

District Health Board
Emergency Medicine Consultant, Dr B

A Report by the
Health and Disability Commissioner

(Case 16HDC01886)



Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Table of contents

Executive summary	1
Complaint and investigation.....	2
Information gathered during investigation	3
Opinion: Dr B — breach	11
Opinion: the DHB — no breach.....	12
Recommendations	13
Follow-up actions	13
Appendix A: Independent advice to the Commissioner.....	14

Executive summary

1. In 2015, Mr A, aged 70 years at the time of events, experienced severe back pain following exercise in the early morning. Mr A presented to an emergency medical centre at around 7am and was assessed by general practitioner (GP) Dr D and nursing staff.
2. Dr D identified that the pain was located in the thoracic region (back of the chest) and was extreme in nature with a pain score of 10/10 recorded. Mr A was also pale, sweaty, and experiencing slurred speech and a left facial droop. An electrocardiogram¹ (ECG) was carried out and showed that Mr A's heart rate and rhythm were normal.
3. Dr D documented that Mr A's blood pressure in his left arm was lower than the blood pressure in his right arm, and questioned a possible thoracic aneurysm,² a possible cerebrovascular accident (stroke) and/or an acute coronary syndrome (a heart attack).
4. At 7.46am, at Dr D's request, Mr A was transferred to the Emergency Department at the public hospital. At approximately 8.15am, ED registrar Dr C reviewed the medical notes for Mr A. Dr C told HDC that he noted from the medical centre referral that Mr A had been referred to the ED with thoracic back pain for assessment and the symptoms Dr D had identified and documented. This information was conveyed to Emergency Consultant Dr B.
5. Dr B asked Dr C to check Mr A's pulses in both arms for radial-radial delay (a delay between the arterial pulses in both arms). Dr C told HDC: "There was no asymmetry in pulses between arms, which might have occurred if there was a blockage in the main artery to the arm caused by an aortic dissection."
6. At approximately 9.30am, Dr B examined Mr A. Dr B recorded that Mr A had no chest pain, no prior history of hypertension,³ no heart disease or aortic valvular disease,⁴ normal blood pressure and heart rate and no pulse discrepancy between arms, and that the cardiac examination was normal with no murmurs apparent from the front or back of his chest. Dr B stated: "We were aware that it had been commented that there might have been transient neurological findings pre-hospital but these had normalized by the time he arrived in ED."
7. At 12.10, Mr A's pain score had decreased to 2/10. Mr A remained in the ED. Dr C told HDC that, at approximately 1pm, Mr A told him that his pain had resolved, and Dr C told Mr A that he intended to discuss his X-rays with Dr B. Dr C said that as the chest X-ray had been taken in a non-standard position, the plan was to repeat the chest X-ray in the standard position and, if that were normal and Mr A's pain had settled, Mr A could be discharged. Dr B stated that they did this X-ray to examine the outline of the aorta to look for any abnormality such as might occur with aortic aneurysm or dissection.
8. At 3.11pm, nursing staff took Mr A's observations and recorded his pain score as 2/10. Mr A declined further morphine for his pain.

¹ A diagnostic tool used to assess the electrical and muscular functions of the heart.

² An aneurysm is a weakening in the wall of an artery, which causes it to "balloon" or expand in size. "Thoracic" refers to the part of the aorta that runs through the chest (thoracic aortic aneurysm).

³ Abnormally high blood pressure.

⁴ Heart conditions that include diseased vessels, structural problems, and blood clots.

9. Dr C and Dr B told HDC that the further X-ray at approximately 3.10pm revealed a normal appearance. Dr B said that radiology also reported both films as normal. Dr C visited Mr A in the Short Stay Unit at approximately 3.30pm. Dr C told HDC that Mr A advised that his pain had resolved, and the observations taken by the nurses were within the normal range.
10. Dr B stated that, prior to a formal handover, Dr C advised him that Mr A was “pain free”. Dr B told HDC that Dr C informed him that Mr A was resting comfortably, had no further complaints, and that nursing documentation recorded that he had been sleeping. Dr B said that during the handover at 4pm, they began to make formal arrangements for Mr A’s discharge. Dr B stated the diagnosis was of musculoskeletal back pain as the results of all investigations carried out were normal.
11. At 4.10pm, Mr A collapsed and medical staff attempted to resuscitate him. However, this was unsuccessful.

Findings

12. By failing to carry out appropriate investigations to exclude a diagnosis of aortic dissection, Dr B failed to provide services to Mr A with reasonable care and skill and, accordingly, breached Right 4(1) of the Code.
13. It was found that the district health board (DHB) took such steps as were reasonably practicable to prevent Dr B’s error. Accordingly, the DHB was not vicariously liable for Dr B’s breach of the Code.

Recommendations

14. It was recommended that Dr B provide a written apology to Mr A’s family for his breach of the Code.
15. It was recommended that the DHB provide training to Emergency Department medical staff about aortic dissections, and provide evidence of that training to HDC.

