart rate of 90.

He was taken to a monitored cubicle at 21:50. At that point a full set of vital signs were normal. It appears that blood tests including a full blood count, electrolytes, C reactive protein, and a troponin T were taken at this time (registered at the lab 21:50).

At 22:20 [Mr A] was first seen by [Dr C], an ED house officer.

She documents a history of intermittent dizziness, chest tightness, and shortness of breath, with the chest tightness at its worst at 3pm that day. She makes note of negative historical features including cough, fevers, sweating.

Note is made of his previous Right lower limb amputation. There is no mention of presence/absence of lower limb swelling (note a several day history of difficulty [...] due to swelling is documented the following day).

Vital signs are then documented, although there is no mention of heart rate. The chest is noted to be clear.

Blood test results are noted — these include a troponin T of 31 (the upper limit of normal range is 13). There is a note that it is 7 hours since worst pain.

The chest X ray is interpreted by [Dr C] as showing bilateral streaky changes, most likely representing lower respiratory tract infection. Formal reporting later makes note of minor Right basal atelectasis only, with no signs of consolidation.

She makes a diagnosis of likely lower respiratory tract infection. No other potential differential diagnoses are mentioned at this stage.

The documented plan is for discharge home with oral roxithromycin (an antibiotic), and return instructions to ED or GP if worsening. She also asks [Mr A] to follow up with his GP that week.

At 0643 the next morning [Day 2], an ambulance was called after [Mr A] collapsed in the bathroom. He was noted by ambulance staff to collapse on trying to mobilise. He had cold extremities, a low blood pressure, and became extremely cyanosed on the way to the hospital (suggesting severe hypoxia). [...]

He arrived at the ED at 0755, and was immediately seen by an ED doctor & a triage nurse. He was noted to be cyanotic (saturation 81% on high flow oxygen) and agitated, with a blood pressure of 67/48. Swelling of his Left lower leg is documented. ECG was done (again suggesting Right ventricular strain), and a bedside ECHO attempted. On limited views, a large right ventricle was noted. During this ECHO, [Mr A] went into pulseless electrical activity cardiac arrest (0800), and CPR was started. He was given 50 mg alteplase (a thrombolytic drug) at 0804 and 0808 in an attempt to break up the clot from a presumed pulmonary embolism, and had 14 minutes of CPR including 2 doses of adrenaline.

CPR was stopped at 0814, and [Mr A] declared dead.

In answer to your specific questions

1. The reasonableness of the assessments performed on [Mr A] whilst at the Emergency Department on [Day 1]

I think it is important to frame this question within the concept of clinical risk assessment; poor outcome for Emergency Department patients is not necessarily correlated with inadequate or flawed assessment. This is especially true for conditions such as pulmonary embolism, in which the 'acceptable' miss rate for ED presentations is somewhere around 2% (ie of 50 presentations to the Emergency Department with pulmonary embolism, it would be the standard of care to miss one case). To try to reduce this missed diagnosis rate would actually result in increased harm to the overall patient population, with false positive tests and the potential for treatment related injuries. It is also important to note that diagnosis is always much easier in retrospect, and that missed pulmonary embolism is not uncommon in Emergency Department Morbidity and Mortality reviews. [The ED Director] makes this point in his report to the coroner.

Having said all this, it is clear to me that the assessment of [Mr A] in the Emergency Department on [Day 1] was inadequate for a number of reasons, and falls outside the standard of care for a New Zealand Emergency Department. It is also apparent that the initial response by [ED] clinical staff fully acknowledges this, and that there have been steps taken to address the systemic issues raised. It is also apparent that there are contributory factors such as medical and nursing staffing and physical space that are beyond the control of clinical staff.

The initial long delay to medical assessment is regrettable, and certainly well outside the standard of care for an ATS triage category 3 patient in a New Zealand Emergency Department. While there was a rapid ECG, this was not interpreted in the patient's clinical context, and it was a further 5 hours until he was physically assessed by a doctor. The assessment by [Dr C] is superficial, and appears to suffer from anchoring bias; once the provisional diagnosis of chest infection was made, other important pieces of information appear to have been discarded. Any presentation to the Emergency Department with shortness of breath, chest pain, and tachycardia should always prompt consideration of pulmonary embolism. Further history and

examination findings (such as leg swelling) should have been sought and documented. There is no evidence that a differential diagnosis was considered, and no medical decision making note. The failure to address the abnormal troponin result is particularly concerning. While the advent of highly sensitive troponins have somewhat increased the potential for false positive results (5% of a normal population have a troponin value above the cutoff of 14, and this percentage is substantially higher in an ED patient population), an abnormal troponin in the context of chest pain and breathlessness should have been addressed. [Mr A] had no other apparent reason such as renal failure, heart failure or sepsis to have an elevated troponin. At an absolute minimum a repeat troponin was indicated, and given the other features strongly suggestive of pulmonary embolism, a raised troponin should be taken as a sign of right ventricular strain & thus a marker of severity. Similarly, the incomplete right bundle branch block on the ECG should have been considered when synthesising the features of this presentation. This ECG finding can be a normal variant, but in context with breathlessness, tachycardia and pleuritic pain, should have led to the consideration of pulmonary embolism. This is particularly true when the ambulance ECG is taken into account. There is a dynamic change with the normalisation of the flipped T wave in lead V2 on the ambulance ECG. This would be strongly suggestive of pulmonary embolism in the clinical context.

