IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: 2008/4041

FINDING INTO DEATH WITH INQUEST[1]

(Amended pursuant to s76 of the *Coroners Act 2008* on 14 May 2014)

Form 37 Rule 60(1)
Section 67 of the *Coroners Act 2008*

Inquest into the Death of: DEAN LOVETT

Delivered On:	26 February 2014
Delivered At:	Coroners Court of Victoria Level 11, 222 Exhibition Street Melbourne VIC 3000
Hearing Dates:	30 July - 3 August 2012, 22 - 24 October 2012, 17 December 2012
Findings of:	AUDREY JAMIESON, CORONER
Appearances:	Ms Jacinta Forbes of Counsel - Maurice Blackburn Lawyers on behalf of the Lovett family Mr Sean Cash of Counsel - Avant Law on behalf of Dr Gunawardana Mr Neil Murdoch of Counsel – K&L Gates (formerly Middletons) on behalf of Southern Health
Counsel Assisting the Coroner	Ms Fiona Ellis of Counsel

[1] This finding does not purport to refer to all aspects of the evidence obtained in the course of the investigation. The material relied upon included statements and documents tendered in evidence together with the transcript of proceedings and submissions of legal counsel. The absence of reference to any particular aspect of the evidence, either obtained through a witness or tendered in evidence does not infer that it has not been considered.

I, AUDREY JAMIESON, Coroner having investigated the death of DEAN LOVETT

AND having held an Inquest in relation to this death on 30 July - 3 August 2012, 22 - 24 October 2012 and 17 December 2012

at the Coroners Court of Victoria at Melbourne

find that the identity of the deceased was DEAN LOVETT

born on 16 June 1987

and the death occurred on 8 September 2008

at Monash Medical Centre, 246 Clayton Road, Clayton, Victoria, 3168

from:

1 (a) DILATED CARDIOMYOPATHY

in the following circumstances:

BACKGROUND

1. Mr Dean Lovett[2] was born on 16 June 1987 and was 21 years old at the time of his death. He lived at 6 Ruby Place, Berwick with his parents, Wendy and Edward "Ted" Lovett and his sister, Amy. At the time of his death, Dean was in his final year of a TAFE Business Administration Course. Dean is described by his parents as a fit and healthy young man who was an attentive son and scholar.

SURROUNDING CIRCUMSTANCES

2. On or about 1 September 2008, Dean began feeling unwell. Later that week, he experienced a couple of episodes of vomiting. Dean's parents and sister had recently been unwell with a flu-like illness and his family considered that Dean was succumbing to the same or a similar illness.[3]

3. Dean had not improved by 6 September 2008 and his mother took him to the Casey Super Clinic, where he consulted with Dr Gunawardana at approximately 16:08 hours. The

[2] The Lovett family requested that Dean Lovett be referred to as Dean during the course of the Inquest. For consistency, I have, in most part, avoided formality and also referred to him only as Dean throughout the Finding.

[3] Statement of Edward Lovett, Inquest brief, p.527.

subjective history taken by Dr Gunawardana noted that Dean had been feeling hot and cold for approximately two days, had a dry cough and had been vomiting. Dr Gunawardana objectively noted palpitations and finger clubbing. Dean's vital observations included a temperature of 37.1 degrees Celsius, a blood pressure (BP) of 97/66mmHg and resting heart rate of 135bpm, a heart rate which was considered tachycardic, and with a heart rhythm that was considered regular.[4] He had a medical history that included ulcerative colitis treated with Methotrexate.[5]

4. Dr Gunawardana wrote a referral for Dean to have a chest x-ray (CXR), an Electrocardiograph (ECG)[6] and various blood tests performed. She prescribed antibiotics and requested that Dean attend his general practitioner for the test results. Dr Gunawardana advised Dean to attend an Emergency Department (ED) if his symptoms worsened.[7] Dr Gunawardana considered that Dean had a chest infection however, due to the presence of finger clubbing and palpitations, she had a suspicion of an underlying cardiac cause to his presentation.

5. On the morning of 7 September 2008, Dean informed his parents that he had experienced an episode of haemoptysis.[8] At approximately 10:48 hours, Dean and his parents presented at the Casey Hospital ED where he was triaged by Leonie Kennedy, Registered Nurse (RN), Division 1 as a Category 4, which had a prescribed waiting period to be reviewed by a doctor of approximately one hour.

6. As part of the triage process, RN Kennedy took a short history from Dean and recorded his vital observations in the medical records.[9] Mr and Mrs Lovett recalled that blood tests were performed at this time and that his height and weight were recorded.[10] At 12:30

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[4] Inquest brief, p202.