Complaint and investigation

16. The Commissioner received a complaint from the family of Mr A about the services provided to him at the DHB. The following issues were identified for investigation:
 - *Whether the DHB provided Mr A with an appropriate standard of care in 2015.*
 - *Whether Dr B provided Mr A with an appropriate standard of care in 2015.*
17. The parties directly involved in the investigation were:

DHB	Provider, district health board
Dr B	Provider, emergency medicine consultant
18. Information was reviewed from:

Dr C	Emergency medicine registrar
Dr E	Emergency medicine consultant

The Coroner
ACC

Also mentioned in this report:

Dr D

General practitioner

Dr F

Emergency medicine specialist

19. Independent expert advice was obtained from an emergency medicine consultant, Dr Stuart Barrington-Onslow.

Information gathered during investigation

Background

20. Mr A, aged 70 years at the time of events, experienced severe back pain following exercise in the early morning. Mr A presented to the emergency medical centre at around 7am and was assessed by general practitioner (GP) Dr D and nursing staff.
21. Dr D identified that the pain was located in the thoracic region (back of the chest) and was extreme in nature with a pain score of 10/10 recorded. Mr A was also pale, sweaty, and experiencing slurred speech and a left facial droop. An electrocardiogram⁵ (ECG) was carried out and showed that Mr A's heart rate and rhythm were normal.
22. Dr D documented that Mr A's blood pressure in his left arm was lower than the blood pressure in his right arm, and questioned a possible thoracic aneurysm,⁶ a possible cerebrovascular accident (stroke) and/or an acute coronary syndrome (a heart attack).
23. Dr D requested an ambulance to transfer Mr A to the Emergency Department (ED) at the public hospital. Dr D was unable to make contact with any ED medical staff and instead spoke to a nursing coordinator who was available at the time. Dr D also completed a radiology request form for a CT angiogram⁷ of the patient's chest owing to his concern that Mr A might be experiencing a "thoracic aneurysm/aortic dissection⁸".
24. At 7.46am an ambulance transported Mr A, with the radiology referral, to the ED at the public hospital.

Emergency Department

25. At 8am, Mr A was assessed by nursing staff and given a triage score of 2 (which required him to be seen within 10 minutes). Nursing staff documented that his vital signs were

⁵ A diagnostic tool used to assess the electrical and muscular functions of the heart.

⁶ An aneurysm is a weakening in the wall of an artery, which causes it to "balloon" or expand in size. "Thoracic" refers to the part of the aorta that runs through the chest (thoracic aortic aneurysm).

⁷ A computed tomography angiogram (CT angiogram) is a test that uses X-rays to provide detailed pictures of the heart and the blood vessels that go to the heart. A CT angiogram can show narrowed or blocked areas of a blood vessel.

⁸ Aortic dissection is a serious condition in which there is a tear in the wall of the major artery carrying blood from the heart (the aorta).

within the normal range, he had a pain score of 10/10, that the emergency medical centre had questioned aortic dissection as a potential diagnosis, and that Mr A had declined contact with family.

26. At approximately 8.15am, ED registrar Dr C reviewed the medical notes for Mr A. Dr C told HDC that he noted from the medical centre referral that Mr A had been referred to the ED with thoracic back pain for assessment. Dr C stated:

“It was also documented that [Mr A] had a left sided facial droop, slurred speech, looked pale and sweaty and that his vital signs and ECG were normal. In addition, a pressure discrepancy between the left and right arms was noted. A number of diagnoses were queried including aortic dissection, stroke and acute cardiac issue such as a heart attack (MI). The notes recorded that prior to arriving in hospital [Mr A] had received a strong narcotic pain killer, fentanyl 150 micrograms total. I sighted the ECG, which showed normal sinus rhythm.”

27. Dr C said: “The notes made clear [Dr D’s] concerns. It is not routine practice to contact referring General Practitioners and I am unaware of any policy guiding us to do so.”

28. Dr C told HDC that he also reviewed the ambulance note, which “recorded that [Mr A] had stroke like symptoms, left sided facial droop, mildly confused, very vague, vision obscured. It was noted that he looked comfortable although was complaining of severe pain.” Dr C said that Mr A’s vital signs, except for a slightly low temperature, were all within the normal range, and his pain level was reported as 7–8/10.

29. Dr C told HDC that he then assessed Mr A. Dr C stated:

“[Mr A] complained of severe pain in his upper thoracic spine and reported the pain had begun suddenly that morning whilst he was doing a back exercise in the ‘push up position’ and extending his back, and had been constant since. He denied experiencing any anterior (in the front) chest pain. I asked and documented that he had no medical history of note ...”

30. Dr C said that Mr A’s vital signs were within normal limits, with the only exception being his respiratory rate, which was mildly elevated, and that he was pale but not sweaty. Dr C stated that Mr A’s Glasgow score⁹ was also 15/15, meaning that he did not have any confusion at that time.

31. Dr C told HDC:

“I charted intravenous morphine for [Mr A] to settle his pain and asked the nurse to give this. The nursing notes are documented that he received 5 mg intravenously at 0825. 5 mg is a little over half the loading dose of morphine for a patient such as [Mr A], and not a very large dose.”

32. At approximately 8.30am, a further nursing assessment was carried out. Nursing staff documented that Mr A’s vital signs were normal, he had a pain score of 7–8/10, there was

⁹ A neurological scale that aims to give a reliable and objective way of recording the conscious state of a person for initial as well as subsequent assessment. A patient is assessed against the criteria of the scale, and the resulting points give a patient score between 3 (indicating deep unconsciousness) and 15.

no facial droop and no slurred speech, and he was experiencing a “mild weakness [on the left] side”. At 8.33am an ECG was carried out and showed normal rhythm that had not changed since the ECG taken at the medical centre.

33. At approximately 9am, Dr C returned to Mr A and documented a brief medical history. Dr C recorded his examination and noted that no facial weakness had been identified. He documented that his impression was of musculoskeletal pain,¹⁰ and that the plan was to exclude acute coronary syndrome.¹¹ Dr C told HDC: “On examination no evidence of the neurological deficit that had been reported pre-hospital was detected.” Dr C stated:

“Based on [Mr A’s] presenting history, acute onset of pain during a push-up in an otherwise fit and healthy man with no known or reported history of pre-existing disease, and examination findings of a mechanical nature to the pain and no neurological deficits, I formed the opinion that the pain was musculoskeletal in origin. The main differential (alternative) diagnosis I considered (and documented) was acute coronary syndrome (ACS) which is symptoms of coronary artery occlusion that can be or lead to a heart attack. Whilst [Mr A] had no chest pain, I prescribed Aspirin, as is routine for someone with actual or possible ACS, and paracetamol as a simple analgesia.”