It is also important that all of this is viewed in the context of systemic error. [Dr C] is an ED SHO, likely with less than 12 months' experience in Emergency Medicine. While SHOs make up a significant proportion of the ED workforce in New Zealand, they should not be expected to manage patients without direct supervision, and will inevitably have gaps in their knowledge. According to Australasian College of Emergency Medicine guidelines an Emergency Department the size of [this] would have 2 FACEMs, 3 other senior decision makers (such as registrars or non-specialist career medical officers), and a number of SHOs on for an evening shift. It is generally expected that RMOs would average 1 patient seen per hour in an Emergency department.

In order to adequately supervise RMOs, the FACEM in charge of the shift should have minimal clinical workload (ie patients they are solely responsible for), in order that they can safely supervise junior staff and oversee the department. This is often not the case in regional New Zealand hospitals. If the lead FACEM is required to pick up a significant clinical load of their own, this supervisory role becomes very difficult. There is a significant difference between physically reviewing a case with a junior doctor (including looking at all the relevant information such as ECG, blood tests etc), and having a brief discussion in which the RMO presents only the information they think is relevant. In this case there was apparently a brief conversation with a senior doctor, although this is not documented, and the senior doctor on shift had no recollection of it. I think it is extremely likely that if a FACEM had fully reviewed all the available information in this case, then there would have been a decision to admit [Mr A] to hospital, or at least to do some further testing.

While the care given by [the] Emergency Department is clearly outside expected standards, I think it is important not to lay blame solely on the clinicians involved. If

[the] Emergency Department was adequately staffed to College guidelines on [Day 1], then the failure to adequately assess [Mr A] is particularly disappointing. If (as appears to be the case), there was significant understaffing for the clinical workload, then this failure must be seen as a systemic one, with resourcing issues beyond the control of clinicians. In particular, it would not be fair to hold a junior doctor to blame for systemic issues, though it does appear that [Dr C] would benefit from some education around decision making in the Emergency Department.

2. The appropriateness of the decision to discharge [Mr A] on [Day 1]

As stated previously, it was not appropriate to discharge [Mr A] from the Emergency Department without at least undergoing some further testing. This was a relatively classical presentation of Pulmonary Embolism, and the raised troponin was a clear red flag that went unaddressed. The anchoring bias that appears to have happened is a common error for junior doctors in the Emergency Department, and underlines the importance of adequate senior supervision. In addition, at that time of night in a regional hospital, there should in general be a lower threshold for hospital admission, as there is generally less availability of tests such as CT scanning.

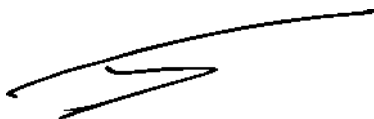
However, again this has to be seen within the context of systemic pressures. It is extremely likely that if [Mr A] had been reviewed fully by a FACEM or other senior emergency clinician there would have been a different decision. In order for this to reliably happen, adequate staffing and resourcing is a prerequisite.

3. Any other matters in this case that I consider warrant comment

My heartfelt sympathy goes out to [Mr A's] family. This was clearly a very distressing case, and their wish to ensure that the hospital improves its diagnostic processes for pulmonary emboli is commendable. It appears to me that [the] Emergency Department has made a full and frank assessment of the key issues in this case, and have taken steps to address them. It also seems clear that there are factors which were critical to this case which are beyond the powers of the ED clinical leadership to address. These are related to resourcing, and include Senior and Junior staffing, the physical facility, and access block issues. Any finding against MidCentral DHB must take these factors into account.

Please let me know if I can be of further assistance in this matter.

Yours Sincerely



Dr Tom Jerram MBChB FACEM
Senior Clinical Lecturer
Nelson Hospital Emergency Department"

Dr Jerram provided the following further advice:

“Complaint [Mr A] (dec)/[The public hospital] (MidCentral District Health Board)

Ref C17HDC01347

Thank you for your request to provide further advice on this case. As you have noted, I originally provided an opinion on this case. This opinion is updated to take into account several new documents provided since my original advice.