[5] Exhibit 6.

[6] Electrocardiograph (ECG) is a sonogram of the heart. It has become routinely used in the diagnosis, management and follow-up of patients with any suspected or known heart disease. It is one of the most widely used diagnostic tests in cardiology. It can provide a wealth of helpful information, including the size and shape of the heart (internal chamber size quantification), pumping capacity and the location and extent of any tissue damage. An ECG can also provide physicians other estimates of heart function such as a calculation of the cardiac output, ejection fraction and diastolic function (how well the heart relaxes after it contracts).

[7] Inquest brief, p154A.

[8] Bloodstained sputum.

[9] Inquest brief, p228.

[10] Inquest brief, p522.

hours RN Kennedy inserted an intravenous (IV) cannula and obtained blood samples.[11] At 13:50 hours RN Elliot recorded Dean's vital observations.

7. Shortly after 14:00 hours, Dean was taken to a cubicle in the ED and seen by RN Tammy Kidd and Emergency Registrar Dr Lauren Wimetal.[12]

8. Dean's condition worsened shortly after he was moved to a resuscitation cubicle where he was treated by a number of registered nurses including Susan Oates, Clint Hick and Rebecca Cameron, and a number of physicians including Dr Martin Seibert, Dr Jonathon Lee, Dr Alan Au, Dr Ian Summers and Dr Alistair Meyer.

9. Over the course of his treatment, Dean received antibiotics, vasoconstrictors, thrombolytics, an ECG, CXR, a cardiac fast ultrasound and resuscitation in the form of IV fluids. Due to the nature and urgency of Dean's condition, the order of the assessments, investigations and treatments was unclear and was the subject of oral evidence at Inquest.

10. Dean quickly became plethoric, suffered a cardiac arrest and was intubated. The sequence of these events was also the subject of oral evidence.

11. Throughout the course of his stay at Casey Hospital ED, Dean was considered to be possibly suffering from sepsis, pulmonary embolus (PE) or a cardiac condition. Due to his changing clinical condition, the list of differential diagnoses remained dynamic.

12. Dean was transferred to the Monash Medical Centre (MMC) at approximately 17:26 hours.[13] He suffered a further cardiac arrest during transfer and another upon arrival. Despite intensive attempts to resuscitate Dean from his parlous condition, including trans-oesophageal ultrasound and extracorporeal membrane oxygenation (ECMO), he died on 8 September 2008 at 19:30 hours.

INVESTIGATIONS

Identity of the deceased

13. The identity of Dean was without dispute and required no additional investigation.

[11] Inquest brief, p228.

[12] Inquest brief, p474.

[13] Inquest brief, p246.

Cause of Death

14. Dr Matthew Lynch, Senior Forensic Pathologist at the Victorian Institute of Forensic Medicine, conducted a post mortem examination on 11 September 2008. Dr Lynch ascribed the cause of Dean's death to 1a) Cardiomyopathy.[14]

Clinical Liaison Service

15. The Clinical Liaison Service (CLS)[15] reviewed the medical records on behalf of the Coroner and suggested that further statements be obtained from relevant healthcare personnel with a view to clarifying the circumstances surrounding and the management of Dean's presentations.

16. The CLS identified issues that required further clarification, including:

    a. The clinical rationale of the general practitioner in not referring Dean immediately for further investigation upon observing a resting heart rate of 135bpm; and

    b. The Casey Hospital ED triage assessment procedure.

17. Two independent expert opinions were subsequently obtained from the following medical experts:

    a. Associate Professor Morton Rawlin, General Practitioner, Sydney University, Macedon Medical Centre; and

    b. Dr Mark Dooris, Senior Staff Cardiologist, Director Cardiac Catheterisation Laboratory, Royal Brisbane and Women's Hospital.

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[14] Exhibit 29.

[15] The role of the CLS was to assist the Coroner's investigation into the nature and extent of deaths, which occurred during the provision of healthcare, and to identity potential system failures in healthcare related deaths. CLS personnel were comprised of practising Physicians and Clinical Research Nurses who drew on their medical, nursing and research experiences, skills and knowledge to independently evaluate clinical evidence for the investigation of reportable and reported healthcare deaths and to assist in identifying remediable factors that may assist in prevention and risk management in health services settings. The CLS was replaced with the Health and Medical Investigation Team (HMIT) in 2010. HMIT sits within the Coroners Prevention Unit, which was established in 2008 to strengthen the prevention role of the Coroner. The unit assists the Coroner in relation to the formulation of prevention recommendations, as well as assisting in monitoring and evaluating the effectiveness of the recommendations.