34. Dr C then discussed Mr A’s presentation with an ED consultant, Dr B, and explained the referral from Dr D, the concerns noted in the referral, and his assessment. Dr B told HDC that Dr C expressed concern that Mr A could be harboring an aortic dissection. Dr C noted that the GP referral letter had stated that Mr A had had slurred speech and a facial droop, but that his examination did not reveal this. Dr B told HDC that he immediately went to review Mr A with Dr C, as he believed that Mr A could have a “potentially serious illness”. Dr B and Dr C stated that they were both unaware of the radiology request for a CT scan, as it is unusual to receive this from a GP.
35. Dr B asked Dr C to check Mr A’s pulses in both arms for radial-radial delay (a delay between the arterial pulses in both arms). Dr C told HDC: “There was no asymmetry in pulses between arms, which might have occurred if there was a blockage in the main artery to the arm caused by an aortic dissection.”
36. At approximately 9.30am, immediately following this discussion, Dr B examined Mr A. Dr B recorded that Mr A had no chest pain, no prior history of hypertension,¹² no heart disease or aortic valvular disease,¹³ normal blood pressure and heart rate and no pulse discrepancy between arms, and that the cardiac examination was normal with no murmurs apparent from the front or back of his chest.
37. Mr A told Dr B that he had been doing his morning exercises when he performed a push-up, inverting his back, and developed severe sharp thoracic back pain that was exacerbated with movement, but was improving. Dr B said that Mr A denied any anterior chest pain or

¹⁰ Musculoskeletal pain is the sensation of discomfort or pain of structures in the body affecting bones, muscles, ligaments, tendons, and nerves.

¹¹ Acute coronary syndrome is an umbrella term for situations where the blood supply to the heart muscle is suddenly blocked, such as in a heart attack or unstable angina.

¹² Abnormally high blood pressure.

¹³ Heart conditions that include diseased vessels, structural problems, and blood clots.

fainting event, and appeared to be a “very fit man” and did not seem “significantly unwell”. Dr B stated: “We were aware that it had been commented that there might have been transient neurological findings pre-hospital but these had normalized by the time he arrived in ED.”

38. The agreed plan for further investigations included obtaining X-ray imaging of Mr A’s thoracic spine and chest, continuing to observe him in the ED with pain medication, and obtaining basic blood tests to screen for cardiac markers and kidney function. Dr B stated that he discussed the potential diagnostic options with Mr A.

39. Dr C told HDC:

“We discussed and considered the possibility of aortic dissection with its requirement for CT imaging and the non-specific screening D-dimer blood test (used for its negative predictive value), however in light of the examination findings (noted above) and in the absence of any signs of aortic dissection, such as hypertension, radial-radial delay, focal neurological deficit, or anterior chest pain it was decided not to proceed with a CT scan at this stage.”

40. Dr B stated:

“Our plan was that since the patient was hemodynamically and neurologically normal/stable and not in acute distress, to obtain preliminary basic investigations including chest x-ray and ECG along with routine blood work. Specifically in the blood work we were screening for cardiac markers (troponin) that might indicate coronary artery disease, significant angina or a heart attack, and his kidney function.”

41. Dr B said that the reasons for not performing a CT scan included that, in his opinion, the diagnosis of aortic dissection was clinically unlikely owing to his consideration of several risk factors, and that the radiology registrars, at the time of events, were likely to push back any CT request as they preferred to receive them from the cardiology team.

42. Emergency medicine consultant Dr E told HDC:

“During the course of the day, I was party to an informal discussion at the staff base with [Dr B] and a number of other Emergency Medicine doctors ... regarding appropriate investigations of suspected aortic dissection ... This was an informal discussion, rather than a discussion in which [Dr B] was asking for specific advice on how to manage [Mr A]. At no stage did [Dr B] request a review or consult on [Mr A] from myself or any other [emergency medicine] doctor.

...

[Following the discussion it was] not the case that we agreed with a decision not to scan [Mr A]. Rather, [Dr B] had excluded the possibility of aortic dissection and was simply discussing the possible investigations that could be undertaken for suspected aortic dissection. My impression was that this was for the benefit of junior doctors.”

43. At approximately 11am, Dr C discussed Mr A with nursing staff. Dr C stated that nursing staff advised him that Mr A had vomited once, his pain had been relieved, and he was sleeping.

