

IN THE CORONERS COURT  
OF VICTORIA  
AT MELBOURNE

Court Reference: COR 2007 4671

**FINDING INTO DEATH WITH INQUEST**

*Form 37 Rule 60(1)*

*Section 67 of the Coroners Act 2008*

**Inquest into the Death of: LENIN McLARTY**

Delivered On: 5 June 2013

Delivered At: Level 11, 222 Exhibition Street  
Melbourne 3000

Hearing Dates: 16, 17 and 18 November 2010 and  
1 July 2011

Findings of: JANE HENDTLASS, CORONER

Representation: Dr S. Keeling appeared on behalf of Northern Hospital  
Dr D. McWilliams appeared on behalf of Dr J. Schoeman  
Ms S. Reid appeared on behalf of Dr D. Chauhan and Dr  
G. Duggal

Police Coronial Support Unit Senior Constable Kelly Ramsay, assisting the Coroner

I, JANE HENDTLASS, Coroner having investigated the death of LENIN McLARTY

AND having held an inquest in relation to this death on 16, 17, 18 November 2010 and 1 July 2011  
at MELBOURNE

find that the identity of the deceased was LENIN McLARTY

born on 31 August 1939

and the death occurred on 18 November 2007

at Northern Hospital, 185 Cooper Street, Epping 3076

**from:**

- 1 (a) RETROPERITONEAL BLEED WITH DILATED CARDIOMYOPATHY
- 1 (b) PREVIOUS AORTIC VALVE REPLACEMENT AORTIC GRAFT (ON WARFARIN)

**in the following circumstances:**

1. Lenin McLarty was 68 years old when he died. He lived with his wife, Valerie McLarty, at 9 Canberra Grove in Lalor.
2. Mr McLarty's medical history included osteoarthritis, hypertension, rheumatic aortic valvular disease requiring aortic valve replacement, and repaired abdominal aortic aneurysm. Since 1984, his general practitioners had been Dr Dilip Chauhan and Dr Gobind Duggal at the Plaza Clinic in Lalor.
3. Following Mr McLarty's cardiac surgery, Dr Chauhan was told that there was no evidence of underlying ischaemic heart disease. Further, on 18 August 2007, his liver function tests were normal.<sup>1</sup>
4. Dr Chauhan prescribed atenolol (Tenormin), a beta blocker used to control cardiac arrhythmia, warfarin to prevent clotting around the aortic valve and piroxicam and aspirin for pain. He also ordered routine anticoagulant testing which was performed by Austin Health.
5. However, although he prescribed the medication and ordered the routine blood testing, Dr Chauhan explained to the Court that he did not routinely receive the results of Mr McLarty's

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<sup>1</sup> Dr Chauhan also prescribed lumoxicrib from 8 March to 21 August 2007 when it was withdrawn from the market because of adverse drug reactions. However, routine liver function tests indicated that Mr McLarty did not experience any of these side effects from this medication.

blood tests or advice on changes to his warfarin dose. Austin Health managed Mr McClarty's anticoagulation regime almost independently of Dr Chauhan and Dr Duggal.<sup>2</sup>

6. Austin Health records indicate that Mr McClarty's prothrombin and INR<sup>3</sup> indicators of over-anticoagulation had been increasing consistently for at least four months. In the period between 1 August 2007 and 15 November 2007, the prothrombin time had increased from 32 to 49 seconds and the INR had increased from 2.6 to 3.5.
7. In the week prior to his death, Mr McClarty and his family stayed at their holiday property in Yarrawonga. Mr McClarty was eating irregularly and drinking alcohol during the week.<sup>4</sup> He and other family members were also working under the family holiday house in Yarrawonga.
8. On or about 6 November 2007, Mr McClarty felt unwell and had terrible back pain.
9. On 12 November 2007, Mr McClarty went to work but was sent home because he was not feeling well. He then consulted Dr Duggal.
10. Dr Duggal assessed Mr McClarty for explanations of his abdominal discomfort over the last few days. He noted that the discomfort had been relieved by a bowel motion. He did not detect any continuing abdominal pain or abnormality. He did not notice any indication of bleeding or bruising.
11. Accordingly, Dr Duggal formed the view that Mr McClarty was experiencing a gastrointestinal reaction to piroxicam. Therefore, he ceased his piroxicam prescription.
12. After seeing Dr Duggal, Mr McClarty developed bruising on his stomach and he was unable to sleep because of his continuing back pain. This pain was worse when he lay down and relieved when he sat up.
13. At 8.25am on 14 November 2007, Mr McClarty went to the Austin Hospital for his routine blood tests. These tests indicated that his INR was 3.3 and his prothrombin time was nearly three times the acceptable range for a patient on warfarin for a prosthetic heart valve.