For this opinion, I have re-reviewed all of the original documentation provided, as well as the following documents:

- Your letter dated [2018]
- MidCentral District Health Board’s response dated [2018] including appendices 1–10
- [Dr B’s] statement dated [2018]
- [Statements from six nurses]

I am currently a Fellow of the Australasian College for Emergency Medicine since 2011 and work full time as an Emergency Medicine Specialist at Nelson Hospital Emergency Department. I am also a Senior Clinical Lecturer with the Otago University Christchurch School of Medicine. I have read the HDC guidelines for expert advisors. I have reviewed the persons and entities in this case, and can see no conflicts of interest.

Referral instructions

I have been asked by the Commissioner to advise whether the further documentation provided causes me to add to or amend the conclusions drawn in my initial advice.

In particular, I have been asked to comment on:

1. The reasonableness of the assessments performed on [Mr A] whilst at the Emergency Department on [Day 1]
2. The appropriateness of the decision to discharge [Mr A] on [Day 1]
3. The adequacy of MidCentral DHB’s policies
4. The adequacy of changes made by MidCentral DHB, in particular its ‘Action Plan’ dated [2017] and updated [2018]
5. Any other matters in this case that I consider warrant comment

I will not reiterate my initial summary of the case, and will comment only where the additional information provided has caused me to alter my opinion. In matters where I make no further comment in this document, my original opinion can be assumed to stand.

In answer to your specific questions*1. The reasonableness of the assessments performed on [Mr A] whilst at the Emergency Department on [Day 1]*

As I stated in my original opinion, the assessment of [Mr A] in the Emergency Department on [Day 1] was clearly below expected standards. This opinion is shared by [the ED Clinical Directors] in their responses.

The statements by [Dr C] and [Dr D] are helpful in shedding light on the errors which contributed to this inadequate assessment, which I will elaborate on later. They do not however alter my opinion on the overall quality of the assessment in the ED.

2. The appropriateness of the decision to discharge [Mr A] on [Day 1]

Again, this was clearly not appropriate given the diagnostic uncertainty, raised troponin, and other red flags in this case. However I think that the reasons for this decision are complex, and are important to explore further in understanding how this case could have gone differently. The statements from [Dr C] and [Dr D] are helpful in deconstructing this, and I will refer to them over the next few paragraphs.

[Dr C] had [a few] weeks of ED experience at the time of [Mr A's] presentation. She elaborates somewhat on her documented history and examination, specifically stating that she considered DVT given the unusual appearance of [Mr A's] lower leg, but that there was no mention of swelling or difficulty putting weight on the leg (although it appears that she didn't ask this directly, and it was commented on in the next day's presentation). She states that once the troponin t result of 31 had come back, her primary concern was for acute coronary syndrome, although respiratory infection remained a concern. It seems clear that pulmonary embolism was not a significant consideration despite a number of concerning features. I think this is most likely attributable to [Dr C's] inexperience at the time, and likely represents a blind spot error. This is a common error type in junior doctors in the Emergency Department, and is difficult to mitigate. The difficulty is that she doesn't seem to have appreciated the significance of some of the findings (such as the incomplete right bundle branch block/dynamic Right sided T wave inversion on ECG), and that she didn't seek specific historical features (such as the leg swelling). When the case was then presented to more senior doctors, she therefore wouldn't mention these features, which would anchor the senior doctor to her provisional diagnosis (ie you can't take into account information that you are not given).

The only way to mitigate this sort of error is to have a senior doctor physically review each RMO case, including documentation such as ambulance notes, GP referral letters, and ECGs. While this is desirable, it is time consuming, and would need Emergency Departments to be appropriately staffed. The Australasian College for Emergency Medicine staffing document goes into more detail on this. To my knowledge there are no New Zealand Emergency Departments currently staffed to levels which would allow physical SMO review of all RMO cases, although some have more senior supervision than others. [Dr D] specifically states that 'the Emergency

Department at [the public hospital] is chronically understaffed', and emphasises that it is seldom possible for consultants to physically review RMO patients due to the workload. I consider this to be the single largest contributing factor to this case.

Guidelines are not particularly useful in mitigating blindspot error, and are not a substitute for adequate senior supervision.

[Dr C] then discussed the case with a registrar, [Dr B], and appears to have been swayed towards the infective diagnosis, although the plan to repeat the troponin T remained. Both [Dr C] and [Dr B] appear to have incorrectly interpreted the chest X ray as showing consolidation, which is likely an example of confirmation bias (a well described bias of interpreting test results to fit a diagnosis).