44. At 12.10, Mr A's pain score had decreased to 2/10. Mr A remained in the ED. Dr C told HDC that, at approximately 1pm, Mr A told him that his pain had resolved, and Dr C told Mr A that he intended to discuss his X-rays with Dr B. Dr B told HDC that he suggested that they obtain an anterior-posterior X-ray of the spine, as the previous X-ray had been done from the front of the chest, which could distort the view of the middle of the chest where the aorta is viewed. Dr C stated: "On review of the x-rays with [Dr B] we noted the lateral and anterior-posterior views of the spine appeared normal with normal vertebral body and intervertebral disc height and no bony lesion." Dr C said that as the chest X-ray had been taken in a non-standard position, the plan was to repeat the chest X-ray in the standard position and, if that were normal and Mr A's pain had settled, Mr A could be discharged. Dr B stated that they did this X-ray to examine the outline of the aorta to look for any abnormality such as might occur with aortic aneurysm or dissection.
45. At 3.11pm, nursing staff took Mr A's observations and recorded his pain score as 2/10. Mr A declined further morphine for his pain.
46. Dr C and Dr B told HDC that the further X-ray at approximately 3.10pm revealed a normal appearance. Dr B said that radiology also reported both films as normal.
47. Dr C visited Mr A in the Short Stay Unit at approximately 3.30pm. Dr C told HDC that Mr A advised that his pain had resolved, and the observations taken by the nurses were within the normal range. Dr C also stated that Mr A was on a monitor at the time, and had a normal heart rate and oxygen saturation levels. Dr C said that Mr A again denied experiencing any anterior chest pain, was walking with a normal gait, and had no dizziness. Dr C stated:
- "I reassessed his neurological function, including cranial nerves. He had 5/5 power throughout. He had normal tone, sensation and reflexes. At this point he noted he had some slight discomfort in his back but only on movement."
48. Dr C told HDC that, in light of his examination findings and investigation findings, he advised Mr A that he could be discharged. Dr C stated:
- "The plan discussed included follow up with his GP, to take paracetamol regularly and ibuprofen/codeine as required. I asked him to return to the ED if he experienced symptoms including severe uncontrolled pain, chest pain, weakness in his arms or legs, loss of continence of bladder and/or loss of sensation around his bottom."
49. Dr B stated that, at approximately 3.30pm, prior to a formal handover, Dr C advised him that Mr A was "pain free". Dr B told HDC that Dr C informed him that Mr A was resting comfortably, had no further complaints, and that nursing documentation recorded that he had been sleeping. Dr B said that during the handover at 4pm, they began to make formal arrangements for Mr A's discharge. Dr B stated:
- "On the discharge documentation the diagnosis was of musculoskeletal back pain. The x-rays were normal, the blood tests were normal, ECG was normal, a single troponin level was 9, and repeat examination was normal."
50. At 4.10pm, Mr A collapsed and Dr E attempted to resuscitate him. However, this was unsuccessful.

51. At 4.50pm, following Mr A's death, Dr C wrote a note detailing a review that took place at 3.30pm, and that the plan at that time was to discharge Mr A with a diagnosis of musculoskeletal back pain. The discharge documentation stated that the X-rays and blood tests were normal, and that a single troponin level recorded was normal and his electrocardiogram was normal.

52. Dr C told HDC:

“[Only one troponin level was taken as] [w]hen I discussed the results of the investigations, after my initial documentation, we felt that isolated thoracic back pain, and in particular the lack of anterior chest pain, was not compatible with the diagnosis of acute coronary syndrome and therefore an additional troponin was not requested.”

DHB response

53. The DHB told HDC:

“Aortic dissection is one of the most challenging diagnoses to make in our (EM) context. The ‘classic’ presentation of aortic dissection would be in a patient with a history of high blood pressure (hypertension, which damages the blood vessel walls) and once presented has ongoing neurology as clinical evidence of a blocked tributary to the head or upper limbs.

...

[T]he decision to scan or not is a nuanced one in New Zealand. Many other countries have a much lower scanning threshold, which alters the risk benefit profile for populations but possibly not towards better outcomes overall. In New Zealand, however, the usual practice is to perform a CT scan in cases where there is a significant clinical reasoning for doing so which outweighs the potential risks. [Mr A] presented with a diagnostic challenge, as he had no risk factors for dissection, a history of onset of [pain] with exercise (back extension) which strongly suggested an alternative diagnosis and an unremarkable course over the day in the ED. Whilst in ED, he was given pain relief and his condition improved.”

54. The DHB said that in this case, aortic dissection was considered but ruled out, due to Mr A's clinical presentation. In relation to Dr D's referral, which questioned “aortic dissection”, the DHB told HDC that it is quite common for ED staff to be too busy to take telephone calls from general practitioners, and that it is normal process for emergency doctors not to require a referral telephone call, and for general practitioners to send patients to hospital with a referral letter.

55. The DHB stated that it receives multiple GP and urgent care doctor referral letters per shift, many of which typically have a broad differential diagnosis or requests for CT scans, and that, on review of the patient and the referral letter, these imaging scans are not always done or indicated.

56. The DHB told HDC:

“It is both extremely sad and regrettable that we missed the clinical presentation that resulted in [Mr A's] passing away. The learning from [Mr A's] presentation and

subsequent management plan of action has been discussed and reviewed by the department and included as part of the department's Mortality and Morbidity meeting as both a learning and training opportunity for all staff, as we work to lessen the likelihood of this reoccurring in the future."

Dr B's response

57. Dr B told HDC:

"I do wish to convey some personal thoughts and reflections. In my thirty years of practice, this is one of few cases that I have deliberated over almost daily since the event. I would like to convey my sincere condolences to [Mr A's] family over his death ... A day does not go by when I do not think about this case and the tragic consequences."

Dr C's response

58. Dr C told HDC:

"I wish to take this opportunity to offer my condolences to [Mr A's] family over his tragic death in the Emergency Department. I have thought about this day many times since, and reflected on what can be learnt. It is an event that I will always carry with me and which is always on my mind whenever a person has chest or back pain."

Coronial expert advice

59. The coroner received a report from an emergency medicine specialist, Dr F, on the care provided to Mr A. Dr F advised:

"It is very important for a high suspicion to be held for thoracic dissection that there may be some degree of over investigation for this condition.

...

There may have been some indicators pointing to the possibility of a TAD [thoracic aortic dissection] on his presentation to [the emergency medical centre]: abrupt onset of severe pain, back pain associated with neurology above the level of pain (facial droop and slurred speech) and a blood pressure differential in his arms (however non-specific this may be) and [Dr D] correctly referred him urgently to the Emergency Department. Even though it is clear that he was not sure, TAD was certainly one of his differential diagnoses, to the point where he actually thought to need to request a CT angiogram.