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<sup>2</sup> Dr Chauhan's records do not include any Austin Health blood tests results for 2007.

<sup>3</sup> INR is the international normalised ratio used as an indicator of the effectiveness of oral anti-coagulation medication like warfarin.

<sup>4</sup> The Northern Hospital, Warfarin Toxicity, reviewed March 2009. includes excessive alcohol intake as a risk factor for bleeding complications on anticoagulation therapy.

14. On 14 November 2007, Mr McLarty also consulted Dr Duggal again. Now, he complained of a different pain in the left lower chest. He could not sleep well but his chest was clear. Clinically, Dr Duggal excluded any cardiac explanation of Mr McLarty's chest pain. He thought he had muscular pain and prescribed tramadol (Tramal) and propoxyphene (Digesic). Dr Duggal also told Mr McLarty to go to the Northern Hospital if his symptoms got worse.
15. On 15 November 2007, Mr McLarty presented at the Emergency Department at Northern Hospital with a six day history of constant, gradually increasing lower abdominal pain through to the back.
16. Mr McLarty was diagnosed with large haematoma around the left kidney and a large distal right common iliac artery aneurysm. However, there was no indication of active blood loss or rupture of the aneurysm.
17. Once this diagnosis had been made, Mr McLarty's condition was managed by implementing procedures intended to reduce the effect of his anti-coagulation medication. His cardiac condition was also monitored but it remained stable.
18. The evidence before me indicates that Mr McLarty's perinephric haematoma did not increase significantly in size during his admission to Northern Hospital.
19. By 17 November 2007, Mr McLarty was stable, ambulant and self caring. He refused analgesia and was beginning to talk about his discharge. However, he still had pain in his right flank overnight.
20. At 4.10am, nursing staff recorded that Mr McLarty's observations were stable. He was oriented, he had a cup of tea, he was given a couple of Panadol, he was sitting in his chair and he had resettled by 4.30am.
21. At 6.50am on 18 November 2007, Mr McLarty was found unresponsive in his chair.
22. At 8.30am on 18 November 2007, resuscitation efforts ceased and Lenin McLarty died.
23. Blood taken during resuscitation indicated that his prothrombin remained 19 seconds, his INR was still 1.6 but his haemoglobin was 94g/L. These indicators suggest that Mr McLarty's coagulation rates were sufficient to prevent further acute bleeding around his kidney.

24. The forensic pathologist who performed the autopsy formed the opinion that the cause of death was retroperitoneal bleed with dilated cardiomyopathy<sup>5</sup> and previous aortic valve replacement and aortic graft. Toxicological analysis of samples taken on 19 November 2007 detected propoxyphene and paracetamol.
25. The forensic pathologist also commented that the previously undiagnosed dilated cardiomyopathy was probably related to his aortic valve replacement and aortic graft.
26. However, Mr McLarty had responded well to reversal of his over-anticoagulation and there is no evidence that Mr McLarty underwent a further bleed while in Northern Hospital.
27. Further, Mr Schoeman told the Court and I accept that, if Mr McLarty had not died when he did, the perinephric clot would have no short term effect on the functioning of his kidney. In the long-term, his body would probably have resolved this clot by itself.
28. For that reason, I accept Mr Schoeman's opinion expressed in Court:

*"In my opinion the cause of death would be the cardiomyopathy with its resulting complications and not the retro-peritoneal haematoma."*

29. Accordingly, I find that Lenin McLarty died from dilated cardiomyopathy and previous aortic valve replacement and aortic graft. Retroperitoneal bleed was a contributing factor.
30. This finding will now review the history of Mr McLarty's admission to Northern Hospital.
31. It will then comment on Mr McLarty's management which intended to improve management of other patients who present at hospital with symptoms consistent with over-anticoagulation.

#### **History of medical intervention at Northern Hospital**

32. At 5.47am on 15 November 2007, Mr McLarty presented at the Emergency Department at Northern Hospital with a six day history of constant, gradually increasing lower abdominal pain through to the back. This pain was assessed as thoracic back pain radiating around the left breast and 4/10 in intensity. It was worse when he was lying down. He also had a bruise around his umbilicus.