Letters of concern from the Lovett Family

18. Mr and Mrs Lovett sent numerous letters to the Coroners Court of Victoria requesting that an investigation be conducted into their son's death. The letters raised multiple concerns in relation to Dean's medical assessment and management. Copies of these letters were distributed to Interested Parties, however they did not ultimately form part of the Inquest brief.

19. The uncertainty surrounding Dean's medical cause of death, the lack of clarity surrounding his assessment, diagnosis and management by his general practitioner and whilst at Casey Hospital ED, together with the concerns raised by the Lovett family led to my determination that it was appropriate to conduct an Inquest into Dean's death.[16]

JURISDICTION

20. At the time of Dean's death, the *Coroners Act 1985* (Vic) (Old Act) applied. From 1 November 2009, the *Coroners Act (2008)* (Vic) (Coroners Act) has applied to the finalisation of investigations into deaths that occurred prior its introduction.[17]

21. The role of the coronial system in Victoria involves the independent investigation of deaths to determine the cause of death, to contribute to the reduction of the number of preventable deaths and for the promotion of public health and safety and the administration of justice.

22. Section 67 of the Coroners Act sets out the statutory role of the Coroner in that a Coroner must find, if possible, the identity of the deceased, the cause of death and, in some cases, the circumstances in which the death occurred.

23. A Coroner may comment on any matter connected with the death and may also report to the Attorney-General and may make recommendations to any Minister, public statutory authority or entity, on any matter connected with the death, including recommendations relating to public health and safety or the administration of justice.[18]

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[16] *Coroners Act*, section 52(1) states: A coroner may hold an Inquest into any death that the coroner is investigating.

[17] Ibid, section 119 and Schedule 1.

[18] Ibid, section 72(1) and (2).

INQUEST

24. Prior to the commencement of the Inquest, three Directions Hearings were held on 20 December 2011, 27 February 2012 and 27 June 2012.

25. An Inquest was held on 30 July - 3 August 2012, 22 - 24 October 2012 and 17 December 2012.

Viva Voce evidence at Inquest

26. *Viva voce* evidence was obtained from the following witnesses at the Inquest:

a. Mr Edward Lovett;
b. Dr Shirani Gunawardana, General Practitioner, Casey Super Clinic;
c. Ms Leonie Kennedy,[19] Registered Nurse, Casey Hospital;
d. Ms Samantha Elliott, Registered Nurse, Casey Hospital;
e. Ms Carrieann Wells, Registered Nurse, Casey Hospital;
f. Ms Susan Oates, Registered Nurse, Casey Hospital;
g. Mr Clint Hick, Registered Nurse, Casey Hospital;
h. Ms Tammy Kidd, Registered Nurse, Casey Hospital;
i. Ms Rebecca Cameron, Registered Nurse, Casey Hospital;
j. Dr Alistair Meyer, Director of Emergency Medicine Research, Casey Hospital;
k. Dr Jacqueline Nash, Intensive Care Registrar, Monash Medical Centre;
l. Dr Ian Summers, Deputy Director of Emergency Department, Casey Hospital;
m. Dr Lauren Wimetal, Emergency Registrar, Casey Hospital;
n. Dr Alan Au, Emergency Physician, Casey Hospital;
o. Dr Martin Siebert, Career Medical Officer, Casey Hospital;
p. Dr Jonathan Lee, Career Medical Officer, Casey Hospital;
q. Associate Professor Morton Rawlin, General Practitioner, Sydney University, Macedon Medical Centre;
r. Dr Matthew Lynch, Senior Forensic Pathologist, Victorian Institute of Forensic Medicine; and
s. Dr Thomas Chan, Director of Emergency Department, Casey Hospital.

[19] A successful application was made pursuant to section 57 of the *Coroners Act* for Leonie Kennedy to be granted a certificate pursuant to section 57(1)(b) of the Coroners Act, which enables the witness to give evidence without that evidence being used in any proceeding against her.

Concurrent evidence

27. The following expert witnesses were called to provide concurrent evidence[20] during the Inquest:

    a. Dr Mark Dooris – Director, Cardiac Catheterisation Laboratory, Royal Brisbane and Women's Hospital;
    b. Professor Anthony Dart, Cardiologist, Alfred Heart Centre;
    c. Dr Michael Yeoh, Director Quality & Audit, Emergency Department, Austin Health;
    d. Associate Professor John Raftos, Emergency Physician, St Vincent's Hospital, Sutherland Hospital, Sydney Hospital and University of New South Wales; and
    e. Dr John Fergus Kerr, Director, Emergency Medicine, Austin Health.