It is unfortunate that the communication line between the referring doctor and the ED receiving team was unavailable, as this discussion may have prompted a higher index of suspicion with the receiving clinicians.

His symptoms and signs [had] changed by the time he arrived in the ED and by the time [Dr C] saw him his only symptom was pain, as the neurological symptoms and signs [had] all resolved. A discussion with Emergency Medicine Specialist [Dr B], ensued during which further investigations and a period of observation was decided on. From the reports supplied by [Drs C and B], it is clear that they considered TAD as a possibility but convinced themselves that further investigations were not required. It is

now clear, with considerable hindsight and plenty of time to consider it, that some of their reasoning may be perceived as erroneous, although probably not dissimilar to a large cohort of their peers. It is important to emphasize that TAD is an extremely rare condition presenting to an ED and may mimic several other disease processes ...

The clinicians involved considered this diagnosis and after a risk-assessment opted not to investigate it further; unfortunately with catastrophic consequences. They did, however, act professionally and made acceptable diagnoses with the information and knowledge at hand.”

ACC expert advice

60. ACC received a report from an emergency medicine specialist, Dr G, on the diagnosis made by the DHB clinicians for Mr A. Dr G advised:

“It is true that the diagnosis of aortic dissection is often missed when there are atypical symptoms associated with its presentation. This is generally because the diagnosis is never considered as a possibility. In this case there certainly was consideration of the correct diagnosis. [Dr D] correctly diagnosed it and presented [Mr A] to the ED doctors as having an aortic dissection. The doctors were well aware that it was a possible diagnosis. [Dr D] clearly documented all the necessary information as did the ambulance. The blood pressure difference was clearly available but never acknowledged. The neurological symptoms were clearly recorded yet they were dismissed.

The job of the emergency physician is to rule out threatening conditions and not to diagnose the most likely condition. It is true at the moment that [Dr B] saw him, [Mr A] appeared to have musculoskeletal back pain and did not look unwell, however, he was specifically sent in to the ED by [Dr D] to rule out an aortic dissection because he looked unwell earlier and had signs and symptoms of an aortic dissection. He was in severe pain and was pale and diaphoretic. He had neurological findings for [Dr D]. I might expect the ED registrar or junior doctor to miss this diagnosis but the ED consultant, [Dr B] should have realized several things. Sudden onset of severe back pain even though it sounds musculoskeletal with new neurological findings and symptoms is unusual. That is not a common presentation among the thousands of back pain presentations that an ED consultant would hear. It is not the sort of thing an ED consultant after years of practice, hears as a typical history taking finding. It is a red flag ...

The second thing is that if a colleague suspects a serious life threatening diagnosis and asks the ED to rule it out, there should be some concrete reason why the recommended studies and referral are not done. [Dr D] is a physician and he found neurological symptoms and was specifically worried about an aortic dissection. The examination of another physician was discredited. It was [Dr B's] responsibility to rule out the life threat. By simply questioning if the neurological symptoms ever existed and by feeling his pulse in both arms and not checking blood pressure in both arms or acknowledging that it was already done and was abnormal was a mistake. Not taking [Dr D's] concerns seriously was a mistake. Thinking that aortic dissection pain required chest pain with the back pain was a mistake. As [Dr F] wrote in his letter: ‘It is very important for a high suspicion to be held for thoracic dissection that there may be some degree of over

investigation for this condition'. This is exactly what [Dr F] was referring to. [Mr A] should have had a CT scan. In cases such as these where there is even some concern, over investigation is necessary. While I can understand why the doctors tried to rationalize why [Mr A] did not need a CT scan, in my professional opinion, the doctors at [the public hospital] should have ordered a CT scan or they should have asked the cardiothoracic team to evaluate [Mr A] ...”

Reponses to provisional opinion

61. The DHB was provided with an opportunity to respond to the provisional opinion and had no further comments to add.
62. Mr A's family were provided with an opportunity to comment on the information gathered section of the report and had no additional information to add in relation to that section.
63. Dr B was provided with an opportunity to respond to the relevant sections of the provisional opinion.
64. Dr B stated: “I sincerely believe that I did carry out appropriate investigations in light of the symptoms that [Mr A] presented with in the ED, his medical history and in the light of the diagnostic concerns of [Dr D]. While at the public hospital we are doing everything we possibly can to try and understand the events leading up to tragedy so that we can lessen the likelihood of it happening again, instances of thoracic aortic dissection remain rare and very difficult to diagnose.”
65. Dr B also stated: “Since this case, we have increased our attentiveness for this rare condition including performing a detailed risk factor profile for thoracic aortic dissection on every patient who presents with chest pain.” Dr B stated: “I wish to extend again my sincere condolences to [Mr A's] family and friends over his death.”

Opinion: Dr B — breach

66. Dr B is an experienced emergency medicine consultant who is employed by the DHB. Dr B was the ED consultant who assessed Mr A (with ED registrar Dr C) and decided on the investigations to undertake. While I note that it is accepted between the providers, and all emergency medicine specialists who have commented on the care provided to Mr A, that instances of thoracic aortic dissection are rare and difficult to diagnose, I do not accept that the rarity of a condition or the difficulty in forming a diagnosis is determinative in assessing whether the standard of care has been met in a particular case.
67. Dr B was aware of the concerns raised by Dr D, and that Dr D's concerns included his suspected diagnosis of an aortic dissection. Dr D had had the benefit of reviewing Mr A shortly after the onset of pain, and had appropriately recorded Mr A's condition, presenting symptoms, and vital signs at the time of this presentation.
68. Expert advice was obtained from an emergency medicine consultant, Dr Barrington-Onslow. Dr Barrington-Onslow advised:

“If one were to ask an Emergency Physician to consider a seventy year old man with severe back pain (when stretching), diaphoresis (sweating), who also had (albeit transient) facial weakness and a blood pressure difference in his upper limbs, then thoracic aortic dissection would be at the top of the list of diagnoses to exclude.”