At the evening medical Handover, [Dr C] describes discussing the case with a consultant ([Dr D]). She presented 2 working diagnoses (chest infection, and possible ACS). She states that [Dr D] advised her that [Mr A] could safely be discharged if the maximal pain had been >6 hours prior to the first abnormal troponin. This is clearly an error, and not supported by any guideline (including MidCentral DHB's accelerated chest pain guideline). If the troponin had been <14 at >6h post pain, this would have been reasonable, but a HSTnt of 31 should have prompted repeat testing if there was any concern of ACS. It is unclear whether this error is due to incomplete knowledge on [Dr D's] part, or a failure of information sharing between [Dr C] & [Dr D]. Again, I suspect if [Dr D] had been able to physically review [Mr A] & all the relevant documentation and investigations that he would have almost certainly given different advice. [Dr D] states that it is his usual practice to specifically ask junior doctors about risk of Pulmonary Embolism in all chest pain patients (using a PERC or Well score, which are validated risk assessment tools for Pulmonary Embolism). It is unclear if this happened in this case, & is not mentioned/recalled by either [Dr C] or [Dr D]. Again, the ability for a senior doctor to physically review patients would likely have mitigated this potential error.

3. The adequacy of MidCentral DHB's policies

I have reviewed MidCentral DHB's accelerated chest pain pathway, diagnosis and treatment of STEMI pathway, and triage process guidelines. I believe they are adequate, but as I previously stated, guidelines are not a substitute for adequate clinical staffing and supervision.

4. The adequacy of changes made by MidCentral DHB, in particular its 'Action Plan' dated [2017] and updated [2018]

This document outlines a development plan for physical facility updates, Emergency Department Staffing, documentation and IT updates, equipment updates, models of care updates, evaluation of surge capacity, serious event reporting, clinical governance, and overall service culture.

Of these, I believe that Physical facility, ED staffing, surge capacity, clinical governance, and overall service culture are most relevant to this case, so will confine my comments

to these. Interestingly, at least [2 outside consultancy firms] seem to be involved in this strategic development.

PHYSICAL FACILITY — there is a general 7 year plan for a hospital rebuild. I don't believe that this is particularly relevant to this case. There is also upgrade work to the waiting area, triage, and subacute areas in ED, projected to have finished December 2018. This will have some impact on improving overcrowding in [the] ED, but it is likely to be minor.

ED STAFFING — This is one of the key issues in this case. It appears clear that medical staffing numbers at [the ED] are inadequate to provide for full physical review of all RMO patients by a consultant. If this is the case, errors such as were made in [Mr A's] case must be expected to occur again. There is mention dated July 2018 of engagement of an outside consulting group to 'undertake key pieces of work, which have included the implementation of the ED development plan', but no apparent concrete steps towards addressing staffing shortfall.

CLINICAL GOVERNANCE — ED morbidity and Mortality meetings have been implemented 5 weekly, although there seems to be ongoing work on this process. This is a positive step & will serve to improve junior and senior doctor knowledge base, and identify potentially avoidable errors on a shorter feedback loop.

— There is a plan for at least 3h protected teaching time for registrars and SHOs weekly. They currently receive 2h, and the plan to make up the deficit has been deferred to the 'workforce plan' mentioned above.

CULTURE OF SERVICE OVERALL — There is mention of 'whole of hospital approach', 'cluster models', 'Patient centric care', and 'removing Silos'. There are no concrete plans as to how any of these objectives are to be furthered.

5. Any other matters in this case that I consider warrant comment

As I stated in my original opinion, [the] Emergency Department appear[s] to have made a full and frank assessment of the issues in this case, and taken steps to address them within the confines of their available resources. Despite this, I think the major underlying issue is one of inadequate clinical supervision, and therefore of medical staffing. It is standard practice in most (if not all) Emergency Departments in New Zealand for RMOs to see at least some patients & discharge them without physical review by an SMO. If this continues to be the case, it is my opinion that avoidable errors such as happened in this case are inevitable, if rare. It comes down to probability and risk tolerance. Increasing medical staffing comes with an increased cost, and in a system with finite resources, this means cutting resource elsewhere. As a healthcare system we must decide where our risk/cost tolerances lie.

I also think it is important to point out that the clear errors in decision making in this case did not necessarily influence the outcome. Had a pulmonary embolism been diagnosed that night, in the absence of abnormal physiology the most likely treatment

would have been subcutaneous enoxaparin (a blood thinner) and admission under the general medical team. It is by no means clear that a single dose of enoxaparin would have reduced the risk of the second, massive embolism that happened the next morning. It is also far from clear that there would have been a different outcome had his deterioration happened on the ward rather than at home/in the ED.

Again, my heartfelt condolences go out to [Mr A's] family.

Please let me know if I can be of further assistance in this matter.

Yours Sincerely

A handwritten signature in black ink, consisting of a large, sweeping loop that starts from the left, goes up and over, then down and back to the left, ending with a small arrowhead pointing towards the right.

Dr Tom Jerram MBChB FACEM
Senior Clinical Lecturer
Nelson Hospital Emergency Department"

Appendix B: Independent advice to the Commissioner — Mr Michael Geraghty

“Expert advice to the Health and Disability Commissioner

Case Number: C17HDC01347

Disclaimer.