Submissions

28. At the conclusion of the Inquest, Counsels acting on behalf of Interested Parties and Counsel Assisting the Coroner provided final submissions, which I have considered for the purpose of this Finding.

Issues investigated at Inquest

29. A number of issues were examined in the course of the Inquest regarding the medical management of Dean on 6 and 7 September 2008, including but not limited to:

    a. The medical cause of death;
    b. Dean's attendance at Casey Super Clinic;
    c. The triage time at Casey Hospital ED;
    d. Possible differential diagnoses;
    e. Fluid administration;
    f. Dean's cardiac arrest and resuscitation; and
    g. Dean's possible survivability.

a. <u>Medical Cause of Death</u>

30. Dr Matthew Lynch, provided an opinion that Dean's cause of death was 1a) Cardiomyopathy.[21]

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[20] Concurrent evidence is when a number of expert witnesses are called to give evidence at the same time. In this case, five experts were all provided with the Inquest brief and a number of questions. They met prior to the Inquest to discuss the issues and were then sworn in and asked for their responses to the question to determine if there was a possibility to establish a consensus on any of the questions.

31. Dr Lynch commented that:

> at autopsy the heart was enlarged and there was evidence of left ventricular hypertrophy and dilation. There was no other anatomical abnormality detected and no evidence of coronary artery disease. Microscopic examination showed no evidence of myofibre disarray typically seen in hypotrophic cardiomyopathy.[22]

32. Dr Lynch provided two supplementary reports clarifying aspects of his original autopsy report in the course of the coronial investigation into Dean's death and in response to concerns raised by Mr and Mrs Lovett.[23]

i. Cardiomyopathy

33. In relation to Dean's cause of death, Dr Lynch, commented that:

> Cardiomyopathy is a term which in its purest sense is invoked to describe a group of primary disorders of the cardiac muscle and some of these conditions such as hypertrophic obstructive cardiomyopathy and dilated cardiomyopathy may be inherited...[24]

34. During the course of Dr Lynch's evidence, he stated: "Dean's cardiomyopathy starts to appear to be most likely falling into a category of cardiomyopathy called dilated cardiomyopathy."[25]

35. Dr Lynch gave evidence that macroscopically, Dean's heart was enlarged "due to a combination of the wall being thickened and the chamber being abnormally dilated."[26] Microscopically, Dr Lynch was able to observe that the nuclei of the individual muscle fibres were enlarged and that some fibres had two nuclei.[27]

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[21] Exhibit 29.

[22] Inquest brief, p10.

[23] Exhibit 30 and Exhibit 31.

[24] Inquest brief, p10.

[25] Transcript of evidence p792.

[26] Transcript of evidence p790 and 792-3.

[27] Transcript of evidence p790.

36. During his oral evidence, Dr Lynch accepted the opinion of Professor Dart that Dean had an underlying cardiomyopathy of unknown aetiology.[28] Professor Dart had concluded that Dean died from an extremely severe acute cardiomyopathy. Professor Dart's report concluded that it was plausible that the underlying cardiomyopathy, of unknown aetiology, was exacerbated by an inter-current infection (an infective, probably viral illness) in the days prior to his death.[29] Dr Lynch agreed with this point[30] and further accepted that Dean's cardiomyopathy was likely to have been in existence for some time.[31] According to Dr Dooris, there was something in addition to a pre-existing cardiomyopathy, an acute event that precipitated his "fulminant deterioration".[32] Dr Dooris agreed that the most likely cause of death was cardiomyopathy.[33]

37. Professor Dart concurred that there was adequate evidence to conclude that the cause of death was cardiomyopathy.[34]

ii. Myocarditis

38. It became apparent during the course of the concurrent evidence that Dean did not suffer from myocarditis[35] and that Associate Professor Raftos had been mistaken in this regard.[36] Dr Lynch commented that there was no microscopic evidence of myocarditis[37] and Dr Dooris accepted that Dean likely did not have fulminant myocarditis as "there wasn't inflammation at the post mortem histological examination."[38]

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[28] Transcript of evidence p796. The term "aetiology" refers to the study of causation.

[29] Inquest brief p511 and 513.

[30] Transcript of evidence p797 and 889.

[31] Transcript of evidence p791 and 806-7.

[32] Transcript of evidence p938.