69. Dr Barrington-Onslow advised that he is of the opinion that there was an opportunity to make the diagnosis of thoracic aortic dissection at the ED, as there were enough clinical features to warrant appropriate investigation for dissection. He considers that aortic dissection needed to be ruled out, and that Dr B failed to do so. I accept Dr Barrington-Onslow’s advice that “a seventy year old man who presents with severe back pain with facial droop and mild [left] weakness needs aortic dissection ruled out by a CT scan”.
70. I have carefully considered Dr B’s explanation for the care he provided. While I accept Dr B and Dr C’s submissions that they considered the potential diagnosis of aortic dissection and felt that they had ruled it out as a diagnosis, I note that Dr Barrington-Onslow, Dr F, and Dr G all agree that it is very important for a high suspicion to be held for thoracic dissection.
71. In this case, I am critical that Dr B failed to carry out appropriate investigations in light of the symptoms that Mr A presented with in the ED and his medical history and diagnostic concerns documented by Dr D.
72. By failing to carry out appropriate investigations to exclude a diagnosis of aortic dissection, Dr B failed to provide services to Mr A with reasonable care and skill and, accordingly, breached Right 4(1) of the Code.

Opinion: the DHB — no breach

73. As a healthcare provider, the DHB is responsible for providing services in accordance with the Code. In this case, I consider that the errors that occurred did not indicate broader systems or organisational issues at the DHB. Therefore, I consider that the DHB did not breach the Code directly.
74. In addition to any direct liability for a breach of the Code, under section 72(2) of the Health and Disability Commissioner Act 1994 (the Act), employing authorities are vicariously liable for any act or omission by an employee. A defence is available to an employing authority under section 72(5) of the Act, if it can prove that it took such steps as were reasonably practicable to prevent the act or omission.
75. At the time of these events, Dr B was an employee of the DHB. Accordingly, the DHB is an employing authority for the purposes of the Act. As set out above, I have found that Dr B breached Right 4(1) of the Code for failing to carry out appropriate investigations.
76. Dr Barrington-Onslow advised:

“If one were to ask an Emergency Physician to consider a seventy year old man with severe back pain (when stretching), diaphoresis (sweating), who also had (albeit

transient) facial weakness and a blood pressure difference in his upper limbs, then thoracic aortic dissection would be at the top of the list of diagnoses to exclude.”

77. I accept Dr Barrington-Onslow’s advice and am of the opinion that Dr B had an appropriate level of clinical experience and expertise and that the DHB was entitled to rely on Dr B to investigate the causes of Mr A’s presentation adequately.
 78. Accordingly, I am satisfied that the DHB took such steps as were reasonably practicable to prevent Dr B’s error. Accordingly, I do not find the DHB vicariously liable for Dr B’s breach of the Code.
-

Recommendations

79. I recommend that Dr B provide a written apology to Mr A’s family for his breach of the Code. The apology is to be sent to HDC within three weeks of the date of this report, for forwarding to Mr A’s family.
 80. I recommend that the DHB provide training to Emergency Department medical staff about aortic dissections, and provide evidence of that training to HDC, within three months of the date of this report.
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Follow-up actions

81. A copy of this report with details identifying the parties removed, except the expert who advised HDC on this case, will be sent to the Medical Council of New Zealand, and it will be advised of Dr B’s name.
82. A copy of this report with details identifying the parties removed, except the expert who advised HDC on this case, will be sent to the Australasian College for Emergency Medicine, and it will be advised of Dr B’s name.
83. A copy of this report with details identifying the parties removed, except the expert who advised HDC on this case, 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 an emergency medicine consultant, Dr Stuart Barrington-Onslow:

“June 2017

Independent advice to the Health and Disability Commissioner for case number C16HDC01886 by Dr Stuart Barrington-Onslow

I have read and agreed to follow the guidelines for independent advisers provided by the office of the Health and Disability Commissioner.

I am an Emergency Medicine Specialist, qualifying as a doctor in 1988 at the University of London. I have been practising Emergency Medicine since 1997 and became a Fellow of the Australasian College for Emergency Medicine in 2007. I am currently employed as a full-time specialist at the Christchurch Hospital Emergency Department.

I have been asked to provide independent expert advice regarding the care provided to [Mr A] in the Emergency Department of [the public hospital] [in] 2015. To aid me in my advice I have received documentation from the commissioner’s office that includes:

- Letter of complaint dated [...].
- [The DHB’s] response dated 3rd March 2017.
- Clinical records from [the DHB].
- Clinical records from admission to [the emergency medical centre] and [Dr D’s] report to the coroner.
- Clinical records from [the ambulance service].
- Coronial autopsy report prepared by [...].
- A response from [the DHB] regarding access to acute Radiology services.

Summary of Events

These are provided in the documentation I have received.

[The emergency medical centre]

[Mr A], a seventy year old man, presented to the [emergency medical centre] on [date] at 07:00hrs complaining of back pain. The pain had commenced when he was performing stretching exercises 30 minutes prior to his presentation. He was assessed by [Dr D] and duty nursing staff at said clinic.

The pain was in his thoracic region (back of chest), was extreme in nature, a pain score of 10/10 was noted which usually represents the worst pain imaginable. He was found to be pale and sweaty with a left facial droop and slurred speech.

His past medical history was noted as was the fact he was on no regular medications and had no allergies.