I have been asked to provide a nursing opinion to the Commissioner on case number C17HDC01347. I have read and agree to follow the Commissioner’s Guidelines for Independent Advisors.

Personal Statement.

I am an Emergency Nurse Practitioner (NP) and currently employed at Auckland City Hospital, Adult Emergency Department (ADHB) and have been in this role since 2001. I hold a Masters of Nursing degree (University of Auckland).

Information reviewed.

This report was based on the following information provided by the Commissioner and in respect to the care provided to [Mr A] in [the Emergency Department] (MidCentral District Health Board MDHB) [in] 2017.

1. Letter of complaint [...]
2. MCDHB responses [2017 and 2018].
3. Clinical records from MDHB for the [period of admission].
4. MDHB Clinical Guidelines (medical and nursing) related to Emergency Care.
5. Statements from medical and nursing staff involved in his care.

Summary of events.

[Mr A], a [man in his fifties], was admitted to [the] emergency department (ED) [in] 2017 having been referred by his GP with a complaint of shortness of breath, chest tightness and feeling light headed. He had been experiencing these problems for the previous two days although the tightness in his chest has settled a little by the time he saw the GP. He was a fit and healthy non-smoker with no known cardiac history and was taking no regular prescribed medications. The GP had arranged for an ambulance to take him to hospital with a concern that his symptoms were the manifestation of a cardiac event.

The GP noted his heart rate to be higher than normal, in the ambulance it was 114 bpm (upper limit if normal for an adult is 100), his blood pressure (BP) was on the lower side of normal but he had also been given a nitrolingual spray that typically lowers the BP. His SpO2 (the amount of oxygen getting into the blood) was on the lower side of normal. The electrocardiograph (ECG) tracing taken en route showed a normal rhythm but an abnormal rate of 114 bpm.

Despite his symptoms he did not appear unduly distressed.

He arrived at the ED just after 17.00 hours and was allocated a triage score of three. He had a regular heart rate at 84 bpm and a respiratory rate of 16, neither of which would cause any undue concern. He was placed in the waiting area and had a further assessment by the triage nurse including an ECG. This was noted to be abnormal and required repeating twenty minutes later, which did not occur. The majority of his time in ED was spent in the waiting room, but [he] was moved into the main ED prior to a medical assessment. His vital signs throughout this period were unremarkable.

[Mr A] was seen by one of the ED medical staff at 22.20 hours and had a chest x-ray, bloods drawn and discharged just after midnight on [Day 2] with a presumed diagnosis of a chest infection. Sadly he collapsed that morning, was unable to be resuscitated and passed away at 08.14 hours [Day 2].

Information requested.

I have been asked to make particular comment, from a nursing perspective on points one to seven. This is contextualised further by addressing the following questions:

- a. What is the standard of care/accepted practice in NZ?**
- b. If there has been a departure from this standard(s), how significant is this departure?**
- c. How would a peer group view this?**
- d. Recommendations for improvement that may help to prevent a similar occurrence in future.**

1. The appropriateness of [Mr A's] triage assessment and the triage category assigned.

Triage is the process of determining the urgency, by which a patient should be seen and should not be influenced by the availability of, (or lack of) resources within the ED at any given time.

It is carried out by trained nursing staff using a combination of information (presenting complaint, referral letters, ambulance report, visual appearance of the patient), alongside advanced knowledge to assign a patient a triage category.

[Mr A] was assigned a triage category three meaning he should have a more in-depth assessment and treatment plan within 30 minutes of arrival.

The GP had expressed concerns that his pain may have a cardiac origin, which would have placed him as a category two (the implication being that he would have been assigned a bed space in the ED and attached to a cardiac monitor).

The triage notes reflect a pain score of 1–3 (mild), stable heart and respiratory rates and symptoms that were non radiating, worse on deep breathing and having had these symptoms for two–three days. A triage category of three utilizing that information would have been equitable. (FACEM triage implementation guidelines

2016). The notes made by the triage nurse (page one Initial Triage Assessment document) reflect a collection of both objective and subjective data leading to the triage decision.

The triage category assigned and initial triage categorisation does not reflect a departure from an accepted standard and would be viewed as reasonable by a peer group.

2. The reasonableness of the nursing assessments and examinations performed on him on [Day 1].

After the initial triage assessment there is no further nursing note until 00.18 hours on the 8th July when he was moved to the Emergency Department Observation Area (EDOA).

He did not have a full set of vital signs or Early Warning Score (EWS) recorded within 30 minutes after triage but did have vital signs taken at regular intervals from 1915 hours in keeping with the clinical guidelines ([MDHB] — nursing documentation).