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<sup>5</sup> Cardiomyopathy is a weakening of the heart muscle with dilatation of the heart valves, probably in this case being present since his aortic valve replacement.

33. Mr McLarty's blood pressure was 140/80mmHg, his temperature was 38.6 degrees C, his heart rate was 85 beats per minute, his oxygen was 99% saturated. His liver function tests were normal.
34. Accordingly, Mr McLarty was triaged by an experienced nurse as Category 3 which requires 75% of patients to undergo medical assessment within 30 minutes.
35. At 6.55am, nursing staff inserted an intravenous access line and took blood samples from Mr McLarty for analysis.
36. At 7.30am, Dr Sen Sivablan assessed Mr McLarty. Dr Sivablan found that the pain was in the lower thorax radiating anteriorly on the left side although it had initially been in the abdomen and associated with some diarrhoea. Dr Sivablan attributed Mr McLarty's pain to a number of differential diagnoses: diverticulitis, graft leak or abdominal aorta aneurysm.
37. Accordingly, Dr Sivablan referred Mr McLarty for a CT abdominal angiogram.<sup>6</sup>
38. At 7.52am, Mr McLarty was sitting on the bed for positional pain relief. At 8.06am, he was given paracetamol and codeine combination (Panadiene Forte) for pain. At 8.14am, Dr Sivablan handed Mr McLarty over to Dr David Neale.<sup>7</sup>
39. At 11.38am on 15 November 2007, the CT abdominal angiogram was performed.
40. At 11.53am, Dr Neale first reviewed Mr McLarty's biochemistry results. These confirmed that his haemoglobin concentration was 79g/L, his INR was 3.3 and his prothrombin time was 49 seconds. Although the INR was within the range recommended for maintaining adequate function of his prosthetic heart valve, from the perspective of preventing further bleeding, an INR of 3.3 indicated that Mr McLarty was over-anticoagulated and therefore more likely to bleed.
41. Dr Neale did not review Mr McLarty at this time. However, at 12.15pm, he requested three units of fresh frozen plasma<sup>8</sup> and two units of cross matched blood. He also ordered administration of Prothrombinex<sup>9</sup> but there was no dosage written on the order form.

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<sup>6</sup> The Northern Hospital, Abdominal CT Scanning (Non Trauma). 20 May 2005.

<sup>7</sup> Dr Neale was not called to give evidence. He confirmed he wrote an entry in the medical record at 3.30pm on 15 November 2007. However, he has no independent memory of Mr McLarty or providing medical care to him.

42. At about 2.15pm, the CT abdominal angiogram was formally reported as showing bilateral polycystic kidneys, a large (10 x 11 x 13cm) left perinephric haematoma displacing the left kidney anteriorly and an incidental large (5cm) distal right common iliac artery aneurysm. However, there was no active blood loss out of a blood vessel or any other findings suggestive of aortic or right common iliac aneurysm rupture/leak.
43. Dr Chris O'Donnell is a forensic pathologist. He has also reviewed Mr McLarty's CT abdominal angiogram from 15 November 2007.
44. Dr O'Donnell confirmed that it indicated a very large acute haematoma in the left perinephric space causing the left kidney to be displaced and distorted anteriorly. The haematoma appeared to arise from the left renal parenchyma posteriorly. Dr O'Donnell also confirmed that the CT abdominal angiogram also showed a 6cm aneurism in the right common iliac artery without signs of rupture.
45. At 2.41pm, Dr Neale also referred Mr McLarty to the urology registrar. Therefore, I presume that Dr Neale was told the results of the CT abdominal angiogram at about 2.41pm.
46. At the same time, the nursing attendant went to pathology to collect the fresh frozen plasma and Prothrombinex. It was not yet available and they were asked to return in 15 minutes.
47. At 3.20pm, 5.25pm and 6.15pm on 14 November, three units of fresh frozen plasma were administered.
48. At 4.24pm, Mr McLarty was accepted for admission under the Urology Consultant, Mr Joseph Schoeman.
49. At 4.56pm, 500 IU of Prothrombinex were dispensed. This was administered at 5.25pm. I am unable to say how this dose was determined.
50. At 8.00pm, Mr McLarty was transferred to the ward.
51. Mr Schoeman reviewed Mr McLarty with the urology registrar, Dr Yong. Mr McLarty was seated in his chair. His observations were completely stable.