On examination, his vital signs were normal, a blood sugar test was slightly elevated at 9.8 (mmo1/1) and it was commented that he was pale and diaphoretic (sweaty) with his left mouth and face drooping. His speech was slurred. There were no cardiac murmurs, no limb weakness and no ataxia (lack of co-ordination). The blood pressure in his right arm was documented to be lower, at 107/80 mmHg compared to 134/76 mmHg on the left.

An electrocardiograph was noted as ‘nad’ (no abnormality detected).

The assessment by [Dr D] was of ‘? thoracic aneurysm’ (an aneurysm is an abnormal enlargement of a blood vessel which makes it prone to rupture), ‘?CVA’ (cerebrovascular accident or stroke) and ‘?ACS’ (acute coronary syndrome — angina or a heart attack).

Appropriate blood tests were taken, [Mr A] was given a slow intravenous infusion of saline, and his pain was treated with intravenous Fentanyl 100 micrograms initially followed by another 50 micrograms as his pain was still documented at a level of 5/10.

An ambulance was requested at 07:30hrs to transfer [Mr A] to [the public hospital] Emergency Department. Also there is a note ‘discussed with ED reg’ but [Dr D] was unable to contact any on that morning, nor was the triage nurse available, so he spoke to a nursing co-ordinator. [Dr D] also filled out a radiology request form for a CTA (CT angiogram) of the patient’s chest as he was concerned about ‘a thoracic aneurysm/dissection’. This form was handed to the ambulance staff with [Dr D’s] notes.

[Ambulance service] Transfer

The ambulance was called at 07:13hrs [in] 2015, arrived at [the] Accident and Medical Clinic at 07:28hrs. They left the clinic at 07:46 hrs and arrived at [the] Emergency Department at 07:54hrs when [Mr A’s] care was transferred to [Emergency Department] staff. He was given further oral analgesia, ibuprofen 400mg, paracetamol 1 gram, and tramadol 50mg. A single set of vital signs were within acceptable limits and his pain score was noted to be 10/10, and located down the middle of his back over his thoracic spine.

[Emergency Department]

[Mr A] had an initial nursing assessment at 08:00 hrs and was given a triage score of 2 (to be seen within 10 minutes). It was documented that [the emergency medical centre] had ‘?aortic dissection’ (rupture of the main artery in the body). His vital signs remained normal, but he lost a point on his GCS (Glasgow Coma Scale) scoring 14/15.

Also, it is documented that he declined any contact, which I assume was with his family.

A further nursing assessment at 08:30hrs again documented normal vital signs but with a pain score of 7–8/10. Also, it was documented that there was no facial droop, no slurred speech but ‘mild weakness L side’. The notes do not mention weakness of what.

A rapid medical assessment was made at 09:30hrs by [Dr C], an Emergency Department registrar. This documented a brief history and examination. Of note, there was no facial weakness found. The impression was of 'MSK' (musculoskeletal pain) and to 'exclude ACS'. The plan was for analgesia, blood tests with X-rays of his chest and thoracic spine. [Dr C] discussed with, and [Mr A] was seen by Dr B the Emergency Medicine Consultant who agreed with the plan.

There are nursing notes from 09:15 to 12:10 with repeated vital signs that are normal. [Mr A's] pain score had dropped to 2/10 by 12:10hrs.

[Dr C] wrote a note at 16:50hrs, after [Mr A's] collapse and death. It was a review at 15:30hrs and the plan, after discussion with [Dr B] was to discharge [Mr A] with a diagnosis of musculoskeletal back pain. On the discharge documentation, the X-rays were said to be normal as were the blood tests. A single troponin level was 9 (see below) and repeat examination was normal. His E.C.G. was also normal, and a prescription for analgesia was written.

Unfortunately, at approximately 16:10hrs [Mr A] collapsed and was unable to be resuscitated. The cause of death was a ruptured thoracic aneurysm causing cardiac tamponade (the heart sits in a bag of tissue in the chest, that bag has filled with blood and prevented the heart from pumping blood).

Issues

Thoracic aortic dissection is rare (1.4:10,000 population) and a difficult diagnosis to make in the acute setting as many of the symptoms are vague and non-specific. It is often missed at initial presentations (up to 38%) and carries a high mortality if untreated, 1–2% per hour. The mortality of those amenable to surgical correction is 30%.

[...]

3 [Public hospital] Emergency Department

3.1 I am aware of potential bias as I know the outcome of this case. However, in my opinion, the diagnosis of acute aortic dissection should have been considered and therefore should have been investigated during this presentation. A 70 year old man presenting with severe thoracic back pain during a relatively minor exercise, together with neurological symptoms, namely the facial droop and slurred speech, indicates a potential aortic dissection until proven otherwise. I acknowledge that, apart from his age, [Mr A] had no risk factors for this condition.

3.2 There was no acknowledgement by the medical staff of the concerns raised by [Dr D] and no attempt to exclude the diagnosis of aortic dissection.

3.3 In my opinion, an attempt should have been made to speak to [Dr D] to discuss his concerns.

3.3 The medical notes are brief, but this may represent the workload of the department at the time.

3.4 The initial impression was of musculoskeletal pain or acute coronary syndrome. The latter was not excluded prior to discharge as only a single troponin blood test was taken, and two are required, separated by a defined time, to exclude cardiac injury.

3.5 [Dr B] has written in the notes post the attempted resuscitation that he had a discussion regarding the use of a D dimer blood test. I assume he was referring to studies during this period suggesting its use in diagnosing and excluding aortic dissection acutely. While I agree with the lack of this test's usefulness in this situation, in my opinion, if a clinician considers aortic dissection, then it has to be excluded with an appropriate radiological test, be that CT angiography or trans oesophageal ultrasound.