Page two of the Initial Triage Assessment document consists of a checklist which was completed but not signed, there is a tick against the 'obs' box inferring that this was complete which was erroneous, there is a tick 'bloods taken' box which is also incorrect. The blood tests were eventually taken at 21.50 hours.

Document [MDHB] (page two — History) does allude to the fact that under certain circumstances the briefest details would be acceptable but this was not achieved.

According to the MDHB operations manager there were large volumes of patients in the waiting area during the time [Mr A] was admitted, whilst the nursing staff for those shifts were adequate these patient volumes were impacting on their ability to perform some nursing duties.

Throughout his stay in the Emergency Department his vital signs, pain score values and EWS scoring would not have been a cause for concern, not necessitate a change in his triage category or require mandatory reporting to the medical staff.

Overall the standard of documentation is poor and not matching the standard set out by the MDHB guidelines and reflects a mild departure from the expected norm and would not be viewed as reasonable by a peer group. This mild departure also applies to the plan to initiate blood tests which did not occur at the time of initial assessment or anytime soon after until he was medically assessed.

3. The decision not to repeat the ECG.

As noted above an ECG was initiated soon after arrival in the ED and was checked by a medical practitioner within a reasonable time period. It was noted to be abnormal and was to be repeated in a 20-minute time frame. Other than the note written on the ECG to this effect there are no other written notes reinforcing this and statements from the

nursing staff involved in his care suggest no verbal or other communication about this (*the nursing statements provided by the relevant staff are all written after the event, many have no date ascribed to them, two have been compiled in December 2018*). The nurse who acquired the ECG states she verbally handed over his care to the waiting room nurse but does not specifically state that an ECG needed to be repeated. Page four of the document [MDHB] notes the need to document any investigations or procedures and cite an ECG as a typical example. Page six of the NCNZ code of conduct also notes the importance of keeping clear and accurate records of care. The nursing note taken at 00.18 hours notes repeat blood tests and an ECG at 01.50 hours but he was discharged prior to this and after the case had been discussed by the medical staff at the evening hand over. MDHB utilise an accelerated chest pain pathway to risk stratify and improve flow of patients with suspected cardiac chest pain. As [Mr A] was not placed on this pathway a repeat set of bloods and ECG would not have been mandated.

There is no clear rationale why the ECG was not repeated at the time requested or at any other subsequent time during his stay and reflects a mild departure from the expected standard outlined in the DHB's policy and would not be viewed as reasonable by a peer group. This mild departure also reflects the lack of adequate communication to repeat the ECG as written.

4. The decision to treat [Mr A] in the waiting area.

A statement provided by the triage nurse notes that [Mr A] was placed in the waiting room in the absence of any bed space within the main ED. However correspondence with the MDHB operations manager ([2017 and 2018]) suggests there were assessment bed spaces available at the time he arrived.

He remained in the waiting area for almost five hours before being medically assessed in one of the ED cubicles around 21.50 hours. There is no documentation to determine whether this placement was ever reviewed, which would have been appropriate. Emergency departments by definition are busy places and bed spaces become free on a regular basis, a triage three patient sitting in the waiting room should have been flagged by (nursing or medical) staff and by staff either in or out of the waiting room.

Having available physical bed spaces is essential to the successful running of an ED and as such patients in beds tend to get prioritised over those in the waiting areas. From the operations manager's statement she acknowledges that three category four patients in bed spaces were seen in advance of [Mr A] which negates her later comment that being in the waiting room did not disadvantage him.

It is likely that [Mr A] would have been seen a lot quicker, and had his investigations initiated earlier had he been in the main ED.

The overall running of a department is the responsibility of both the senior nurse shift coordinator and the senior medical officer, both who often have numerous competing issues to consider. To my knowledge there is no specific training on how to do this and the 'successful' management of a shift is complex and multi factorial.

Whilst the initial decision to place [Mr A] in the waiting area may have been deemed necessary there is no evidence that this was ever reviewed. I do not believe there to be any fault attributable to the nursing staff per se and believe the action taken initially would be deemed reasonable. I am not aware of any MDHB ED policy that addresses this issue however review of patient should be ongoing in order to expedite care for each individual. No standard breached.

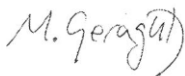
5. The appropriateness of the decision to discharge him on that day.

The decision to discharge [Mr A] is essentially the responsibility of the medical staff involved in his care, however nursing staff are expected to act as advocates for their patients should they believe clinical decisions made would compromise his wellbeing (Principle four NCNZ code of conduct). From the objective and subjective information available it does not appear that there were any clinical concerns. From a nursing perspective the plan to discharge [Mr A] would have been a reasonable one.

From a nursing viewpoint the decision to discharge [Mr A] does not reflect a departure from an accepted standard and would be viewed as reasonable by a peer group.

