Registrar in General Practice, Dr A

Registered Nurse, Ms D

Accident and Medical Clinic

A Report by the

Health and Disability Commissioner

(Case 07HDC20618)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Overview

On 19 November 2007 at 5.40am, Mr B presented to an accident and medical clinic (the Clinic) complaining of bad indigestion. Mr B was triaged by nursing staff and an ECG[1] was commenced. Mr B was then seen by the duty doctor, who queried whether there might be some cardiac involvement that could warrant further investigation but did not require urgent treatment. Mr B was advised to go to hospital for further review.

Mr B arrived at hospital and was triaged at ED at approximately 6.30am. He was diagnosed shortly after his arrival as having had a myocardial infarction, and he subsequently underwent an angioplasty and stenting. [2]

My investigation focused on whether Mr B was adequately assessed at the Clinic.

Complaint and Investigation

On 29 November 2007, HDC received a complaint from Mr B about the services provided to him when he presented to the Clinic on 19 November 2007. The following issues were identified for investigation:

- *The appropriateness of the care provided to Mr B by Dr A on 19 November 2007.*
- *The appropriateness of the care provided to Mr B by Registered Nurse Ms D on 19 November 2007.*
- *The appropriateness of the care provided to Mr B by the Clinic on 19 November 2007.*

An investigation was commenced on 19 February 2008. The parties directly involved with the investigation were:

Dr A	Provider/registrar in general practice
Mr B	Consumer
Dr C	Clinical director
Ms D	Provider/registered nurse
Accident and medical clinic	Provider/Medical Centre

Independent expert advice was obtained from general practitioner and accident and medical specialist Dr Steve Searle (see Appendix A). General nursing advice was also obtained from nursing expert Jane MacGeorge.

[1] An ECG (electrocardiogram) measures the electrical activity of the heart.

[2] The process of widening an artery.

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Information gathered during investigation

Background
Mr B, then aged 59 years, had been experiencing what he thought was indigestion for approximately three days.

On the morning of 19 November 2007, Mr B's symptoms became worse and he started experiencing chest pain behind his sternum. Mr B decided to go to his local accident and medical clinic. The Clinic is an accredited after-hours surgery and is open 24 hours a day to provide after-hours general practice cover.

Triage
Mr B arrived at the Clinic at approximately 5.30am. At 5.40am, he was triaged by registered nurse Ms D.

On examination, Ms D noted that Mr B's presenting problem was "difficulty bringing up wind, upper [abdominal]/chest pain". She recorded his temperature as 36°C, pulse 94, blood pressure 160/101, and oxygen saturation 97%, all which she considered were within normal ranges for Mr B's age, gender and presentation. While Mr B was not presenting with typical chest pain, due to the duration and location of Mr B's symptoms, Ms D decided to perform an ECG to help rule out any cardiac involvement.

After completing the ECG, Ms D sent Mr B back to the waiting room and advised him that the doctor would see him shortly. Ms D categorised Mr B as triage code "3" — to be seen within 30 minutes. She explained that because the doctor, Dr A, was free at that time she immediately handed him Mr B's chart and ECG and gave him a verbal handover. Ms D is unable to recall her interpretation of the ECG at the time. She has made no reference to the ECG on her triage record.

Ms D advised that whenever anyone presents with chest pain it is normal process to follow the Clinic's "Acute Ischaemic Chest Pain" pathway. Ms D undertook the first step of the pathway — obtaining a brief targeted history, measuring vital signs, and commencing an ECG. However, because Mr B had "atypical chest pain" she did not continue with the pathway (administering oxygen, establishing IV access, taking bloods, and starting GTN[3] and aspirin) and referred him to the doctor. Ms D stated:

> "I made the decision not to give asprin due to [Mr B's] complaint of bloating and stomach pain, and the known risk associated with an ulcer or GI bleed. As [Mr B's] vital signs were within normal limits and knowing that he would be seeing the doctor within a matter of minutes I also made the decision not to commence oxygen or administer GTN."

[3] Nitrolingual spray — used to treat angina.

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Ms D advised that her normal process is to perform one ECG, unless there are any signs of concern or if the patient's symptoms warrant it. She said that after the ECG is complete she always prints two copies of the trace from the machine. This is to ensure that one copy is retained with the patient records and the other can be sent with the patient if he or she requires hospital admission.

Ms D advised that most of her training in ECG monitoring has been "on the job". However, she has completed the ACLS level 5 resuscitation course, which included training in identifying life-threatening rhythms.

Medical assessment

Dr A was the doctor on duty at the time of Mr B's presentation. Dr A is currently registered with the Royal New Zealand College of General Practitioners in the "General Practice Education Programme Stage 2".[4] Dr A has been working in general practice for the past four years.

Dr A advised that his "experience in the reading of ECGs is over 7 years of my practising medicine". He advised that his formal training in ECG interpretation was at the Royal College of Surgeons in Ireland during his final years of medical training. He has also had further training while working as an emergency house officer, as well as informal experience while practising in the accident and medical setting.

Dr A recalled that he received a verbal handover from Ms D at approximately 5.50am. Ms D advised him that Mr B appeared to be presenting with bad indigestion and that the ECG was not showing any sign of cardiac involvement. Dr A then reviewed the triage notes and the ECG trace and invited Mr B into the consultation room, where he commenced his assessment.

Dr A recalls that Mr B advised him that he had been experiencing indigestion for the last four to five days, which was associated with "bloating and quite a lot of wind". He also told Dr A that he had a history of occasional indigestion, with no previous cardiac history or family history, was a non-smoker and led an active lifestyle.

In contrast, Mr B advised that he never complained about bloating. He also does not recall ever being asked about his family history.

Dr A then reviewed the ECG and commenced his examination, noting normal heart sounds, no murmurs, a heart rate of 90bpm which was regular, blood pressure of 160/101, temperature of 36.7°C, and that his chest was clear. Upon further questioning, Dr A recalls that Mr B said that his stomach pain was associated with pain radiating to his jaw and left arm. Dr A recorded:

[4] The Royal New Zealand College of General Practitioners General Practice Education Programme is divided into two stages. At the completion of the Programme the practitioner gains vocational registration in general practice.

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> "Presents was 5/7 [history] of worsening chest pain which he describes as constant in nature associated with jaw pain and pain in the [left] arm."

Following his examination, Dr A felt that Mr B's pain might be cardiac, rather than indigestion as initially thought. Accordingly, he recommended that Mr B go to hospital for further testing. Dr A stated:

> "I must admit that owing to his initial presentation with gastric symptoms, the longstanding nature of those symptoms, the absence of a previous cardiac history, his denial of risk factors for cardiac disease, and his apparently active lifestyle … I was not entirely certain of a diagnosis. However on the basis of his ECG and my conviction that his pain was more likely to be cardiac in nature, I suspected that his diagnosis was one of Angina, ischemia or possibly GORD."[5]

Dr A recalls that Mr B was anxious to know what was wrong with him. As such, Dr A "reassured both [Mr B] and his partner of my conviction that he would be 'OK' and should try not to worry". Dr A then asked if Mr B wanted him to arrange for an ambulance to transport him to hospital, but Mr B said that he would go in his own private car.

Dr A then wrote a referral letter, which he gave to Mr B, together with the ECG trace.[6] The referral letter outlined his assessment findings and requested further assessment "re bloods and cardiology work up".

Dr A also contacted the Emergency Department (ED) house officer, providing an outline of Mr B's presentation, his clinical suspicions, and the ECG findings. This is not documented in the patient records.

Comment from Mr B

While Mr B agrees that Dr A recommended that he should go to hospital for further testing, he does not recall Dr A ever expressing any urgency. Mr B advised that he did not know he had a cardiac problem until he arrived at the ED. Furthermore, he does not recall Dr A ever offering to call an ambulance; it was always assumed that his partner would take him in their private car.

Emergency Department

Mr B arrived at the ED at approximately 6.30am and was triaged immediately. The triage record notes that Mr B had a history of severe indigestion and pain radiating up his neck and down his left arm. The nurse noted that the ECG that Mr B had provided from his assessment at the Clinic indicated cardiac ischaemia. The ECG included the

[5] Gastro-oesophageal reflux disease.

[6] Dr C advised that the normal process at the Clinic when taking ECGs is to print out two copies. One goes onto the patient file, the other is given to the patient.

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computer interpretation at the top of the print-out, which stated "abnormal CTG".[7] Mr B was categorised as triage code 2 — to be seen within 10 minutes.

At 6.45am, Mr B was reviewed by the duty doctor. On examination, the ED doctor noted that Mr B was pale, his heart rate was 72 beats per minute and regular, and his blood pressure was 171/100. The duty doctor also noted that he could hear no added heart sounds on auscultation, and that Mr B's chest was clear. The duty doctor reviewed the ECG and concluded that Mr B was presenting with acute cardiac symptoms. He was treated with aspirin and GTN and referred to the cardiology team.

Cardiology
Following review by the cardiology team, Mr B was diagnosed as having had a myocardial infarction.[8] Mr B underwent an angioplasty and stenting later that morning.

Mr B was discharged home on 22 November 2007. He has had no ongoing cardiac problems.

Complaint
On 25 November 2007, Mr B made a complaint to the Clinic. He was concerned that Dr A failed to correctly diagnose his condition and as such put his life at risk. Mr B advised that at no stage was he made aware that his condition was serious. It was not until he arrived at hospital that he was alerted to the fact that he had a problem with his heart. Mr B would like to ensure that this does not happen to anyone else.

The Clinic
Dr C, clinical director of the Clinic, responded to Mr B's complaint by email on 20 December 2007. In his response, Dr C stated that the "ECG did not show a heart attack, although there were some less specific changes that can be associated with angina". In conclusion, Dr C stated that "[f]rom the point of view of clinical competence, I am satisfied that the staff who saw you acted appropriately".

In his initial response to HDC, dated 11 March 2008, Dr C advised that he had carried out a further review of the care provided to Mr B. Dr C considered that, in accordance with the Clinic's protocol for managing chest pain, Mr B fell into the category of a patient who may be managed in the community with cardiac blood tests and repeat ECG over a six-hour period. Dr C stated that "[Dr A's] clinical judgment was to 'play safe' and (after discussing the case both with ED and cardiology registrars) [to] transfer Mr B to hospital for monitoring and it appears, with the benefit of hindsight, that this judgment was prudent".

[7] See Appendix B for the ECG Mr B provided to ED.