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<sup>8</sup> Fresh frozen plasma is concentrated clotting factors extracted from blood.

<sup>9</sup> Prothrombinex contains concentrated synthetic clotting factors.

52. Mr Schoeman recommended continuing efforts to reduce his INR level. He also sought to raise Mr McLarty's haemoglobin level to 100g/L. He told the Court this was the recommended level for any cardiac patient.
53. At 8.30pm and 10.30pm, after discussion with Mr Schoeman, Mr McLarty was administered two units of packed red blood cells and his warfarin was withdrawn.
54. Dr Yong also referred Mr McLarty to the cardiology registrar for immediate specialist review of the likely effect of withdrawing his warfarin and review by the cardiology consultant next day.
55. At 11.15pm, Mr McLarty had his first dose of oxycontin for pain.
56. By 5.20am on 16 November 2007, Mr McLarty's haemoglobin level had increased slightly to 81g/L and his clotting indices had improved. His prothrombin time had declined from 49 to 31 seconds and his INR had declined from 3.5 to 2.4.
57. At 9.32am, the Blood Bank dispensed a further dose of 500IU of Prothrombinex.
58. At 11.45am and 1.00pm, two more units of fresh frozen plasma were administered.
59. At 3.00pm, Mr McLarty's clotting indices had further improved: his prothrombin time was now 19 seconds and his INR was 1.6.
60. At 10.40am and 12.00pm, Mr McLarty was administered two further units of fresh frozen plasma.
61. At 2.00pm, the urology registrar, Dr Yong ordered 2,000 IU Prothrombinex and a unit of packed red cells. At 4.40pm, Mr McLarty was administered this third unit of packed red blood cells
62. Mr McLarty's daughter visited Mr McLarty during the afternoon on 16 November 2007. She told the Court that her father:

*"Looked good, he had energy and had colour back in his face.... (he) had gone from being a horrible grey colour to a nice pink colour."*



63. By 8.50pm, Mr McLarty confirmed he was much more comfortable than when he was admitted to hospital. He commenced eating and tolerated his food. His pain continued but it was well controlled by analgesia.
64. At 6.30am on 17 November 2007, Mr McLarty's haemoglobin level remained 82g/L and his clotting indices remained stable: his prothrombin time was 22 seconds and his INR was 1.8.
65. Mr Schoeman said:
- "(The haemoglobin level) didn't go as high as what I wanted but he did have other volume expanders as well. So if you expand the - the vascular volume with other things other than red cells it could give you a false drop or not the increase that you would expect."*
66. At 1.20pm on 17 November 2007, Mr McLarty remained stable, ambulant and self caring. He refused analgesia and was beginning to talk about his discharge early next week.
67. Mr McLarty's daughter says that when she last saw Mr McLarty on the Saturday evening, which was the night before he died, he was chatting, he was talking about going home and he was able to lie back a bit more and feeling a little more comfortable.
68. Mr McLarty expected to be discharged on 19 November 2007 and go back to work the following day.
69. Similarly, Mr McLarty remained alert and orientated overnight, sitting on the edge of his bed and engaging in conversation. However, he still had pain in his right flank. He requested 5mg oxycodone at midnight and settled well.
70. At 4.10am on 18 November 2007, Mr McLarty's observations were still stable. He was oriented, he had a cup of tea, he admitted to continuing right flank pain and was given a couple of paracetamol, he was sitting in his chair and he had resettled by 4.30am.
71. At 6.50am, the night nurse on duty found Mr McLarty unresponsive in his chair.
72. At 8.30am on 18 November 2007, resuscitation efforts ceased and Lenin McLarty died.
73. Blood taken during resuscitation indicated that Mr McLarty's prothrombin time remained 19 seconds, his INR was still 1.6 and his haemoglobin was 94g/L. These indicators suggest that

there was no recent further bleeding to precipitate his acute decline after 4.30am on 18 November 2007.