6. The adequacy of MDHB's policies since this incident.

Appendix One provides an extensive list of improvements and incorporating changes not only to the physical space, staffing, but more importantly initiatives to improve delivery of care, quality of care markers, education and communication. I believe these changes to reflect good practice and to be more than adequate.



Michael John Geraghty.

References.

1. Code of Conduct for Nurses. Nursing Council of New Zealand. June 2012.
2. Competencies for Registered Nurses. Nursing Council of New Zealand. 2007
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Appendix C: Accelerated Chest Pain Pathway



PROCEDURE

ACCELERATED CHEST PAIN PATHWAY	
Applicable to: Emergency Department	Issued by: Emergency Department, Internal Medicine and Cardiology
	Contact: ED Consultant

1. PURPOSE

The Accelerated Chest Pain Pathway (ACPP) is designed to speed up the diagnostic process for patients with suspected cardiac chest pain, without compromising patient safety.

Chest pain is one of the most frequent presentations to the emergency department and places a significant time and cost burden on existing services. The ACPP developed by Dr Martin Than at Christchurch Hospital uses the EDACS score, troponin T at 0 and 2 hours and 12 Lead ECG to risk-stratify patients presenting with suspected cardiac chest pain. Those who are deemed "low risk" are discharged at two hours without further investigation.

Please see [appendix 1](#) for the MCH Accelerated Chest Pain Pathway.

2. SCOPE

Doctors and nursing staff involved in the care of adult patients with suspected cardiac chest pain.

3. ROLES & RESPONSIBILITIES

Emergency department doctors and nurses are responsible for the acute assessment of patients at ED presentation.

Internal Medicine Consultants and Resident Medical Officers are responsible for ongoing assessment and treatment of patients referred by Emergency Department Doctors.

Cardiologist is responsible for reviewing patients with an EDACS of 16-20 in order to determine ongoing assessment and diagnostics. This will occur following receipt of a scanned ED Clinical Note being sent to the mailbox:

4. PROCEDURE

Patients with suspected chest pain of cardiac origin should be assessed to exclude STEMI, or a clear alternative diagnosis (e.g. aortic dissection, pulmonary embolism, pneumothorax, pericarditis, pancreatitis, pneumonia or cholecystitis), or any significant red flags (crescendo angina, haemodynamic instability, ischaemic changes on the ECG, positive hsTnT or a recent cardiology review within the last 30 days). Any patients with STEMI, or a clear alternative diagnosis or significant red flags outlined above should be exited from the Accelerated Chest Pain Pathway.

All other patients should have an EDACS performed (see [appendix 2](#)), in addition to arrival 12 Lead ECG and hsTnT.



4.1 LOW RISK PATIENTS (EDACS <16)

For patients with an EDACS of <16, a repeat hsTnT is required at 2 hours following the baseline troponin at arrival to ED.

If both the 0 and 2 hour hsTnT are negative (hsTnT <14), AND no new ischaemic changes on ECG AND no new red flags then the patient can be safely discharged home without any further diagnostic testing.

- It is expected that all patients will receive an “Advice Following Your ED Visit for Chest Pain” Brochure. These patients should see their GP if they have not had GP review within the last 6 months.

4.2 NOT LOW RISK PATIENTS (EDACS 16-20)

For patients with an EDACS of 16-20, initial management is provided by the Emergency Department Consultant and a repeat hsTnT is required at 6 hours post worst pain.

If both the 0 and 6 hour hsTnT **are negative** (hsTnT <14), AND no new ischaemic changes on ECG AND no new red flags then the patient can be safely discharged home.

The Cardiologist will be sent a copy of the ED Note for review and any further follow-up for this group of patients.

- It is expected that all patients will receive an “Advice Following Your ED Visit for Chest Pain” Brochure. These patients should see their GP if they have not had GP review within the last 6 months.

4.3 NOT LOW RISK PATIENTS (EDACS >20)

All patients with an EDACS of >20 must be referred to Internal Medicine **OR** be reviewed by the ED Consultant prior to discharge.

5. REFERENCES

Than, M., Flaws, D., Sanders, S., Doust, J., Glasziou, P., Kline, J., & Cullen, L. (2014). Development and validation of the Emergency Department Assessment of Chest pain Score and 2 h accelerated diagnostic protocol. *Emergency Medicine Australasia: EMA*, 26(1), 34-44.