[8] Myocardial infarction is death of a segment of heart muscle, which follows interruption of its blood supply.

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Further comment from the Clinic
Dr C subsequently advised HDC that the Clinic has not retained a copy of the ECG. Having had the opportunity to review the ECG sent to with the referral letter to the hospital[9] Dr C has changed his interpretation of the ECG. He stated:

> "I deem [the ECG] to show widespread ST depression, which is particularly severe in v2 to v6. Coupled with what I think is some T wave inversion in aVL and v1 … the ECG findings lead to a differential diagnosis of angina, acute coronary syndrome or myocardial infarction."

Dr C advised that, in accordance with the Clinic's 'Acute Ischemic Chest Pain' pathway, following review of this ECG, Mr B should have been given aspirin, morphine and oxygen, prior to being transferred to hospital by ambulance.

Further comment from Dr A
Having also had the opportunity to review the ECG and compare it to the clinical records, Dr A also considers that the ECG provided to the hospital is indicative of acute cardiac ischemia. He stated:

> "I have recently had the opportunity to review the ECG reading which was included in my letter to the Cardiology team at [the] hospital. I note that this ECG is strongly suggestive of ischemia."

However, Dr A does not believe that this is the same "ECG which I referred to in my letter to the cardiology team". Dr A advised that he has since confirmed that, at the time of this incident, it was standard practice at the Clinic for two ECG traces to be printed after the ECG had been completed. This involved printing two traces, one after the other, from the ECG machine. As a result, the two traces were not identical.

Dr C has confirmed that, at the time of Mr B's presentation, it was standard practice at the Clinic for two ECG traces to be printed from the ECG machine, one to be sent to the patient's GP or with the referral, and the other to be retained in the patient's records at the Clinic. Dr C explained that these traces were consecutive traces, not identical traces, generally taken seconds apart.

Subsequent loss of ECG trace
On 29 April 2008, Dr C told HDC that he recalls reviewing an ECG trace while preparing his initial response to Mr B's complaint in December 2007. He notes that Dr A "wonders whether the reason there is no ECG in [Mr B's] notes is because he had given both copies to [Mr B] at the time of the presentation". However, Dr C says that "this would be unusual at 24[hrs] — we generally retain an ECG" and Dr A's suggestion would be inconsistent with Dr C's recollection that he had viewed the ECG while preparing his initial response to Mr B's complaint. Dr C confirmed that the

[9] A copy of the ECG was forwarded to Dr C by HDC on 30 April 2008.

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ECG was not available to him when he prepared his response to HDC in March 2008. He asked HDC to send him the copy we obtained from the DHB.

In a later email on 4 May 2008, Dr C states that he "honestly can't explain" how the ECG was misplaced from the Clinic. He said, "I know that I wouldn't have told Mr B that I had looked at his ECG unless I had." Dr C then states, "I do wonder whether I was given the wrong patient's ECG to review or whether I looked at the other of the two ECGs which were done during [Mr B's] visit to us …"

Mr B believes that Dr C reviewed the ECG when he first made the complaint to the Clinic as he recalls talking to Dr C about the ECG trace.

Action taken
Dr C advised that this case has been used as an education tool. The Clinic ran a teaching session on ECG interpretation on 19 March 2008 and a session on managing patients with acute chest pain on 27 June 2008.

Dr C advised that he has also specifically discussed this case with Dr A, reiterating the Clinic's acute chest pain policy, as well as offering him ongoing support and mentoring. Dr C advised that he has continued to review Dr A's work and he has no concerns about the standard of care provided by Dr A.

Dr C has also provided a copy of an action plan that has been developed to try to address all the issues that have been highlighted by this complaint. This includes:

- Reviewing the Acute Ischaemic Chest Pain protocol.
- Reviewing the documentation and storage of the patient clinical records, including reviewing the method of obtaining and storing patient ECGs to ensure all the copies are identical.
- Reviewing the process in place for triage.
- Reviewing the complaint and incident review process.
- Implementing a guideline for the transfer of patients with chest pain and other acute problems to hospital.
- Implementing a protocol for managing a people who choose not to be transferred to hospital by ambulance.

Dr A advised that he has also reflected on his practice. He stated:

> "Since this incident and reviewing my notes I accept that I did not apply the 'the Clinic Health Acute Pain Protocol' which would have included the administration of aspirin, GTN, morphine and oxygen prior to hospital transfer via ambulance. My reason for this is that [Mr B] did not present acutely but rather with a 5 day history of pain, I have changed my practice in this regard and in future will also apply the guidelines in the non-acute presentation."

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In addition, Dr A acknowledges that his questions to Mr B regarding his family history of ischaemic heart disease were unclear. Dr A has assured me that he has changed his practice in this area.

Response to provisional opinion

Dr A
Dr A advised that when he reviewed the ECG that was sent to the DHB (after it had been sent to him by this Office) he immediately considered that Mr B should have been given aspirin and transferred to hospital by ambulance. It was not until he then reviewed Mr B's records, in particular the referral letter, that he noted that what he had written — "ST depression in V3 and Q waves in Lead V4" — did not feature on the ECG held by HDC. He stated: "These features are clearly not evident on the ECG contained within the [HDC] draft report".

Dr A reiterated his belief that the ECG he reviewed at the time that he assessed Mr B and wrote his referral letter was different from the ECG that was sent to the DHB.

Dr A explained that it was standard practice at the Clinic, when taking an ECG, to obtain at least two copies of the ECG trace. One would then be retained in the patient clinical records, while the other is sent with the referral letter or to the patient's GP.

Dr A advised that at the time of this incident he had been working at the Clinic for only 12 nights. It was his understanding that the two ECG traces that were printed out by the nurse were identical. It was not until further investigation following the receipt of Mr B's complaint that Dr A now understands that the two ECG traces are actually consecutive readings taken within seconds or minutes of each other. Dr A stated:

> "What is being overlooked, is the fact that 'one ECG' at the [Clinic] actually consists of two consecutive tracings printed from the machine at a single sitting and usually within minutes or seconds of each other."

As an example, Dr A provided a copy of two consecutive ECGs (taken 50 seconds apart) recently taken at the Clinic which showed two very different results — the first showed no cardiac involvement, but the second is suggestive of myocardial infarction.

Dr A acknowledged that the ECG that he believes he reviewed has not been retained in Mr B's records. However, he considered that the actions and comments of Ms D and Dr C suggest that they also had reviewed this lost ECG.

Dr A highlighted the fact that, following her review, Ms D also concluded that the ECG did not show any signs of cardiac involvement and returned Mr B to the waiting room with a triage category of 3 — which could mean a wait of up to 30 minutes. Dr

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A considered that this demonstrates that Ms D also reviewed the more benign ECG, not realising that the two traces were not identical.

Dr A also pointed out that when Dr C carried out his initial review of the ECG he concluded that the "ECG did not show a heart attack although there were some less specific changes associated with angina". This suggests that Dr C also reviewed a different ECG from the one sent to the DHB.

Dr A believes that the ECG had been retained on Mr B's file up until the point that Dr C presented this case to the Clinic's audit committee.

In relation to Ms D's comments that the Clinic was generally quiet at the time of Mr B's presentation, Dr A explained that the night shift is generally a very busy shift and is staffed by only one doctor, two nurses and one nurse aid. Therefore, he believes that Ms D's comment is not an accurate reflection of how busy the shift generally is for the doctor on duty.

Dr A also advised that it is his normal practice to ask the patient to wait outside while he discusses the case with the hospital. While he is doing this it is common for the nurse to request the referral letter for the waiting patient. The nurse will then attach all the relevant documentation to the referral (in this case the other ECG).

Dr A stated:

> "I acted upon the information and facts that were before me at the time. The increased risk to [Mr B] was the result of a systems failure at my place of employment …
>
> I am unhappy that my assessment of [Mr B] was compromised by the presence of an additional trace and the fact that I had to learn in such a way how traces are handled and produced at the [Clinic]. These practices have been changed and it is hard for me to imagine that a similar event will occur again."

Ms D

Ms D explained that when taking an ECG it is her normal process to print off two traces. Ms D's lawyer stated that "when [Ms D] took the initial ECG she says that she would have printed one off and then immediately printed off another reading". She explained that this is routine practice at the Clinic so that one can be sent with the referral and the other can be retained in the patient records.

Ms D stated that having now reviewed the ECG this Office has on file (the trace sent with Mr B to the DHB) she "would never have sent [Mr B] out to the waiting room". She would have immediately commenced the Clinic Acute Chest Pain protocol.

The Clinic

Dr C has also confirmed that at the time of this incident, it was standard practice for two ECG traces to be printed off whenever an ECG was performed. He explained that

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after the patient was connected to the ECG machine "[t]he ECG would be taken by pressing 'record'. As soon as the ECG had printed out, the 'record' button would be pressed again and the second ECG would be generated, literally seconds after the first". Both of the traces would then be placed on the patient file awaiting review by the doctor.

Dr C advised that following the consultation, one of the copies would be retained on the patient record. The other would either be given to the patient with the referral, or sent to the patient's GP.

Dr C advised that this system has since been changed and only one trace is printed. This trace is then scanned into the patient's computer record. A copy of the same trace is then sent with the referral or to the patient's GP.

Mr B

Mr B is concerned that Dr C considered that Dr A's management was appropriate when staff at the hospital were able to see immediately that there was a serious problem on the ECG. It is his belief that Dr C reviewed the ECG when he initially made his complaint to the Clinic, as he recalls talking to him about it.

Mr B cannot recall Dr A discussing his case with anyone at the hospital. Furthermore, Mr B does not recall more than one ECG being carried out and believes that Dr A is now trying to cover up his mistake by suggesting that a second one exists.

Mr B remains of the view that Dr A should have picked up his cardiac problem and sent him to hospital by ambulance. He reiterated that by making this complaint he wants to ensure that this does not happen to anyone else.

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Code of Health and Disability Services Consumers' Rights

The following Rights in the Code of Health and Disability Services Consumers' Rights are applicable to this complaint:

RIGHT 4

Right to Services of an Appropriate Standard

(1) Every consumer has the right to have services provided with reasonable care and skill.

(2) Every consumer has the right to have services provided that comply with legal, professional, ethical, and other relevant standards.

Other relevant standards

- The Clinic *Acute Ischaemic Chest Pain* (July 2006) (See Appendix C)

Opinion: No breach — Dr A

ECG
Dr A recalls that when Ms D handed over Mr B's care, she advised him that Mr B was presenting with bad indigestion and that the ECG was not showing any sign of cardiac involvement.