74. Dr Paul Bedford was the forensic pathologist who performed the autopsy.
75. Dr Bedford found numerous simple cysts in both kidneys measuring up to 7 cm in diameter. In addition surrounding the left kidney, there was approximately 1900mls of fresh blood. There did not seem to be extension outside the confines of the perinephric space.
76. Dr Bedford also found a markedly enlarged heart. On cross section, the myocardium of the left ventricle was up to 10mm in thickness. The left ventricular cavity was markedly dilated at 7.0cm while the right ventricle was up to 6 mm in thickness with the cavity up to 6.5cm.
77. On the basis of these findings, Dr Bedford formed the opinion that the cause of death was retroperitoneal bleed with dilated cardiomyopathy and previous aortic valve replacement and aortic graft. Toxicological analysis of samples taken on 19 November 2007 detected propoxyphene and paracetamol.
78. In response to questions asked by Counsel for Dr Chiu, Dr Bedford indicated that the 1900ml volume of blood was estimated by direct placement of clotted and unclotted blood in a measuring cylinder. Therefore, his use of 'fresh blood' can be interpreted to mean clotted and unclotted blood. It is not necessarily evidence of a new bleed around Mr McLarty's kidney
79. Further, the forensic radiologist, Dr Chris O'Donnell, estimated that the volume of the perinephric haematoma on 15 November 2007 was about 1620ml using measurements from the CT abdominal angiogram.
80. Using the same radiograph, Mr Schoeman worked out with Dr Yong and the haematoma was about 1400ml.
81. Given the method of measuring the size of the haematoma, the 300ml difference in these estimates of its size on 15 November 2007 is not necessarily significant. Similarly, the difference between these estimates and that undertaken after Mr McLarty died is well within the expected errors of each measurement.

82. Therefore, I find that there is no evidence that Mr McLarty bled into the perinephric haematoma after 15 November 2007.

83. Further, Mr Schoeman told the Court and I accept that, if Mr McLarty had not died, the perinephric clot would have no significant short term effect on the functioning of his kidney. In the long-term, his body would probably have resolved this clot by itself and this process could have left some scar tissue. This scar tissue could have caused compression of the kidney in due course.

84. On 18 November 2007, Mr McLarty was completely stable and there was no reason to believe that his cardiac function was giving any problems.

85. However, Mr Schoeman told the Court:

*“In my opinion the cause of death would be the cardiomyopathy with its resulting complications and not the retro-peritoneal haematoma.”*

86. Accordingly, I find that Lenin McLarty died from dilated cardiomyopathy and previous aortic valve replacement and aortic graft. Retroperitoneal bleed was a contributing factor

### **Comments and Recommendations**

1. Lenin McLarty's medical history included osteoarthritis, hypertension, cardiomegaly, rheumatic aortic valvular disease requiring aortic valve replacement and repaired abdominal aortic aneurysm. Since 1984, his general practitioners had been Dr Dilip Chauhan and Dr Gobind Duggal at the Plaza Clinic in Lalor.
2. At autopsy, he was also diagnosed with severe and dilated cardiomyopathy. Cardiomyopathy is a weakening of the heart muscle with dilatation of the heart valves, probably in this case being present since his aortic valve replacement.
3. Patients with cardiomyopathy are always at risk of sudden death.
4. Mr McLarty was prescribed warfarin to ensure his prosthetic heart valve did not become compromised by coagulated blood. He underwent routine blood monitoring at the Austin Hospital to assess the effectiveness of his anticoagulation medication.

5. At the beginning of November 2007, Mr McLarty developed abdominal pain after performing hard manual work at the family weekend house in Yarrawonga and eating and drinking more than usual.
6. A bruise developed on Mr McLarty's stomach and he experienced pain which varied in severity over the following week. When he consulted Dr Duggal on 14 November 2007, his pain was sufficient to justify prescription of tramadol and referral to the Emergency Department at the Northern Hospital if he failed to recover.
7. On 15 November 2007, Mr McLarty presented at the Emergency Department at Northern Hospital with a six day history of constant, gradually increasing lower abdominal pain through to the back. This pain was worse when he was lying down. He also has a bruise around his umbilicus.
8. Bruising around the umbilicus can reflect over-anticoagulation but it can also be associated with several other differential diagnoses including retroperitoneal haematoma and/or a leaking aortic aneurysm.
9. Appropriate management of these conditions includes reversal of oral anticoagulation therapy using Prothrombinex, fresh frozen plasma and Vitamin K. None of these therapies will influence an existing haematoma. However, they reduce the likelihood of further bleeding.
10. The Emergency Department at Northern Hospital was particularly busy on the night of 14 and 15 November 2007.
11. On 14 November 2007 there had been 188 presentations to the Emergency Department which is above average for the Emergency Department. This included three Category 1 patients and a Category 2 mental health patient. These patients take up considerable resources and time.
12. Then, from midnight to 5.47am on 15 November 2007, there were 20 presentations, two were Category 2 and 10 were Category 3 as well as continuing care for the previous day's patients.
13. Further, on the evening shift on 14 November there were two emergency physicians and eight junior doctors so they were one doctor short.
14. On the night shift commencing 1.30am on 15 November 2007, there were 20 presentations, two were Category 2 and 10 were Category 3. However, by then, two emergency physicians,