[33] Transcript of evidence p922.

[34] Transcript of evidence p922.

[35] Inflammation of the myocardium, that is, the thick contractile middle layer of muscle cells that form the bulk of the heart hall. It may be caused by viral, bacterial or fungal infection, serum sickness, rheumatic fever, a chemical agent, or it may be a complication of a collagen disease (Source: *Mosby's Medical, Nursing & Allied Health Dictionary*, 6th Edition).

[36] Exhibit 37.

[37] Transcript of evidence p791, 797 and 798.

[38] Transcript of evidence, p870.

39. Dr Lynch commented on his post-mortem examination findings that "the enlargement of an organ due to an increase in cell size...are not acute changes."[39] He further explained that "[t]hey're indicative of a process, a pathological process that's been going on for some time."[40]

40. I am satisfied based on the medical evidence that Dean did not have myocarditis.

iii. Anaphylaxis

41. The issue of a possible anaphylactic reaction to the antibiotic Bactrim as a triggering event to Dean's clinical deterioration was raised by Dean's family and considered over the course of the Inquest. In Dean's case, the presence of trimethoprim, a component of Bactrim, was not isolated in ante-mortem blood specimens. Dr Lynch explained its absence was due to its levels being below the detectable range.[41]

42. Three ante-mortem blood samples were analysed and none revealed an elevated tryptase[42] level. Dr Lynch gave evidence that "[t]he absence of an elevated tryptase in an ante-mortem specimen in the absence of a clinical suspicion of an anaphylaxis would say to me that there's no evidence of anaphylaxis."[43] I am satisfied on this basis that Dean did not suffer from an anaphylactic reaction.

iv. Conclusion on Medical Cause of Death

43. Based on the concurrent evidence provided at the Inquest, which greatly assisted my investigation, I am satisfied that there is no evidence that Dean died from myocarditis, nor did he die as a result of anaphylaxis.

44. I am satisfied that Dean's medical cause of death was *dilated* cardiomyopathy and I intend to notify the Registrar of Births, Deaths and Marriages of my amendment to the medical cause of death.

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[39] Transcript of evidence p791.

[40] Transcript of evidence p791.

[41] Transcript of evidence p801.

[42] Tryptase is defined in *Dorland's Illustrated Medical Dictionary*, as one of a class of enzymes which split native proteins to peptides in neutral or near neutral solutions (23rd Edition, (1957) Philadelphia and London: W.B. Saunders Company. p1474).

[43] Transcript of evidence p789.

b. Attendance at Casey Super Clinic

45. Dean was able to independently walk into the consultation, and provide a comprehensive history upon his attendance to the Casey Super Clinic on 7 September 2008. He appeared objectively well.[44]

46. Dr Gunawardana saw Dean at 16.08 hours and Dean provided a medical history which included information about his ulcerative colitis and his recent history of experiencing heart palpitations and episodes of vomiting over the previous few days, being a non-smoker,[45] feeling hot and cold[46] and having a dry cough.[47] Dean did not mention having experienced any chest pain.[48]

47. Dr Gunawardana stated Dean's "clinical examination was unremarkable other than...tachycardia and...finger clubbing and low normal blood pressure...given no...family history of chest pains...no prior cardiac illness my diagnosis was...chest infection."[49] Dr Gunawardana further stated in evidence that she "...wanted to...exclude any cardiac cause"[50] and requested further investigations on this basis.

48. Dr Gunawardana ordered an ECG, blood analysis for thyroid stimulating hormone (TSH) levels and a CXR.[51] Dr Gunawardana filled out two investigation requests - a pathology request [52] and an imaging request[53] to exclude a cardiac cause.[54] Her expectation was that the tests would be conducted on the Monday following the Saturday consultation.[55] When asked in evidence about the urgency of the tests, Dr Gunawardana stated: "I really regret that I didn't do it at that time...at that stage I never thought that it was necessary to do it

[44] Transcript of evidence p86.

[45] Transcript of evidence p75.

[46] Transcript of evidence p74.

[47] Transcript of evidence p74.

[48] Transcript of evidence p86.

[49] Transcript of evidence p86.

[50] Transcript of evidence p79.

[51] Transcript of evidence p83.

[52] Exhibit 2.

[53] Exhibit 3.

[54] Transcript of evidence p79.

[55] Transcript of evidence p84 and p95.

urgently."[56] Although Dr Gunawardana ordered the abovementioned tests to exclude the possibility of a cardiac cause to Dean's presentation, she stated she "never thought that cardiac cause was the issue for his clinical presentation".[57]

49. Based on the possibility of Dean having an underlying cardiac cause, Dr Gunawardana verbally instructed Dean to attend a hospital ED if his condition deteriorated. Dr Gunawardana also instructed him to be reviewed by a general practitioner as soon as possible.