On review of Mr B's ECG, Dr A interpreted it as showing a "st depression v3 and q waves v4", suggesting only minimal cardiac involvement. However, having reviewed the ECG that was sent with Mr B to the hospital, Dr A agrees that his interpretation of Mr B's ECG was not consistent with what the ECG showed. Dr A stated:

> "I have recently had the opportunity to review the ECG reading which was included in my letter to the Cardiology team at [the] Hospital. I note that this ECG is strongly suggestive of ischaemia."

Dr A has suggested that the reason for such significant differences in his interpretation was due to there being two ECG traces that were done consecutively — one that was sent to the hospital, and the other initially retained in Mr B's records, but later lost.

While my initial view was to reject this suggestion given that there is no physical evidence that more than one ECG was taken, having carefully considered the

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responses to my provisional opinion, I am now more inclined to accept Dr A's explanation. In particular, I accept that Dr C reviewed an ECG trace when initially responding to Mr B's complaint. Based on Dr C's initial review of the ECG he considered that the "ECG did not show a heart attack although there were some less specific changes associated with angina". This was similar to Dr A's interpretation in the referral letter. Furthermore, Ms D also advised Dr A that the ECG was not showing any sign of cardiac involvement.

Dr C has explained that, at time of this incident, when an ECG was being taken it was the standard practice at the Clinic for two traces to be printed. These were consecutive traces, not identical. I accept Dr A's submission that, even when taken seconds apart, these may show different readings.

While, as noted by my expert, Dr Searle, Dr A still had a responsibility to review all the ECGs taken, I do not consider that Dr A should take sole responsibility for this error (discussed further below). I must also take into account that Dr A had been working at the Clinic for only 12 nights at the time of this incident.

Disappointingly, no ECG, or ECGs, were retained by the Clinic in Mr B's patient records (discussed below). However, on balance, I accept that it is likely that two ECGs were taken consecutively.

Opinion: Breach — Dr A

Diagnosis and management
Dr A advised that he was initially in doubt about whether there was any cardiac involvement. However, in light of the ECG findings (which Dr A interpreted as showing minimal change), he decided to refer Mr B to hospital to investigate this further. He stated:

> "I must admit that owing to his initial presentation with gastric symptoms, the longstanding nature of those symptoms, the absence of a previous cardiac history, his denial of risk factors for cardiac disease, and his apparent active lifestyle … I was not entirely certain of a diagnosis. However, on the basis of his ECG and my conviction that his pain was more likely to be cardiac in nature, I suspected that his diagnosis was one of Angina, ischemia or possibly GORD."

Dr A maintained a level of suspicion in his analysis of Mr B's presentation and did err on the side of caution in referring Mr B to hospital. However, because he was not convinced of his diagnosis, he did not apply the Clinic "Acute Ischaemic Chest Pain" pathway, which would have recommended the administration of aspirin, nitrolingual spray, morphine and oxygen prior to immediate transfer to hospital by ambulance. Therefore, the question is whether Dr A adequately assessed Mr B in light of the information available.

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As noted in a previous HDC opinion:[10]

> "… chest pain should be considered cardiac until proven otherwise beyond reasonable clinical doubt. Pain that can also be attributed as referred cardiac pain requires equal vigilance in its assessment and treatment."

In a situation where there is doubt about a recent or current suggestion of a heart problem, Dr Searle advised that it is reasonable practice to refer the patient to hospital for investigation or to have a community-based management plan. This is in accordance with the Clinic "Acute Ischaemic Chest Pain" pathway.

While Dr Searle acknowledges Dr A's analysis of the situation, he considers that there were some signs that should have encouraged him to make a more confident diagnosis of cardiac involvement. In Dr Searle's view, Dr A should have taken a more precautionary approach to his management. He stated:

> "I think given [Mr B] had chest pain, and given that the ECG that [Dr A] looked at had at least some changes in lead V3 that some sort of pre-hospital treatment should have been given."

Dr Searle advised that, in these circumstances, the minimum pre-hospital treatment would have been aspirin. He viewed Dr A's failure to start Mr B on aspirin with mild to moderate disapproval.

Transport

Dr A advised that, after he had recommended to Mr B that he should go to hospital for further assessment, he discussed with Mr B calling an ambulance, but that this was declined by Mr B. In contrast, Mr B does not recall an ambulance ever being suggested. It is his recollection that, after Dr A had reviewed the ECG, he recommended that Mr B go to the hospital for further investigations. He does not recall Dr A providing any further explanation about why.

Clearly there is a difference in the recollections about whether an ambulance was discussed at this somewhat stressful time. It is doubtful the issue can be resolved with any reliability given the intervening events. That Dr A did not document the discussion is enough for me to conclude that Mr B left the surgery with his partner and was driven straight to the hospital, without the offer of an ambulance.

Dr Searle advised that in a situation such as this, where there was a possibility that Mr B's symptoms might be of cardiac origin and the decision had been made to send Mr B to hospital for "cardiology work up", it is standard practice to transport the patient by ambulance. Dr Searle advised that in some circumstances it may be acceptable not to use an ambulance, but this should be clearly documented.

[10] Refer to: http://www.hdc.org.nz/files/hdc/opinions/04hdc11728gp.pdf, 29 November 2005.

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Dr A made the decision, based on the information available to him, to transfer Mr B to hospital for further assessment. Dr A clearly considered that this review was urgent enough to warrant immediate cardiology review. In these circumstances Mr B should have been transported by ambulance. If Mr B chose not to be transported by ambulance after being given information about the risks of not going by ambulance, this should have been clearly documented.

Conclusion
Regardless of whether there was a second ECG or not, Dr A had some suspicions that Mr B's presentation did have cardiac involvement. In the circumstances, Dr A should have started Mr B on aspirin and arranged for his transfer to hospital by ambulance. This was a requirement of the Clinic policy for "Acute Ischaemic Chest Pain".

Overall, I conclude that Dr A breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code) by failing to provide Mr B with service with reasonable care and skill.

Opinion: No breach — RN Ms D

Following his arrival at the Clinic, Mr B was immediately triaged by Ms D. Ms D noted that Mr B was presenting with a history of wind and upper abdominal/chest pain. Ms D observed that all of Mr B's vital signs (blood pressure, temperature, pulse, and oxygen saturations) were within normal ranges for Mr B's presentation. However, in light of the location and duration of his pain, Ms D decided to perform an ECG to eliminate the possibility of cardiac involvement.

After she completed the ECG, while some doubt remained, Ms D considered that Mr B's presentation was likely gastric and asked Mr B to wait in the waiting room while she provided a verbal handover to Dr A.

I consider that it was good practice for Ms D to commence an ECG following her triage assessment. This demonstrated that Ms D maintained a high level of suspicion despite the atypical nature of Mr B's pain.

After the ECG had been completed, Ms D did not consider there to be any serious cardiac involvement and returned Mr B to the waiting room while she briefed Dr A on Mr B's presentation.

Had Ms D reviewed the ECG sent with Mr B's referral she may well have taken a different course of action. I note that my medical advisor has criticised her decision to return Mr B to the waiting room. Similarly, when asked for general advice about the expectations of a triage nurse in these circumstances, independent nursing advisor Jane MacGeorge agreed with Dr Searle's view that Ms D should not have returned Mr B to the waiting room. However, from the information I have received, it appears that

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Ms D, like Dr A, only reviewed one of the ECGs. Indeed, having now received the ECG sent to the DHB, Ms D concluded that "she would never have sent Mr B out to the waiting room" and would have immediately commenced that Acute Chest Pain protocol.

However, I consider that this case highlights the importance of being vigilant where a patient presents with any possibility that their symptoms may be of cardiac origin. Overall, I conclude that Ms D did not breach the Code.

Opinion: No breach — The Clinic

Vicarious liability
Under section 72 of the Health and Disability Commissioner Act 1994 (the Act) an employer is liable for acts or omissions by an employee unless they prove that they took such steps as were reasonably practicable to prevent the employee from breaching the Code.

As Dr A is an employee of The Clinic, consideration must therefore be given as to whether it is vicariously liable for his breaches of the Code. Under section 72(5), it is a defence for an employing authority to prove that it took such steps as were reasonably practicable to prevent acts or omissions leading to an employee's breach of the Code.

The Clinic has provided a copy of its "Acute Ischaemic Chest Pain" policy. This policy provides clear guidance to staff on managing patients presenting to its service with chest pain.

Overall, I am satisfied that this policy is sufficient to guide staff on the management of acute chest pain. It is my view that Dr A's breaches resulted from his own clinical judgement.

Other comment

ECGs
At the time of Mr B's presentation, when taking an ECG it was standard practice at the Clinic for two traces to be printed from the ECG machine. This was to ensure one trace could be retained for the patient record and one sent with the referral or to the patient's GP. However, rather than the second trace being an exact copy of the first, it was recorded immediately following the first. As a result, the ECGs were not identical.

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Regardless of the responsibility for the doctor to review all the ECGs, I am concerned that there was the potential for a different ECG from that sent with the referral or to the patient's GP (or vise versa as in this case) to be stored by the Clinic. Patient records act as a record of the patient's presentation and management. That the record retained in one facility is different from that at another demonstrates that the Clinic system is inherently flawed.

Furthermore, the Clinic had a responsibility to ensure that Dr A understood that the practice of printing out consecutive rather than duplicate ECG traces was the usual practice. The fact that Dr A was cautious in terms of Mr B's atypical presentation suggests that Mr B's outcome could have been a great deal worse. I view this as serious. However, in deciding whether the Clinic breached the Code, I have considered a number of factors, including the Clinic's willingness to improve its system and Mr B's wish for this case to be used to prevent a similar event from happening to anyone else. In my view, the public interest will be served in sending this report to the Royal New Zealand College of General Practitioners and the Medical Council of New Zealand. Little more would be achieved by the additional step of finding the Clinic in breach of the Code.

I am pleased that in light of this complaint, the Clinic has now reviewed its system so that the ECG trace is now scanned into the patient record, then a copy of the trace is taken and sent to the patient's GP or with the referral.

Storage of patient records

During the course of this investigation, it became apparent that the ECG taken on the morning of 19 November 2007 had been lost from Mr B's notes.