3.6 [Dr B] did discuss the case with colleagues who agreed with the decision not to scan [Mr A].

3.7 [Dr B], in his typed response to the H.D.C., stated that Radiology Registrars 'push back' CT requests from the Emergency Department. This is a potentially dangerous state of affairs whereby a doctor is making major decisions regarding the assessment of a patient when they have had no contact with said patient. I do acknowledge that improvements have been implemented in this process.

3.8 [Mr A] was asked if he wanted to contact anyone and had the ability to do so while he was in the Emergency Department.

[Dr Stuart Barrington-Onslow further advised:

'The failure to investigate represents a departure from an expected standard of care.

It is difficult to state the degree being aware of the outcome. But, I am of the opinion that [Mr A] should have been investigated for this life threatening condition, and so it is a severe departure.']

References

A Review of Acute type A Aortic Dissections

Thoracic Aortic Aneurysm and Dissection

Journal of American College of Cardiology Vol 64 No 16 2014 1725

Neurological Symptoms in type A Aortic Dissections Stroke 2007 38 292"

Dr Barrington-Onslow provided the following further advice:

"15th December 2017

Dr Stuart Barrington-Onslow Emergency Medicine Specialist.

Re [Mr A] 16HDC01886

The Office of the Health and Disability Commissioner has requested my further opinion regarding statements made by:-

- [Dr F] — Emergency Medicine Specialist.
- [Dr G] — Emergency Medicine Specialist.
- [Cardiothoracic Surgical Specialist].

I confirm that I have no conflicts of interest, and have written this report. There has been no alteration in my credentials from my original documentation.

The information I have received does not alter my opinion that there was an opportunity to make the diagnosis of thoracic aortic dissection at [the] Emergency Department as there were enough clinical features to warrant appropriate investigation for dissection.

I appreciate the information noted by [Dr F] that it is a rare and difficult diagnosis to make, and many cases are missed. However, if one were to ask an Emergency Physician to consider a seventy year old man with severe back pain (when stretching), diaphoresis (sweating), who also had (albeit transient) facial weakness and a blood pressure difference in his upper limbs, then thoracic aortic dissection would be at the top of the list of diagnoses to exclude.

The difficulty making the diagnosis is, as [Dr F] notes, the large spectrum of presentations that are possible with this condition. But in the case of [Mr A], my opinion remains that aortic dissection needed to be ruled out.

Dr Stuart Barrington-Onslow”

Further expert advice was obtained on 14 May 2018:

“Response to further comments from [the DHB’s] Emergency Department regarding H.D.C. C16HDC01886 [Mr A].

Firstly, I will respond to [Dr H’s] notes dated 19th February 2018. [Dr H] is the Clinical Director of the Emergency Department.

1. Regarding the first paragraph of the response, if the clinicians involved considered the diagnosis of dissection then, in my opinion, they should have either noted why they had excluded the diagnosis, especially as it had been suggested by another clinician, or performed a test to confirm there was no dissection. Also, it states their decision was to exclude ischaemic heart disease, which they did not do. (See below.) Also, [Dr H] states there were no neurological findings at [the] Emergency Department, when the nursing triage note at 0830 hours states ‘mild weakness L side’. Finally, in this paragraph, [Dr H] states ‘their decision was to investigate for the more common consideration of ischaemic heart disease.’ Which they did not do.
2. [Dr H] comments that [Dr D] was the night doctor at [the emergency medical centre] and they assume he was not there. There is no comment in the notes regarding any attempt to contact said doctor.
3. Many emergency departments send blood tests early on the patient journey, which may not be required. [Dr H] states that [Dr C] and [Dr B] discussed conducting a further test, but decided not to. There was no documentation of this in the notes.

4. I stated that a single troponin would not exclude an acute coronary syndrome, and [Dr H] suggests that recent studies using a single blood test (highly-sensitive troponinT). The study he alludes to is from 2017 and this case was in 2015 when single troponin was not thought adequate, and even if used today have a very specific cohort of patients it can be considered in.
5. Again, I acknowledge that by not being present and only having access to the notes, which can never be a complete record in a busy Emergency Department, there is the potential for my bias. However, in my opinion, a seventy year old man who presents with severe back pain with facial droop and mild L weakness needs aortic dissection ruled out by a CT scan.

Secondly, I received a statement by [Dr C].

1. This is a much more thorough note than the clinical one. As I have stated, the workload on doctors in Emergency Departments prevents adequate notes for all presentations. However, [Dr C] confirms receipt of documentation from emergency medical centre with the concerns for aortic dissection and why, as well as the ambulance documentation of stroke like symptoms as well as the nursing documentation of left sided weakness.
2. [Dr C] was called away during his assessment of [Mr A] and I assume his signs had normalised during that time. Nevertheless, severe thoracic back pain and neurological signs represents a thoracic dissection until proven otherwise.
3. [Dr C] had appropriately contacted a senior Emergency Doctor, [Dr B] regarding this presentation and for management advice.

Finally, in response to [Dr B].

1. [Dr B] suggests (point 9) that I offhandedly [remarked] about bias being aware of the outcome. This is not an offhand remark, it is acknowledgement for the H.D.C. that there is the potential for bias in my report.
2. In point 25, [Dr B] mentions the use of the HEART score (for risk stratification for patients presenting to Emergency Departments with chest pain that is suspicious for acute coronary syndrome). I ask if this was the standard way patients with chest pain at [the] Emergency Department were risk stratified and did they have a protocol in 2015?
3. Again, acknowledging my bias, all I have to comment on are the notes. I stand by my opinion that a seventy-year-old man with severe thoracic back pain and documented neurological deficits should have had a definitive investigation for aortic dissection urgently.

Dr Stuart Barrington-Onslow FACEM”