50. According to Associate Professor Rawlin, the nature of the investigations ordered by Dr Gunawardana were "absolutely appropriate" given Dean's history and presentation.[58]

51. Associate Professor Morton Rawlin, Member of the Royal Australasian College of General Practitioners, provided an expert report and gave oral evidence at the Inquest.[59] He stated that the decision to accept a delay in having the investigations performed was "taking a significant risk" on the part of the general practitioner.[60]

52. Associate Professor Rawlin accepted that at the time of Dr Gunawardana's consultation, a number of differential diagnoses existed with infection being a probable candidate.[61] He opined that the tests should be have been conducted quickly and commented that if local pathology laboratories were closed, it would be appropriate to advise someone in Dean's position to attend a public hospital for investigations to be conducted there.

53. However, Dr Thomas Chan later provided evidence at Inquest that there is no facility, capacity or process at Casey Hospital whereby pathology can be performed after hours upon the request of a general practitioner.[62]

54. Associate Professor Rawlin commented that general practitioners should show caution when treating patients who are treated with immunosuppressant medication, as these patients can have atypical presentations and can quickly develop overwhelming infections or illnesses. aAccording to Associate Professor Rawlin, most practitioners would

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[56] Transcript of evidence p85.

[57] Transcript of evidence p85.

[58] Transcript of evidence p751.

[59] Exhibit 28.

[60] Transcript of evidence p766.

[61] Transcript of evidence p758 and 774.

[62] Transcript of evidence p966.

consequently over investigate or advocate for these patients to have investigations completed in a more prompt manner.[63]

55. Associate Professor Rawlin also commented that finger clubbing usually develops over a period of time, is usually a marker of chronic illness,[64] and that it may be referrable to a number of conditions (for example chronic lung disease, Crohn's disease or a thyroid illness) including ulcerative colitis.[65]

56. Associate Professor Rawlin was critical of Dr Gunawardana's failure to treat the circumstances as requiring an urgent response.[66] He commented that Dean's low blood pressure and elevated heart rate, together with his known use of Methotrexate, were sufficient features in themselves to warrant an immediate response from Dr Gundawardana.[67] Associate Professor Rawlin stated: "I can understand what she did and why she did it...I think...that the response potentially should have been a little more forceful at getting him to secondary care".[68]

57. Associate Professor Rawlin also stated that:

> You need to give people some real guidelines as to what you expect in the next three, six hours and if those things are not being met then they also need a plan as to what they are going to do next, and that is most likely in this context present to casualty and I would also usually give that person a letter...if I wasn't actually going to send them straight away I'd actually give them a letter introducing them to the...casualty department to take away with them to present to casualty if my milestones had not been met.[69]

58. Counsel for Dr Gunawardana submitted: "in hindsight, Dr Gunawardana accepts that the clinical presentation warranted urgent investigation, that an underlying cardiac condition

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[63] Transcript of evidence p749.

[64] Transcript of evidence p764.

[65] Transcript of evidence p775.

[66] Transcript of evidence p774-775.

[67] Transcript of evidence p781.

[68] Transcript of evidence p782.

[69] Transcript of evidence p756 and 766-8.

in an otherwise healthy 21 year old without a history of cardiac conditions was something that needed urgent investigation."[70] Counsel for Dr Gunawardana stated further:

> She accepts that, with the benefit of hindsight, the examination findings ought to have alerted her to an acute cardiac cause that if a patient were to present with such symptoms today, they could be indicative of a cardiac condition and she would instigate urgent investigation, making it clear in the investigations that she was looking to confirm or exclude a cardiac origin."[71]

59. I accept the evidence of Dr Gunawardana and acknowledge her regret in not pursing urgent investigations of Dean's condition. I accept that Dr Gunawardana was in an inherently difficult position, as Dean was a seemingly healthy young man, who presented objectively well and without a cardiac history. However, based on some discreet aspects of his clinical presentation and considering he was taking Methotrexate, I find that Dr Gunawardana should have urgently referred Dean to an ED for further investigation, which I accept would have provided him with the best chance of survival. I also accept that if Dr Gunawardana were ever placed in a similar situation, she would adopt a more proactive approach in ordering urgent tests.

c. Triage time

60. On arrival to the ED on 7 September 2008, RN Kennedy reviewed Dean at 10.58 hours, and based on his appearance and vital signs, triaged him as a Category 4, which meant he was to be seen by a doctor within an hour.[72]

61. Prior to the commencement of the Inquest, Counsel for Southern Health conceded that Dean should have instead been triaged as Category 3.[73] According to the Australasian College for Emergency Medicine *Policy on Triage Scale*,[74] the recommended waiting time for a patient assessed as a Category 3 is 30 minutes.