Dr C advised that when an ECG is performed at the Clinic it is the normal process to print two copies — one for the patient, the other to be retained in the patient clinical records. It is unclear what happened in this case. While he is confident that when first replying to Mr B's complaint he sighted the ECG, Dr C is unable to confirm this. Dr C also advised that when responding to HDC, he based his response on Dr A's records made at the time of his consultation with Mr B. In my view, the most likely explanation is that the ECG was lost sometime between March 2008 when Dr C responded to Mr B's complaint, and April 2008 when Dr C responded to HDC's enquiry about the lost ECG.

In any case, what is clear is that the ECG has not been appropriately retained in Mr B's clinical records. This is not acceptable. Clinical records are essential for effective communication and good clinical care. Fundamental to this is ensuring that all records are accurate, clear and full.

I note the Clinic has now obtained a copy of the ECG for Mr B's file and it has reviewed its systems for retaining this information on patients' clinical records.

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Recommendations

Dr A
I recommend that Dr A provide a written apology to Mr B for his failure to take adequate precautionary steps when he had suspicions of cardiac involvement. This should be sent to this Office by **5 January 2009**, and will be forwarded to Mr B.

The Clinic
I recommend that The Clinic update me on implementation of its action plan by **27 February 2009**.

Follow-up actions

- A copy of this report will be sent to the Medical Council of New Zealand and the New Zealand Nurses Organisation.

- A copy of this report, with details identifying the parties removed except the name of Dr A and the names of my expert advisors, will be sent to the Royal New Zealand College of General Practitioners.

- A copy of this report, with details identifying the parties removed except the names of my expert advisors, will be placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

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Appendix A

Expert Advice Report

This report has been prepared by Dr S J Searle, under the usual conditions applying to expert reports prepared for the Health and Disability Commissioner. In particular Dr Searle has read the guidelines for Independent Advisors to the Commissioner (Ref. 1) and has agreed to follow them. He has been asked to provide an opinion to the commissioner on case number 07HDC20618.

He has the following qualifications: MBChB (basic medical degree Otago University), DipComEmMed (a post graduate diploma in community emergency medicine — University of Auckland), FRNZCGP (Fellow of the Royal New Zealand College of General Practitioners — specialist qualification in General Practice which in part allows him to practise as a vocationally registered practitioner). As well as the qualifications listed Dr Searle has a certificate in family planning and a post graduate diploma in sports medicine. He has completed and maintains renewal of a course in Advanced Trauma — ATLS (Advanced Trauma Life Support). He has also completed and maintained a certificate in Resuscitation to Level 7 of the NZ Resuscitation Council. He has worked in several rural hospitals in New Zealand as well as in General Practice and accident and medical clinics and currently works in his own practice as well as in the Emergency Department in Dunedin Hospital. He is also actively involved in local search and rescue missions and training.

Dr Searle is not aware of any conflict of interest in this case — in particular he does not know the health providers either in a personal or financial way. Dr Searle has not had a professional connection with the providers to the best of his knowledge.

Basic Information

Patient concerned: [Mr B]

Nature of complaint: Possible inappropriate care

Complaint about: [Dr A], [Ms D], and [the Clinic].

Also seen by: Staff at Christchurch Hospital

This complaint commented on by: [Dr C], Clinical Director, and [the Clinic].

[At this point Dr Searle refers to the information provided by HDC. This information has been removed for the sake of brevity.]

Possible missing information:

There is the possibility that a second ECG was taken at the time [Mr B] was seen. Thus the rest of my report refers to two possibilities at times.

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1. One possibility is that a second ECG was taken and it was this second ECG that was used for the Clinical decision made by [Dr A] & Nurse [Ms D]. This second ECG is apparently missing and cannot be found — I will refer to it as "the missing ECG" or "ECG M".

2. Another possibility is that the ECG I have seen [Appendix B], which was sent with him to hospital, was the ECG that [Dr A] & Nurse [Ms D] used for clinical decision making at the time [Mr B] was seen. I will refer to this as "ECG S" (ECG seen or ECG sent to hospital).

Some of the appropriate decision making does hinge on exactly what the ECG showed … [Here Dr Searle refers to additional comment he made in relation to the possibility of there being two ECGs. This has been removed because it is outside the scope of what Dr Searle was asked to comment on.]

I have been advised that [the Clinic] is an accredited Accident and Medical clinic and that it is a GP after-hours facility. For the purposes of this case I can give an opinion that the standard of care for this patient would be the same either if [the Clinic] was operating as an accredited Accident and Medical clinic or as a GP after-hours facility. Discussion of the possible differences between these types of facilities is beyond the scope of this report.

It is not clear to me if either [Dr A], or any other staff member of [the Clinic], told [Mr B] not to drive himself to the hospital but to get someone else to drive him. I do not think asking either [Mr B] or the staff members will change my opinion(s) on this case. This is because I think that it is important that if he was told to get someone else to drive him it should have been documented in the notes — it was not documented and this is sufficient for me to give a range of opinions as documented later in this report.

I am not sure how many, if any, patients were being seen at [the Clinic] at the same time as [Mr B]. I note [Ms D] states that "it is generally quiet on a night shift". I also note that [Ms D] stated "As the doctor was free at that time…" [Ms D's letter of 11 March 2008]. I further note that [Mr B] stated that "At the time we arrived the waiting room was empty" [Mr B's letter of complaint dated 29 November 2007]. All this means that I think specifically asking about patient numbers at this time is unlikely to be needed. In my opinion it is reasonable to conclude that there were not many, if any, other patients taking up the nurse's, or the doctor's time when [Mr B] was seen.

The exact Chest Pain protocol that was in place is a little unclear to me — for example supporting information [provided by the Clinic] has one copy of the protocol and [in the information provided by Dr A] have other copies. As far as I can tell the protocols [provided by Dr A] are the same. The one [provided by the Clinic] differs in that under the heading "acute nurse" steps 5 and 6 (morphine and GTN) are in a different order. Also with respect to GTN [the copy provided by the Clinic] has "CI viagra" meaning contraindication viagra and page 34/35 has "CI viagra within past

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24–48 hours." There may be other differences I have not spotted. I do not think establishing which of these protocols was in place would have altered the findings in my report.

Quality of provider's records or lack of them

The nurse, [Ms D], documented her observations on a patient encounter sheet [triage sheet] and her description of the "triage presenting problem" and her triage code. This documentation is reasonable and is typical of what I would expect a nurse to provide who was "triaging" a patient. I note that it has been suggested that [Ms D] did not document this information — "She passed this information on to [Dr A] verbally but did not document her findings." [Letter from [the Clinic] dated 11 March 2008.] As she did document her findings on paper I presume that this means that she should have in addition documented her findings elsewhere (presumably in the computerised notes). There are complex issues with documenting things in two places that are beyond the scope of this report, but there are disadvantages and I don't think [Ms D] can be criticised from a standard of care point of view concerning this point. I accept that each clinic needs to sort out how it deals with recording information and that all staff should be aware of a standard option for recording information and perhaps a couple of well used, well known alternatives. I think a rigid policy of always documenting things in one way is too limited because paper notes have advantages and disadvantages that are different to the advantages and disadvantages of computerised notes. Issues include availability of computers, ease of use of pen and paper without leaving the patient, easier overview of information on most paper charts — ability to have several pieces of paper to view at once in a spread out manner that is not usually easily possible on computer. Alternatives include options such as:

- documenting directly into the computerised notes and not onto paper (various advantages and disadvantages)

- scanning the paper notes into the computer (also advantages and disadvantages) — a good record storage plan once the patient has left and the paper records have been finished with.

The notes from [Dr A] are contained in a letter sent to the hospital with [Mr B] [the referral letter]. The notes contain a history, observations, examination findings and a comment on what the ECG showed. These notes are of a reasonable standard.

Describe the standard of care that should apply in the circumstances

The patient should have been seen by a doctor in a timely manner. Discussion of "a timely manner" is complex and discussed in more detail in my accompanying paper on "triage". Of note in my opinion a formal "triage" process does not actually ensure that "a timely manner" is best served and other processes may in fact be better and recent evidence supports this that I cite in my paper on "triage" [Dr S. Searle, (2008), *Sorting out what to do — when & where and the concept of triage*, unpublished.]

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General Practice after hours care has not had "triage" as established best practice but I note in some clinics it has become usual practice. Triage has become part of the "NZ standard" for Accident and Medical (A&M) Clinics (Ref. 2). I discuss this point in my conclusions and recommendations. What is relevant here is that the standard of care can't be found to be at fault because triage occurred because triage has rightly or wrongly become part of the standard. In my opinion a better standard of care could have occurred if the doctor saw [Mr B] immediately and not waited for a triage assessment to have taken place — particularly given that [the Clinic] was not busy. My point here is that not following the "NZ standard" does not necessarily mean the standard of care is not good, assuming other aspects of care were good. The simplest example of a good standard of care without triage is if the patient arrived and the doctor saw the patient at the point in time the nurse would have seen them to start triaging them — in that situation then clearly not triaging the patient could not be defined as breach in the standard of care simply because triage did not occur. For the purposes of this report the nurse, the doctor, and [the Clinic] can not be criticised simply for having used triage. But I think it is important that readers of this report realise that triage should not be accepted as always being a good thing to do.

If a nurse first sees the patient, with chest pain, then the following applies:

- at the point at which it is clear that there is likely to be a more serious problem then the doctor should be asked to see the patient, with the patient being kept under reasonable observation until the doctor sees the patient. If there is good reason to believe the patient does not have a serious cause of chest pain it may be reasonable to return the patient to waiting room.

- If part of the nurse's assessment includes taking an ECG or several ECGs then:

    a) Unless the doctor is tied up with an emergency elsewhere it is best if the doctor can review the ECG(s) before the patient is taken off the ECG machine.

    b) If the doctor is busy elsewhere and the ECG appears normal and the computerised interpretation of the ECG is normal and there are no other concerns about the patient then it may be reasonable to return the patient to the waiting room. This might apply if other potentially more urgent patients need to be assessed and there is no other way to observe the patient other than returning them to the waiting room.

    c) If the ECG is diagnostic of a potentially serious condition or raises concerns then treatment should occur based on the ECG and the patient's condition — a fuller assessment can occur at the same time as treatments are beginning to be put in place. In this situation the patient should not normally be returned to the waiting room.

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Once, either a nurse, or doctor, assessment a decision to take an ECG is made then the following applies with respect to the ECG(s).

- All copies of the ECG should be reviewed as the doctor starts to see the patient.