three junior registrars and five other medical officers were working which is the full complement.

15. Northern Hospital protocols<sup>10</sup> indicate that a CT abdominal angiogram may detect a number of important conditions associated with abdominal pain including leaking or rupture of an abdominal aortic aneurysm and retroperitoneal haematomas.
16. Accordingly, Mr McLarty was referred for a CT abdominal angiogram. If it was considered clinically appropriate a CT scan could have been performed using an out of hours radiographer and radiology register. However, this was not considered necessary.
17. At about 2.15pm on 15 November 2007, the CT abdominal angiogram was formally reported as showing bilateral polycystic kidneys, a large (10 x 11 x 13cm) left perinephric haematoma displacing the left kidney anteriorly and an incidental large (5cm) distal right common iliac artery aneurysm. However, there was no active blood loss out of a blood vessel or any other findings suggestive of aortic or right common iliac aneurysm rupture/leak.
18. In evidence, Dr Duggal agreed that, in retrospect, the lower side and back discomfort Mr McLarty was experiencing on 14 November 2007 was consistent with bleeding around the kidneys. However, he did not consider this possibility at the time of Mr McLarty's presentation.
19. Further, the forensic pathologist, Dr Chris O'Donnell, expressed the opinion that the perinephric haematoma was likely to have been exacerbated by Mr McLarty's continuing use of warfarin.
20. Dr O'Donnell's opinion is consistent with changes in Mr McLarty's clotting factors in the period between 1 August 2007 and 15 November 2007: the prothrombin time had increased from 32 to 49 seconds and the INR had increased from 2.6 to 3.5.
21. At 11.53am on 15 November 2007, an emergency department registrar reviewed Mr McLarty's biochemistry results. These confirmed that his INR was 3.3 and his prothrombin time was 49 seconds. Although the INR was within the range recommended for maintaining adequate function of his prosthetic heart valve, from the perspective of preventing further

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<sup>10</sup> The Northern Hospital, Abdominal CT Scanning (Non Trauma). 20 May 2005.

bleeding, indicated that Mr McLarty was over-anticoagulated and therefore more likely to bleed.

22. Although the emergency department registrar still had no diagnosis or other direct evidence of bleeding and did not review Mr McLarty at this time, he was aware that Mr McLarty was taking warfarin. Therefore, he appropriately proactively directed himself to reducing the risk of bleeding by requesting three units of fresh frozen plasma<sup>11</sup> and two units of cross matched blood. He also ordered administration of Prothrombinex.<sup>12</sup>
23. The Northern Hospital protocol provided a guide to Prothrombinex administration (“warfarin toxicity protocol”).<sup>13</sup> Where there is no or minor bleeding and warfarin treatment is needed, the warfarin toxicity protocol indicates the following three factors should be considered:
  - Whether the patient requires warfarin for treatment of a hypercoagulable condition;
  - The actual INR level;
  - Clinical risk factors for bleeding.
24. Under this protocol, the dose required for Mr McLarty was 25 to 50IU/kg or 2275 to 4550IU.
25. However, the emergency department registrar failed to write the dose of Prothrombinex on the order form. It is possible that he was waiting for the results of Mr McLarty’s CT abdominal angiogram and was then overlooked.
26. At 3.20pm, 5.25pm and 6.15pm on 14 November, three units of fresh frozen plasma were administered to Mr McLarty.
27. At 4.56pm, 500 IU of Prothrombinex were dispensed. This was administered at 5.25pm. I am unable to say how this dose was determined.
28. The decision about how to manage over-anticoagulation in a patient with a prosthetic heart valve is complicated and a matter of balance. On one hand the INR needs to be maintained at

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<sup>11</sup> Fresh frozen plasma is concentrated clotting factors extracted from blood.