62. At the Inquest, there was unanimous agreement amongst the experts providing concurrent evidence that a medical officer should have seen Dean within 30 minutes of his arrival at

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[70] Legal Submissions on behalf of Dr Gunawardana, p7.

[71] Legal Submissions on behalf of Dr Gunawardana, p7.

[72] Exhibit 8, transcript of evidence p164.

[73] Transcript of evidence p11.

[74] Exhibit 43.

Casey Hospital, that is, he should have been triaged as a Category 3.[75] They further agreed that had Dean been seen within 30 minutes, his outcome might have been improved.[76] Dr Michael Yeoh confirmed in evidence that "earlier treatment and earlier identification of his underlying illness may've led to an earlier transfer to Monash"[77] which may have led to Dean receiving expert cardiac treatment sooner.

63. Associate Professor Raftos stated that "If...he'd been appropriately triaged and seen, he ought to have been transferred earlier...and certainly before the deterioration occurred."[78]

64. I find that Dean should have been triaged as a Category 3 and that RN Kennedy's triage was not appropriate in the circumstances. It is however difficult to conclude with any degree of certainty that this delay led to his ultimate demise, however the delay prevented an early transfer to an appropriate tertiary hospital, which potentially could have enhanced his survivability.

d. Differential diagnoses

65. After reviewing Dean's blood results, Dr Wimetal took Dean to a cubical at 14.03 hours for assessment, just over three hours after his arrival at the ED. Dr Wimetal took Dean's history and noticed runs of tachyarthymia on a monitor of up to 250bpm. Dr Wimetal consulted Dr Alistair Meyer, Senior Emergency Physician and other senior physicians. He asked that Dean be moved to a resuscitation cubicle as he was considered to be pre-arrest. He was given IV saline as it was noted that Dean was possibly dehydrated and hypotensive.

66. Dean's clinical signs and symptoms upon presentation to the ED did not fit exclusively with one diagnosis. The clinical presentation together with the blood results suggested some form of sepsis, treatment of which would have involved the administration of antibiotics and fluid resuscitation.[79]

67. The Casey Hospital medical team considered differential diagnoses of sepsis and PE and administered antibiotics. An ECG and CXR were performed and Dean suffered a cardiac

[75] Transcript of evidence p836.

[76] Transcript of evidence p837.

[77] Transcript of evidence p837.

[78] Transcript of evidence p879.

[79] Transcript of evidence p878, 918 and 935.

arrest shortly after. After receiving the CXR results, an additional differential diagnosis of heart failure was considered. Fluids were ceased following the arrest due to the suspected cardiac condition.

68. The experts who provided the concurrent evidence generally agreed that sepsis was a reasonable working diagnosis.[80] However, Associate Professor Raftos disagreed and thought that once the ECG and CXR had been considered together, the primary diagnosis should have been that of cardiac disease.[81]

69. Dr Dooris explained that patients can have two presenting pathologies and that sepsis and acute heart failure are not mutually exclusive.[82] In relation to determining a diagnosis, Dr Dooris further stated that: "...things happen concurrently. We parallel process, we try to form a diagnosis, we give a treatment, we see what happens. And I think the issue is what we do when we see what happens".[83] Dr Dooris explained "there was a progressive deterioration."[84] He stated further "...it's clear that there was deterioration. There was tachycardia, hypotension, impaired consciousness...culminating ultimately in a cardiac arrest."[85]

70. The experts who provided the concurrent evidence agreed that if Dean had been seen within a half hour of his arrival at Casey Hospital and had both a CXR and an ECG performed and interpreted, a cardiac cause would have been added to the list of differential diagnoses at an earlier stage.[86] The experts were however unsure whether the appreciation or elevation of a cardiac cause as a dominant differential diagnosis would have made a difference to Dean's likely outcome.[87]

71. Dean's presentation to the ED was far from straightforward. His presenting problems on primary assessment appeared to be consistent with sepsis and/or PE. The experts agreed that sepsis was a reasonable working diagnosis. However, the treating doctors faced considerable difficulty in keeping up with Dean's rapid deterioration and dynamic

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[80] Transcript of evidence p840.