- If the ECG is diagnostic then treatment should occur based on the ECG and the patient's condition — a fuller assessment can occur at the same time as treatments are beginning to be put in place.

- If the ECG is normal or non-diagnostic a fuller assessment of the patient should occur — this includes taking a history, and examining the patient.

One part of the examination is to take certain baseline observations such as the blood pressure — these observations may have already been taken by a nurse and do not always need to be repeated by a doctor.

Once the doctor has made a diagnosis (worked out what is wrong with the patient) then further management can occur. The same would apply if a provisional diagnosis was made (the doctor thinks they know what is wrong with the patient but is not certain). For the rest of the report when I say diagnosis I will use the word diagnosis to include provisional diagnosis. Differential diagnoses are a list of alternative explanations for what is wrong with a patient.

Diagnostic options in this case include

1) There is a recent/current suggestion of a heart problem

2) There is not a recent/current suggestion of a heart problem and there is some other explanation for [Mr B's] symptoms.

3) There is doubt about a recent/current suggestion of a heart problem

I will now discuss the appropriate management depending on which of these options applies.

1) **If there is a recent/current suggestion of a heart problem** that is likely to be related to poor blood flow to the heart itself (ischaemic heart disease) then the following would be of note:

- This sort of problem could be suggested by current chest pain/discomfort, or a recent episode of prolonged chest pain, and/or by significant potentially new ECG changes. There are a few other reasons to suspect recent/current ischaemic heart disease but these are beyond the scope of this report.

- The key treatment is to rapidly and safely transport the patient to a hospital which is capable of providing thrombolysis (clot busting treatment) and/or specialist cardiologist care. The standard way to do this is to call an ambulance and to treat

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the patient at [the Clinic] whilst awaiting the ambulance's arrival. However this standard approach has been questioned by specialists (Ref 4.):

> 'Our results suggest that overall it would substantially reduce the hospital admission delay if ambulatory patients with unrelieved chest pain were simply transported to hospital by a bystander or relative. However the safety of such a proposal could be questioned and it is unlikely that this strategy would find favour with any of the present health professional groups involved with transport and care of these patients.'

Full discussion of the pros and cons of treating a patient at [the Clinic] and calling an ambulance vs just sending them to hospital are beyond the scope of this report. I think there is some evidence that reducing pain reduces the risk of arrhythmia (irregular heart beats some of which can be fatal — i.e. the heart stops) and also reducing pain with some pre-hospital treatments may limit the spread of any damage in the heart. The early giving of aspirin is also well established. Where possible pre-hospital treatments should not unduly delay transportation to hospital is the key point, and there are several treatments that can be implemented without causing significant delays — particularly if they are implemented after calling an ambulance whilst waiting for the ambulance to arrive. In any case in this particular patient's care there was not a conscious decision made that he had definite heart problems and that an ambulance would deliberately not be called — instead the diagnosis was uncertain and he was sent to hospital by private transport just in case. If a decision is made to call an ambulance it is debatable if this has to be discussed with the patient— there are complex issues including:

- the above discussion that direct transport may be better than waiting for an ambulance but that it has some risks

- the cost of an ambulance (I note that [Dr C] has mentioned that patients have complained to his clinic about the cost of an ambulance [information provided by [the Clinic] dated 11 March 2008]).

- the time/distance of travel from [the Clinic] to the hospital (I note the short time it took for this patient to get to hospital from [the Clinic] by their own transport [noted in letter from [the Clinic] dated 11 March 2008] and agree with [Dr C] that at times the ambulance services response time can be prolonged and that the risk of a short transport to hospital is probably negligible — however there is no simple way to weigh up these probabilities.

[Here Dr Searle refers to additional comment he has made about ambulance transport. This has been removed because it is beyond the scope of this investigation].

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2) **If there is not a recent/current suggestion of a heart problem** then various management options are available that are beyond the scope of this report.

3) **If there is doubt about a recent/current suggestion of a heart problem** then it is reasonable to either refer the patient to hospital for investigation or to have a community based management plan. Discussion of when a community based management plan should apply and what such a plan should be, where the patient is not initially sent to hospital, is beyond the scope of this report. Concerning transport to hospital in this situation where the diagnosis is in doubt the following points apply:

- As discussed above, even when there is a likely heart problem, there is some debate about ambulance transport. Using ambulance transport would be an acceptable option.

- It may be reasonable to allow the patient to go to hospital by other means but they should be driven by another person to hospital and not drive themselves. I think it is important that this advice is given, and documented, as if the patient has an event that incapacitates them from driving then there are clearly risks for the patient themselves and potentially other persons.

Certainly if an ambulance was called, then obtaining IV access is indicated, even if no treatments are given, because there is a small risk that emergency IV access will be required for any patient with chest pain. However if the doctor and/or nurse are either not capable of obtaining IV access or they are busy elsewhere in [the Clinic] with more urgent patients then the absence of IV access is reasonable. Obtaining IV access and sending a patient to hospital by transport other than ambulance may be a reasonable thing but is a complicated issue beyond the scope of this report because there are various risks and benefits. Usual practice once the decision is made to not use an ambulance is not to obtain IV access.

The usual standard of care should include having appropriate systems in place to reduce errors.

This is where there is great potential to improve the management for all patients. Doctors, and nurses, are human and errors can occur; however they can be minimised and/or the effects of these errors reduced or mitigated by having systems in place to check for errors and if possible to take action to prevent harm or to prevent sub-optimal outcomes for patients. The surgery had an "Acute Ischaemic Chest Pain" protocol in place. This is potentially a good system.

The exact protocol in place is a little unclear to me — for example supporting information [provided by the Clinic] has one copy of the protocol and [the information provided by Dr A] have other copies. As far as I can tell the protocols on pages 34 and 35 are the same. The one [provided by the Clinic] differs in that under the heading "acute nurse" steps 5 and 6 (morphine and GTN) are in a different order. Also with

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respect to GTN [the copy provided by the Clinic] has "CI viagra" meaning contraindication viagra and [the copy provided by Dr A] has "CI viagra within past 24–48 hours". There may be other differences I have not spotted. I am not prepared to endorse any of these protocols for a number of reasons including

- There are other contraindications to GTN — of note there are other similar drugs (Cialis and Levitra) that should also be listed alongside Viagra — I think it is a good idea to have on the protocol a reminder to ask about these drugs but all 3 should be listed not just one of them.

- The protocol does not have a review date.

- It is not clear to me what training is put in place concerning the protocol. It is for example important that staff understand the meaning of the term "acute" in the name of the protocol and how to sort out when a patient might have an "acute" problem on top of a "sub-acute" or "chronic" problem.

- I would suggest that steps 5 & 6 under "Acute Nurse" have a "consider giving heading/discuss with doctors" — I suspect the arrows between the boxes "Doctor" and "Acute nurse" mean that there is an interaction between the doctor and the nurse and that the nurse is not expected to implement things without discussion with the doctor.

- Given the "considerable delays" that [Dr C] has mentioned with respect to getting an ambulance I think that arranging transport by ambulance should be a higher or earlier priority.

- The term "paramedic ambulance" may no longer be appropriate as some non-paramedic ambulance officers are trained to use defibrillators and in any case the patient's condition and location should be described to ambulance control and they should decide on the type of ambulance personnel required.

- I note that there is some international debate about contra-indications to aspirin in the setting of giving it for acute chest pain — other than known allergy other contra-indications have been largely removed in most pre-hospital protocols (discussion of this is beyond the scope of this report but it may be worth [the Clinic] reviewing this point when they review the chest pain protocol — it is good that the protocol lists the contra-indication of known allergy but it is not clear to me that staff using the protocol are aware that other precautions or potential contra-indications in the setting of acute ischaemic chest pain are not to be used as a reason for not giving aspirin — Nurse [Ms D] for example states "I made the decision not to give aspirin due to [Mr B's] complaint of bloating and stomach pain, and the known risk associated with an ulcer or GI bleed" [letter from [Ms D] dated 11 March 2008] — whilst it was not necessarily her decision to give aspirin or not, but rather [Dr A's], this statement does illustrate a common dilemma about the giving of aspirin).

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The complaints review process. This can be seen as part of the systems a clinic has in place to reduce errors. I think it is good that both doctors have reviewed the ECG sent with [Mr B] to hospital and made appropriate comments about this. I think they have demonstrated that they are willing to review this and other cases and learn from it. I note that often complaints can be seen in a negative light and that [Dr A] appears to have this perception given his final sentence in his letter of 16/5/2008 [Letter from [Dr A] dated 16 May 2008]. [Dr A] needs to be aware that it is normal and understandable to view complaints in negative light, but I think it is unhelpful to not recognise the benefit of complaints — improvement can include the way individual health providers think about and deal with similar cases and the potential improvement in the systems that support health providers dealing with such cases. These benefits apply not only to the health providers involved in a complaint but also to other health providers who might review the cases, or other providers who might indirectly benefit when systems issues are addressed. I have mentioned a number of systems issues in this report for example. When complaints are viewed in this context it is actually possible to thank patients for their feedback (otherwise known as "complaints"). There is a growing body of medical literature about complaints and it may be helpful for [Dr A] to review some of this.

Another system to reduce errors is to try and get doctors to think about thinking. Metacognition has been suggested and shown to be one such system (Ref. 7). I would recommend that [Dr A] and even all doctors in general read and act on this type of approach to their everyday work/clinical decision making. I think it was clear in this case that once two issues became prominent in [Dr A's] mind that it was hard for him to then consider the possibility that [Mr B] was having a recent or current heart problem — the first issue was that he had indigestion or "gastric symptoms" and the second issue was that [Dr A] considered the gastric symptoms had a "long standing nature". The symptoms had been present for 4 to 5 days and I think this was long standing in [Dr A's] mind compared to "acute".

In medicine an **acute** disease is a disease with either or both of: a rapid onset and/or a short course (as opposed to a chronic course — chronic meaning a persistent and lasting disease or medical condition, or one that has developed slowly). The time course of "acute" can vary depending on the condition so "acute" for one type of health problem could be minutes or hours and for another it could be days — in other words there is a contextual component. Subacute is defined as "between acute and chronic":

The terms "acute" or "chronic" may often be confused by the general public to mean "severe". This however, is a different characteristic.