<sup>12</sup> Prothrombinex is concentrated synthetic clotting factors.

<sup>13</sup> The Northern Hospital, Warfarin Toxicity, reviewed March 2009.

between 2 and 3. On the other hand, reducing his INR to prevent clots can increase the risk of further bleeding, in this case around his kidney.

29. Mr Schoeman told the Court:

*“If a patient presents with an INR above 8 or 9 the standard would be to reverse it urgently with either Vitamin K, the fresh frozen plasma, that would be the routine but because the INR was less than 8 a more conservative approach was used and the fact that he did have cardiac problems and an aortic valve that was replaced, reversing this with an urgent immediate reversal would probably have led to clotting with possible strokes, et cetera, you would die of complications.”*

30. Dr Chiu also told the Court that best practice would be to commence Vitamin K at the same time as the Prothrombinex because it takes 12 to 24 hours to work. He was unable to explain why this did not occur on 14 November 2007.

31. However, there is no evidence that Mr McLarty’s perinephric haematoma became significantly bigger after his CT abdominal angiogram on 15 November 2007. Therefore, I find that the failure to administer the recommended doses of Prothrombinex or Vitamin K did not contribute to Mr McLarty’s death.

32. Further, if Mr McLarty had not died, the perinephric clot of the type that this was would that have no short term effect on the functioning of the kidney. The body would have probably resolved this clot by itself and, at worst, scar tissue could have caused some compression of the kidney.

33. At my request, Northern Health undertook an audit of all 182 patients prescribed Prothrombinex between 1 January 2007 and 5 February 2011. This review found that 90% of patients received the recommended dose of Prothrombinex.

34. Further, prior to my request, Northern Health had identified that there were several protocols in use for prescribing ordering and dispensing Prothrombinex.

35. Therefore, on 17 November 2010, the Northern Hospital introduced a new protocol which addresses the issue of Prothrombinex doses.<sup>14</sup> This new protocol continues the advice to administer a dose of 25-50IU Prothrombinex /kg for bleeding patients.
36. Although this new protocol is mandatory for management of patients who require planned reversal of anticoagulation, it does not address the needs of over-anticoagulated patients who present without significant bleeding or likely surgery. However, in the absence of a direct relationship between reversal of Mr McLarty's over-anticoagulation and his death, I make no recommendations on this issue.
37. Further, in August 2011, Northern Health completed a series of tasks to implement these guidelines including education of medical nursing and blood bank scientist education regarding the new guidelines, developing a policy for ordering and dispensing Prothrombinex, and listing of Prothrombinex on the front of the Blood Products Record for its easy recognition as a blood product.
38. Northern Health has also committed to implementation of a six monthly audit for two years to determine compliance with the guideline.
39. On 17 and 18 November 2007, indicators of Mr McLarty's cardiac function were also stable and there was also nothing to indicate that his cardiac situation was deteriorating.
40. However, Mr Schoeman told the Court:
- "In my opinion the cause of death would be the cardiomyopathy with its resulting complications and not the retro-peritoneal haematoma."*
41. Accordingly, I have determined that the most likely cause of Mr McLarty's death was dilated cardiomyopathy and previous aortic valve replacement and aortic graft. Retroperitoneal bleed was a contributing factor.
42. In the context of Northern Health's proactive response to the issues raised by Lenin McLarty's death, I make no recommendations arising from this coronial investigation. However, I order that this finding be published on the internet.

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<sup>14</sup> Northern Health, Guidelines for Reversal of Oral Anticoagulation, Level 3 Policy and Procedure, 14 April 2010.



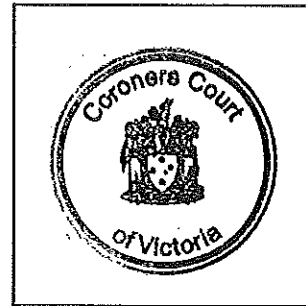
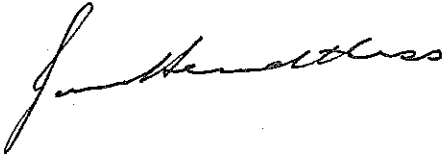
I direct that a copy of this finding be provided to the following:

Mrs Valerie McLarty

Senior Constable Phillip Wendt, St Kilda Road Police, Investigating Officer

Northern Hospital

Signature:



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DR JANE HENDTLASS

CORONER

Date: **5 June 2013**