6. RELATED MDHB DOCUMENTS

Advice following Your ED Visit – Chest Pain Brochure

7. FURTHER INFORMATION / ASSISTANCE

Emergency Department Consultant
Clinical Director – Internal Medicine
Cardiologist



Procedure for Accelerated Chest Pain Pathway

8. APPENDICES

- [Appendix 1](#) MCH Accelerated Chest Pain Pathway
- [Appendix 2](#) Emergency Department Assessment of Chest Pain Score (EDACS)

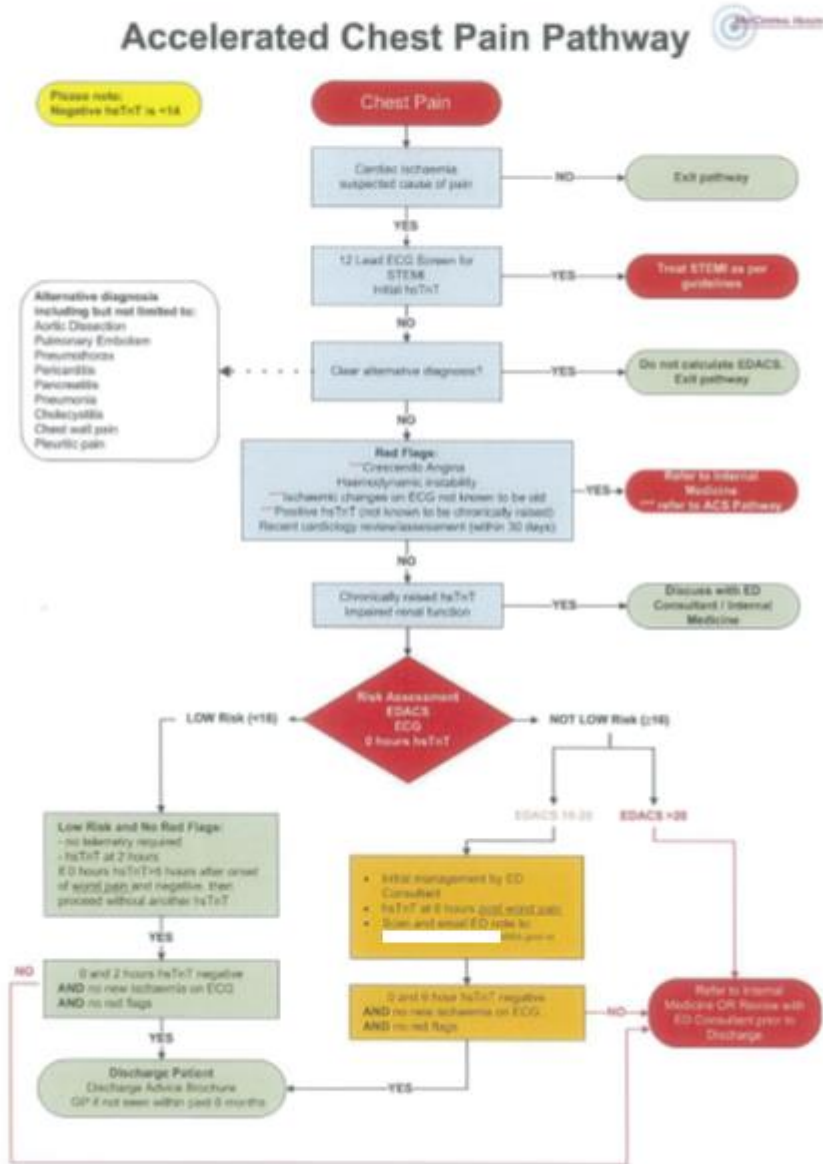
9. KEYWORDS

Accelerated chest pain pathway, ACPP, Chest pain, Low risk chest pain, EDACS



Procedure for Accelerated Chest Pain Pathway

Appendix 1:





Appendix 2:

Emergency Department Assessment of Chest Pain Score (EDACS)

EDACS identifies chest pain patients with low risk of major adverse cardiac event.
This score only applies to patients:

- >18 years old, **with chest pain consistent with Acute Coronary Syndrome (ACS)**
- No ongoing chest pain or crescendo angina

Variables		Patient Score
AGE	18-45 = +2 51-55 = +6 61-65 = +10 71-75 = +14 81-85 = +18 46-50 = +4 56-60 = +8 66-70 = +12 76-80 = +16 86+ = +20	=
GENDER	Male = +6 Female = 0	=
RISK FACTORS	<p>For patients 18-50 years only</p> <input type="checkbox"/> Family history premature CAD and age 18-50 = +4 (i.e. Previous AMI, CABG or PCI in men at age <55 years and women at age <65 years)	=
	OR	
	≥ 3 of the following 4 risk factors and age 18-50 = +4 <input type="checkbox"/> Dyslipidaemia <input type="checkbox"/> Diabetes <input type="checkbox"/> Hypertension <input type="checkbox"/> Current smoker	
SIGNS & SYMPTOMS	Diaphoresis associated with pain* = +3 Pain* occurred or worsened with inspiration (Pleuritic) = -4 Pain* radiates to arm or shoulder = +5 Pain* reproduced by palpation = -6 * Pain that caused presentation to hospital	=
	Total Score	=

Refer to MidCentral Health Accelerated Chest Pain Pathway for ongoing care