In this case "acute" relevant to heart problem can be seen as hours to a day or so as most treatments to unblock coronary arteries are time critical. The potentially deceptive thing in this case is that [Mr B] probably had a less severe form of his problem for 4 to 5 days and at some point in the hours before he was seen he developed the more severe form. [Dr A] did document a history of worsening pain

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which supports this possibility. [Mr B's hospital records] contains notes stating "Pain from midnight — worsening 0530–0600". The back of [the Emergency Department record] states "Bloating 3/7 with wind associated with some left jaw and left arm aching, increasing all night, no specific time of onset". All this shows some variability in the history which is not unusual from my experience (both as a patient and as a doctor watching patients give histories to several different doctors within a short space of time — full discussion of this is beyond the scope of this report but it is a common occurrence that doctors need to be aware of and deal with/allow for).

The point here is that the consistent feature is the story of the pain worsening in the hours before [Mr B] was seen. The key thing being that the story was not one of being perfectly well until a few hours before being seen and then suddenly getting a problem but one of a more prolonged course with a recent flare. This form of presentation may have been what put [Dr A] off the scent so to speak as to the possibility of a recent heart problem. Another possibility is that [Mr B] had two problems — namely indigestion and then on top of that a heart problem — there is some evidence that coronary artery spasm can be set off by reflux of acid and full discussion of this possibility is beyond the scope of this report but I mention it here as a potential learning point for health professionals reading this report.

[Dr A] correctly managed to recognise that there could be a heart problem and did correctly send [Mr B] to hospital but I think the way he starting thinking about the case locked him into thinking about an indigestion type of problem and somehow made it hard for him to consider more seriously an "acute" heart problem. This type of thinking was what I think blocked [Dr A] from carrying out management contained in the "acute ischaemic chest pain" protocol — I suspect [Dr A] thought that [Mr B] had had problems for days and therefore wasn't "acute" — [Dr A] states "[Mr B] did not present acutely but rather with a 5 day history of pain. I have changed my practice in this regard and in future will also apply the guidelines in the non-acute presentation" [Dr A's letter of 29 February 2008]. I think that [Dr A's] review of his practice is good and shows a good standard of care (thinking ahead for future cases — I would suggest that he considers the possibility of "acute" things developing within "sub-acute" or "chronic" presentations. I would also suggest he considers the possibility of two conditions co-existing or even interacting such as reflux of acid and coronary artery spasm. Both for this particular type of case and for other cases Metacognition has been suggested and shown to be a system of helping doctors think about thinking and reduce errors (Ref. 7). I would recommend that [Dr A] and even all doctors in general read and act on this type of approach to their everyday work/clinical decision making.

Describe the care as documented and describe the standard of care that should apply in the circumstances.

Triage: Although Triage is listed as part of the "NZ standard" for Accident and Medical (A&M) Clinics (Ref. 2) I do not think that triage should necessarily always occur, and triage should not be seen as a routine part of care during the ordinary

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operation of such clinics. As this is a complex point to explain I have attached a separate paper on Triage to justify this point. I think individual patients can be harmed by the triage process and that overall care for all patients can be harmed. There is increasing research and publication of alternatives to triage that I mention in my attached paper. Because Triage is within the "Standard" (Ref.2) neither [the Clinic] nor its staff, including the staff who saw [Mr B] can be criticised for their standard of care by involving triage in his care. I do want to make it clear that I do not as an advisor to H&DC support routine triage. If triage is to occur the consequences of triage including inaccurate triage have to be managed. I would strongly suggest that it is better to manage patient flow without triage as evidence now supports alternatives to triage are better and that it is very difficult to mange the consequences of inaccurate triage.

What is important here is that [Mr B] should have been seen by a doctor in a timely manner and after a diagnosis or provisional diagnosis was made that appropriate referral to hospital should have occurred, with appropriate treatment having been started prior to sending [Mr B] to hospital.

Nurse [Ms D's] care. Given that triage did occur, the triage process itself was of a good standard and Nurse [Ms D] appropriately documented this. Nurse [Ms D] provided a good standard of care by deciding to take a nurse initiated ECG. However given that the ECG that I have seen (ECG S) was clearly taken by Nurse [Ms D] then I think it is clear in this case that having [Mr B] put back in the waiting room was inappropriate. Two possibilities exist:

- Nurse [Ms D] did not look at ECG S and instead looked at another ECG (the possible missing ECG or ECG M). **If this was what happened then by not looking at ECG S there was a breach in the standard of care that I would view with mild disapproval.** Whilst I am not a nurse I think this is a reasonable comment and I have discussed this situation anonymously with three practice nurses (Ref. 6) and they would agree with this assessment they all considered it important that all the ECGs were seen. It is hard to comment further on the standard of care in this situation as this other ECG is missing.

- Nurse [Ms D] did look at ECG S. **In this case there would be a breach in the standard of care that I would view with moderate to severe disapproval.** My reasoning is that the computerised ECG report printed out on this ECG included the words "Abnormal ECG". Other comments in this computerised report should also have alerted her to the fact that [Mr B] was having a serious heart problem. Computerised ECG reports are well known for over reading abnormalities or saying there are abnormalities when there are actually not such abnormalities. However I do not think either a nurse or doctor should ignore such computerised reports unless they are confident they can more reliably interpret the ECG than the computer. If Nurse [Ms D] did think she could more reliably interpret the ECG as being of no concern then clearly her approach to the follow up action required after taking an ECG needs to be reviewed.

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[At this stage Dr Searle has commented on the possibility of [Mr B] going into a cardiac arrhythmia while he was in the waiting room and stated that it was his view that [Ms D] should not have returned [Mr B] to the waiting room. Because Dr Searle is not considered to be [Ms D's] peer, Dr Searle's comments have been removed. However, general comment was obtained from independent nursing advisor Jane MacGeorge, who agreed with Dr Searle's view that [Mr B] should not have been returned to the waiting room.]

Nurse [Ms D] both documented her findings and gave a verbal hand-over to [Dr A]. This is a good standard of care.

I do not think Nurse [Ms D] can be criticised for not giving treatments such as oxygen and aspirin because I think that those treatments should be given in consultation with a doctor and she was never asked by [Dr A] to give any treatment.

[Dr A's] management as documented

[Dr A] took a history, examined [Mr B], reviewed his ECG, and documented his findings in a letter he sent with [Mr B] to hospital. This is good standard of care with respect to the decision to send him to hospital. However the interpretation of the ECG and the decision to send [Mr B] to hospital by a means other than ambulance transport is of concern.

With respect to the interpretation of the ECG by [Dr A] two possibilities exist:

1) [Dr A] did not look at ECG S and instead looked at another ECG (the missing ECG or ECG M). **In this case by not looking at ECG S there was a breach in the standard of care — [Dr A] should have looked at all the ECGs that were taken — I would view his not looking at all the ECGs with mild to moderate disapproval.** [Dr A] has stated in his letter dated 16/5/08 "I fully accept that at the time it was and remains my responsibility to review all ECGs performed on patients under my care". It is hard to comment further on the standard of care with respect to the interpretation of the ECG in this situation as this other ECG is missing. I do however note that [Dr A] did note that ST depression (a change that can occur with lack of blood flow to the heart) was present in V3 (one of the readings on the ECG).

2) [Dr A] did look at ECG S — the ECG I have seen. **In this case there would be a breach in the standard of care that I would view with moderate to severe disapproval**. My reasoning is that the computerised ECG report printed out on this ECG included the words "Abnormal ECG". Other comments in this computerised report should also have alerted him to the fact that [Mr B] was having a serious heart problem. Computerised ECG reports are well known for over reading abnormalities or saying there are abnormalities when there are actually not such abnormalities. However I do not think a doctor should ignore such computerised reports unless they are confident they can more reliably

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interpret the ECG than the computer. If [Dr A] did think he could more reliably interpret the ECG as being of no concern then clearly his ability to read/interpret ECG needs to be reviewed.

Given that [Dr A] did decide to send [Mr B] to hospital, with chest pain, possibly needing "cardiology work up" ([Dr A's] words in his letter) then standard practice is to use an ambulance. I have discussed elsewhere in this report that there is some debate about using an ambulance and the reasons why. I note [Dr A] states that "I asked [Mr B] if he wished for us to arrange for transportation to the hospital, however he requested that his partner would drive him there directly" [Mr B's hospital records]. As stated in my comment's on non-ambulance transport in this situation it is important that someone else drives the patient to hospital and that the patient themself does not drive. I think if the decision is made to not use an ambulance, in the transportation of patients to hospital with chest pain for a "cardiology work up" that this should be documented in writing**. It should also be documented that the patient was told not to drive themselves. I think the absence of this documentation was a breach in the standard of care and I would view this with mild to moderate disapproval**.

I note that "indigestion" was apparently the presenting complaint and it has been suggested that it was fortunate [Mr B] wasn't sent home with antacids or words to that effect. However I think it is clear that [Mr B] had chest pain as well as indigestion as his symptoms because:

- [Mr B] states in his letter [dated 29 November 2007] that he had very bad indigestion "and pain behind my sternum".
- Nurse [Ms D's] documentation states "upper abdo/chest pain"
- [Dr A's] letter states "worsening chest pain".

I think given [Mr B] had chest pain, and given that the ECG that [Dr A] looked at had at least some changes in lead V3 that some sort of pre-hospital treatment should have been given. The minimum pre-hospital treatment would have been aspirin — this could have been safely given even with non-ambulance transport. I note that there is some international debate about contra-indications to aspirin in the setting of giving it for acute chest pain — other than known allergy other contra-indications have been largely removed in most pre-hospital protocols (discussion of this is beyond the scope of this report but it may be worth [the Clinic] reviewing this point when they review any training they have put in place concerning the chest pain protocol). **I would view [Dr A's] decision to not give aspirin to [Mr B] in this setting with mild to moderate disapproval.**

Clearly if a decision to call an ambulance had been made then other treatments such as oxygen should have been used. Treatments beyond aspirin and oxygen have some risks and benefits and giving those whilst awaiting the ambulance would depend on

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the doctor's judgement and prior experience and possibly on the capacity of [the Clinic] to deal with complications of such treatments whilst potentially having to treat other patients who might arrive at [the Clinic] whilst awaiting the arrival of the ambulance. Thus I don't think the absence of pre-hospital treatments such as GTN and morphine is always a sub-standard level of care. Of note the giving of GTN to [Mr B] pre-hospital might have dropped his blood pressure dramatically because this happened in hospital — this may have been more difficult to deal with in a pre-hospital setting and it may be fortunate that he was not given this treatment pre-hospital — however the outcome of care is not the issue here but rather the standard of care — I certainly think most doctors would be capable of dealing with a lowered blood pressure from GTN and I am not suggesting that GTN should not be given pre-hospital but rather that this case is a reminder about giving it cautiously.

It has also been suggested that [Mr B] had a good outcome in part because he was sent to hospital and not sent home. Of note the outcome of care is not relevant in assessing the standard of care (Ref. 1) — for example he might not have actually had a heart problem but my decisions based on the information available at the time of his being seen prior to going to hospital (the history, examination findings, and the ECG recording(s)) — would still apply.

Answering Questions put to me by the Commissioner's office

1) Please comment generally on the standard of care provided by [Dr A], [Ms D], and [the Clinic]. 2) What standards apply in this case? 3) Were those standards complied with? I believe I have already done this earlier in my report and I also comment a little more on *this in my conclusions and recommendations.*

4) The adequacy of [Dr A's] assessment. I believe I have already done this earlier in my report and I also comment a little more on this in my conclusions and recommendations. *Please include comment on whether you consider he should have carried out any additional investigations*. I do not believe he should have carried out any additional investigations — in fact further investigations prior to sending [Mr B] to hospital were relatively contra-indicated as they might delay sending [Mr B] to hospital. If an ambulance had been called and an intra-venous cannula inserted then taking blood test tubes to send to hospital with [Mr B] would be a good standard of care as it may have sped up his care in the hospital — but of note these are not investigations that [Dr A] would wait for the results of prior to sending [Mr B] to hospital.

5) *[Dr A's] interpretation of the ECG.* I have already commented on this elsewhere in my report — the issue having been complicated by the possibility of a missing ECG recording. However even allowing for these issues I think we can say that there was at least a breach in the standard of care by not looking at all ECG recordings. **I would view the not looking at all ECG recordings as a breech in the standard of care that I would view with mild disapproval.** I note that [Dr A] has now accepted that his was responsibility to look at all ECG recordings (supporting information page 98).

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If [Dr A] in fact saw the ECG recording that I have seen then I would view his interpretation and/or his management plan based on that ECG as substandard and I would view this with moderate to severe disapproval.

6) *Do you consider [Dr A] took appropriate action following his assessment?* I have commented on this else where in this report.

7) *Please include comment on his explanation as to why he did not implement the "[the Clinic] health Acute Chest Pain Protocol". I think [Dr A] has already answered this and accepted that in future he would use the protocol in similar cases. I have commented on this elsewhere — in particular I would draw attention to my comments on metacognition earlier in this report (under the section having appropriate systems in place to reduce errors).*

8) *Do you consider [Dr A] should have responded with more urgency given his assessment findings?* I have already commented on this elsewhere.

Please include comment on whether it was appropriate for [Mr B] to be transported the ED by private car. Sending [Mr B] directly to hospital by private transport interestingly probably got [Mr B] treatment more "urgently" due to the potential delays of ambulance transport but private transport had some risks which I have commented on elsewhere.

9) *The adequacy of [Dr A's] documentation.* The documentation was sufficient given [Mr B] was sent to hospital.

10) *The adequacy of the policies and procedures in place at [the Clinic]*

I have not reviewed all the policies and procedures in place at [the Clinic] and therefore my comments are restricted to the policies and procedures that I do make comment on — my absence of comment can not be seen as an endorsement. I have made comment about the apparent policy of triaging patients even when a doctor might be immediately available to see a patient but I note there is potentially a problem with the NZ standard and so I do not think [the Clinic] can be criticised on this point.

11) *Any other comment you wish to make.*

I have made extensive comments in this report and in the attached information on triage. It is hard to focus on any one particular aspect of these comments. I would though note that chest pain and/or indigestion are common problems but having ECG changes with such problems is less common and it was the ECG changes that are a key feature. Whilst I agree with [Dr A] that you should treat the patient and not the ECG some ECG changes do demand more careful management until a more certain diagnosis is made. A more certain diagnosis almost always requires hospital management and there are complicated issues surrounding ambulance transport that I have discussed. I think [Dr A] has reviewed this case on several occasions and shows

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a willingness to change his practice which is good because doctors who are unwilling to change their practice when there has been a problem are of concern.

Conclusion:

Checking all ECG tracings. There is a responsibility also for the doctor to check that all ECGs have been seen and reviewed — [Dr A] accepts that it was his responsibility to look at all copies of the ECGs [letter dated 16 May 2008]. If he did not look at all the ECGs this was a breach in the standard of care that colleagues would view with mild disapproval. If there was not a second ECG then there was a more serious breach in the standard of care in that he did not adequately interpret the ECG that sent with [Mr B] to hospital (this colleagues would consider with moderate to severe disapproval).

Review of Care by Health Professionals. [Dr A] has made comments about how after reviewing his management he would now act differently. This review of his practice is a good thing and I would encourage him to consider the points I raise in my report as part of a further review. Nurse [Ms D] has not had an opportunity to further review this case because as yet I do not think she has been shown the ECG that was sent with [Mr B] to hospital — she should be able to review that along with a copy of my report.

The Complaints Review Process. [Dr C] has reviewed aspects of this case. I am concerned that the review process did not earlier pick up on the problems with there potentially being two ECGs. I am further concerned that a critical piece of information (an ECG) in this case was lost after the complaint had been made. I think that the complaints review process should be reviewed and that more care is taken with the storage of information — original copies should be left in notes and if original copies are removed copies of those should be temporarily put in the notes and labelled to identify that this has been done. If [Dr C] did see the ECG I have seen at the time of his original comments then I would be concerned about these earlier comments. I do note that he has subsequently made comments on the ECG I have seen and I recognise that these show a good standard of care with respect to undertaking a further review of the case. I think that the technical medical aspects of cases that concern a complaint could possibly benefit from having a second doctor reviewing the case rather than just one doctor. I have not seen the exact complaints review process that [the Clinic] uses and comments on this is beyond the scope of this report but it may be that they would choose to review their process.

Triage and for Accident and Medical (A&M) Clinics. Although triage is listed as part of the "NZ standard" for A&M Clinics (Ref. 2) I do not think that triage should necessarily always occur, and triage should not been seen as a routine part of care during the ordinary operation of such clinics (in my opinion it can worsen care). As this is a complex point to explain I have attached a separate paper on triage to justify this point. I note that some of the evidence I cite in my paper involves information that was not available at the time of the current (2004) version of the "NZ standard". I

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would encourage the group of people reviewing the standard to examine the growing body of evidence concerning alternatives to triage. Whilst "current best practice" is defined in the glossary of the "NZ standard" what is not mentioned is the method used to obtain evidence that triage is current best practice. Until relatively recently general practice after hours care did not routinely use triage, and some clinics still do not formally triage patients, and the default usual practice was not to triage. Default usual practice in my opinion should not be changed without good robust evidence. The reasons why A&M clinics have adopted triage as "current best practice" is not clear to me other than possibly the copying of usual practice in emergency departments. Emergency departments themselves probably don't have robust evidence for triage in situations where they are not overloaded, but triage has sort of evolved into usual care. My own paper on triage is limited to my own opinions and my own personal effort to obtain a collection of evidence and research. Clearly more systematic ways of obtaining evidence are needed that take into account both research studies and practical implementation in the real world (Ref. 3). Such a systematic review is beyond the scope of this report but I think it is important that readers of this report realise that triage should not be accepted as always being a good thing to do.

Recommendations

Triage should not always be used as a way to ensure patient's are seen in a timely manner — there may be other better options as discussed previously in this report. My main comment in this case is that even if a clinic decides to keep using triage, staff should be thinking of patient flow and time delays, and patient risks — in other words once triage starts it doesn't have to end with the patient being put back in the waiting room — instead a doctor can be called to assess the patient jointly with a nurse or at the very least to see the patient before they are put back in the waiting room. In much the same way if a doctor starts seeing a patient and recognises the need for an ECG the nurse can be called and the observations and ECG can be taken whilst the doctor is still with the patient, or the doctor can be immediately called back to the patient after these things are done without putting the patient back in a waiting room. If [the Clinic] is not too busy alternative options such as team triage or the nurse and doctor seeing the patient together rather than separately could be considered.

Recommendations re Labelling/viewing and storage of ECGs.

When more than one ECG tracing is taken special care must be taken with methods for labelling ECGs, and for ensuring all ECG tracings are viewed by the doctor seeing the patient. Ensuring copies of all ECG tracings are kept by [the Clinic] can be important for quality control and in the event of a complaint occurring. Where the ECG machine is capable of a continuous paper print out care needs to be taken with the following;

- If more than one ECG is taken, and the ECGs are only standard ECGs and not special tracings (such as prolonged rhythm strips) then ECGs with the perforations should be torn either before they are removed from the ECG machine, or

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immediately after, to avoid the folding up of two ECGs disguising the presence of more than one ECG. This recommendation may partly depend on how ECGs are stored or displayed and/or labelled in each clinic.

It may be better, more reliable practice, to label ECGs as "1 of 1" or "1 of 2", "2 of 2" or "1 of 3" etc. regardless of the type of ECG machine used, in addition to the standard date/time and patient identification labelling.

The complaints review process — as per my comments in my conclusion this process needs review — it concerns me that [Dr C] has either

a) not taken due care with the integrity of the information (a critical piece of information is now apparently missing — the ECG tracing that he initially looked at), or

b) he did see the ECG that I have seen, and perhaps not looked at it carefully, and made initially reassuring but potentially misleading comments in his initial responses to the case.

I accept that he has now recognised the above problems and addressed them appropriately with respect to this case. The complaints review process needs to be more robust to prevent similar problems happening with any future complaints — such processes may also be able to be applied to significant events that don't necessarily generate complaints.

There should be a protocol for patients with chest pain, who need hospital treatment, and who refuse ambulance transport.

At a practical level if the patient becomes aware that an ambulance is being called and either refuses to have one and/or refuses to pay for one it can be very problematic for the patient and the doctor and/or nurse involved. If the patient is capable they may even walk out before the ambulance arrives. I think in such situations then the obligation is for the nurse and/or doctor to discuss briefly and rapidly with the patient that there is a small risk that their heart might stop and hence a small risk they might die. If they decline ambulance transport they should be told they are not legally allowed to drive until cleared by a doctor and that they should be driven by another person to hospital and not drive themselves. By the time all this is explained they may accept an ambulance but they may not. Limited treatment before going to hospital could be given such as aspirin but possibly it is best to avoid other treatments for patients going to hospital by means other than ambulance, I have not had time to fully develop my thoughts on this sort of protocol but I suggest that clinics have such a protocol as this is much more likely to be problematic for staff than simply having a protocol to call an ambulance. If a patient declines an ambulance this should be documented in the notes.

Ambulance funding and charging is problematic for both patients and doctors and nurses, and probably also for ambulance officers. **The government and/or DHBs should review the funding and charging issues that I have raised concerning the**

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ambulance service. If they do not then I do not think it is fair to ask the ambulance service to review their charges but it would be useful to obtain the ambulance services views on this. I note a major review of ambulance services has occurred at the time I am finishing this report and I am not sure if the issues I have raised on this aspect of the ambulance service and its funding are included in the review or not.

The surgery had an "Acute Ischaemic Chest Pain" protocol in place but this needs review. This is potentially a good system and rather than not having such a protocol, the problems with the protocol can be fixed. The protocol has several versions and there are a number of potential problems within the protocol that I discussed earlier in my report.

Finally complaints should be seen as a good thing that enables learning and improved care. I think that there may be a need for [the Clinic] to review its procedures and processes concerning complaints. Also [Dr A] has probably had a stressful time concerning having a complaint made but I am encouraged to see that he has thought about the case and already made comments about what he would do differently. This shows a good approach to the technical aspects of a complaint, but it may be that he needs to apply a similar line of thought to why complaints are made from a patient's point of view. I would like to thank [Mr B] for bringing this case to our attention.

References

1) Guidelines for Independent Advisors — Office of the Health and Disability Commissioner — Appendix H of the Enquiries and Complaints Manual — effective date: 9 November 05.

2) NZ Standard Accident and Medical Clinic Standard; NZS 8151: 2004 (from Standards NZ)

3) Knowing What Works in Health Care: A Roadmap for the Nation; Jill Eden, Ben Wheatley, Barbara McNeil, and Harold Sox, Editors, Committee on Reviewing Evidence to Identify Highly Effective Clinical Services; ISBN: 0-309-11357-1, 280 pages,6x9,(2008)

4) Early recognition and early access for acute coronary syndromes in New Zealand: key links in the chain of survival; Helen Tanner, Peter Larsen, Nigel Lever, Duncan Galletly; Journal of the New Zealand Medical Association, 21-April-2006, Vol 119 No 1232

…

7) Cognitive Forcing Strategies in Clinical Decision making, Pat Croskerry, Annals of Emergency Medicine 41:1, Jan 2003, p110-120

[Dr Searle has also commented on areas that were outside his brief. Although important issues, in the interests of brevity, I have omitted Dr Searle's comments

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about matters not directly relevant to this investigation, for example, the funding of ambulance services.]

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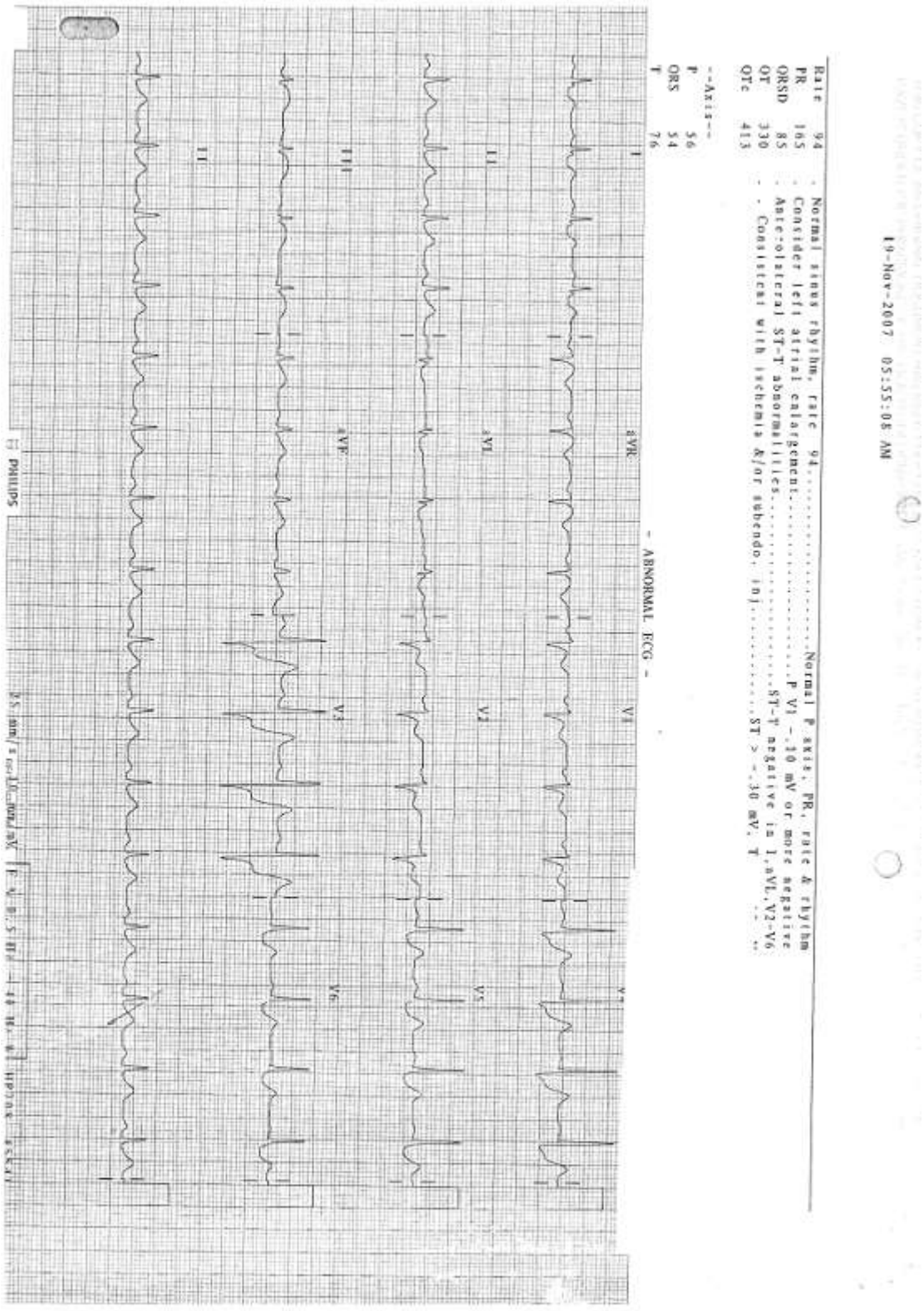
Appendix B



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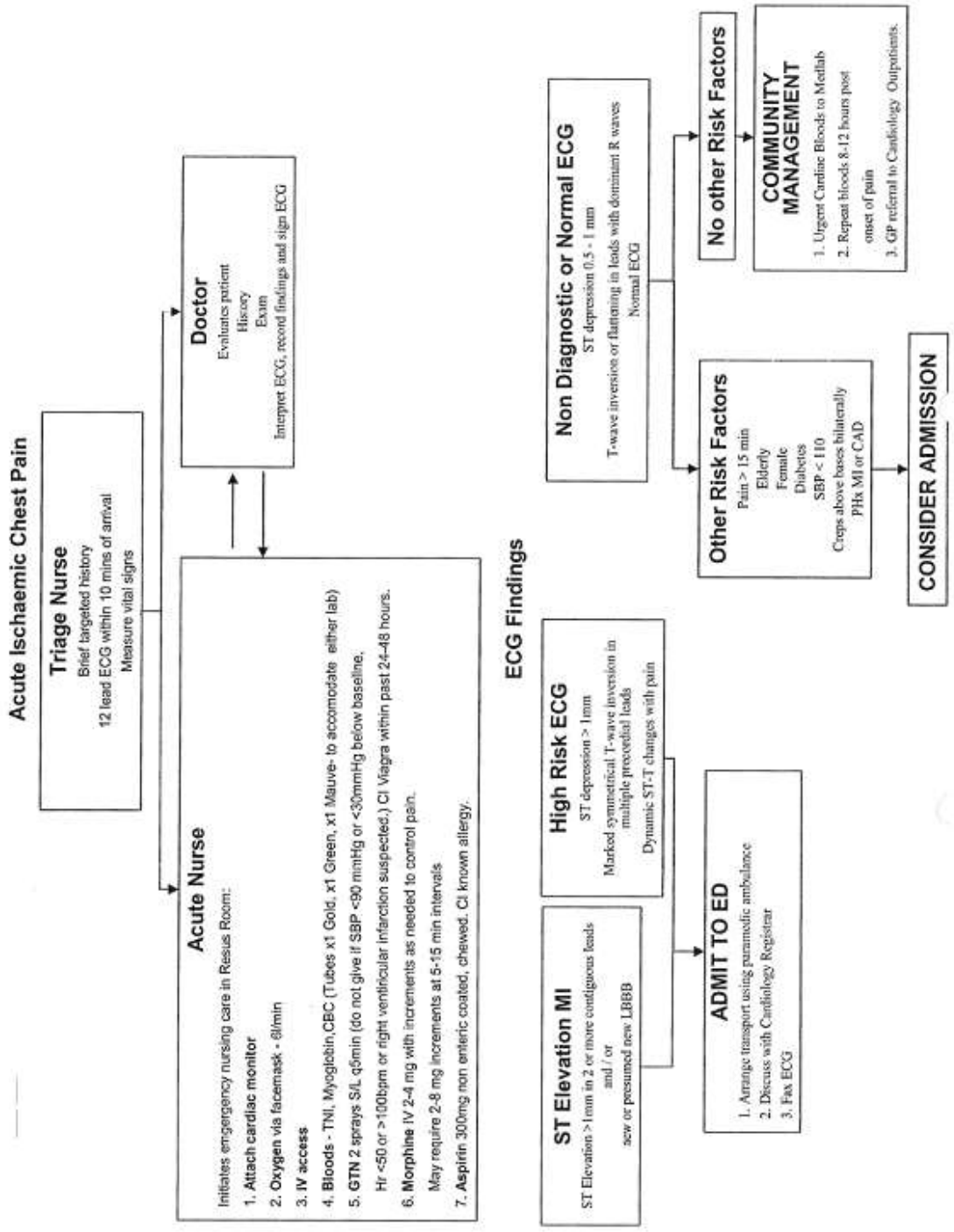
Appendix C



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