[81] Transcript of evidence p840.

[82] Transcript of evidence p841.

[83] Transcript of evidence p859.

[84] Transcript of evidence p860.

[85] Transcript of evidence p860.

[86] Transcript of evidence p839.

[87] Transcript of evidence p839.

symptoms. There were a number of factors relevant to Dean's management whilst at Casey Hospital that were arguably sub-optimal, in terms of the timing of assessments and treatments. However, I acknowledge that it was a complex, dynamic and stress-inducing situation and I accept that the medical staff were attempting to adequately diagnose and treat Dean in a difficult and rapidly evolving situation. In these circumstances and in this regard, I make no adverse finding against treating medical staff.

e. Fluid Administration

72. The clinical documentation relating to the administration of fluids is difficult, if not impossible to interpret. The inconsistent documentation caused much confusion during the evidence of Casey Hospital's medical and health personnel. The oral and documentary evidence provided by the medical and health practitioners made it difficult for me to assess the appropriateness of the fluid administration and the relevance of the time at which it was ceased.

73. The Intravenous Fluid Infusion Chart[88] indicates that three litres of Normal Saline were administered. The first litre was commenced at 14:15 hours, the second at 15:04 and the third at 15:06 hours. The difficulty arises when attempting to reconcile the Intravenous Fluid Infusion Chart with the Fluid Balance Chart[89] and the progress notes.[90]

74. Dr Siebert's evidence regarding the total amount of fluids received by Dean cannot be relied upon as it was based on general treatment principles rather than on the facts of Dean's case.[91] Dr Chan gave evidence that he was not working on the day of Dean's presentation to the ED however, he was involved in discussions with staff after the event to ascertain a treatment chronology. He was unable to confidently state in evidence the total amount of intravenous fluids administered to Dean.[92] Due to the inconsistencies in the evidence, I am unable to determine with any degree of certainty the amount and therefore the appropriateness of fluid administered.

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[88] Inquest brief, p239.

[89] Inquest brief, p242.

[90] Inquest brief, p238 and 240.

[91] Transcript of evidence, p727.

[92] Transcript of evidence, p822.

f. Cardiac Arrest and resuscitation

75. Dean was taken to the resuscitation cubicle at approximately 14.30 hours.[93] Dr Au joined Dr Meyer in the cubicle and found Dean was sweaty, tachypnoeic and tachycardic.[94] Immediately prior to being intubated, Dr Au noticed a change in Dean's colour and Dr Meyer commented that this signifies poor peripheral circulation.[95]

76. The documentation around the timing between Dean's change in colour, the number of cardiac arrests and when he was intubated is lacking and factually differs between the medical witnesses. RN Clint Hick commented that as part of the resuscitation procedure, someone becomes the nominated scribe and is required to document what they observe. Consequently, this means that not everything is accurately recorded.[96] The only common agreement amongst the physicians is that Dean experienced a rapid deterioration.

77. There was a factual dispute in relation to the number of cardiac arrests that Dean suffered whilst at Casey Hospital. Mr Lovett gave evidence that he considered Dean experienced three cardiac arrests[97] while Dr Meyer and Dr Wimetal both gave evidence that they thought Dean suffered two cardiac arrests.[98] The experts providing concurrent evidence were of the opinion that the number of arrests did not alter their view on Dean's survivability.[99]

78. I accept that Dean suffered at least two cardiac arrests shortly after he was assessed in the resuscitation cubicle and that staff consequently made their best attempts to resuscitate him.

79. I make no criticism of the management of Dean during his collapse and resuscitation. I find the response of the medical staff following his arrest, whilst not well documented due to rapidly changing circumstances, was prompt and well supported.

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[93] Transcript of evidence p245.

[94] Transcript of evidence p677.

[95] Transcript of evidence p436.

[96] Transcript of evidence p295.

[97] Transcript of evidence, p15.

[98] Transcript of evidence, p636.

[99] Transcript of evidence, p914.

g. Dean's Survivability

80. The experts agreed that Dean was extremely unwell by the time he presented to Casey Hospital and that this was a very serious illness from the outset. Dr Yeoh stated that the severity of Dean's illness was the major factor that mitigated against his survival.[100] Further, he stated that: "[the] illness severity was by far and away the most important factor...the other factors...the delay in diagnosis...fluid administration, not being at a tertiary centre immediately...are very much fine print sort of things, if you like, in terms of the relative importance".[101]

81. Associate Professor Raftos stated, with the support of all other experts, that "This is serious heart disease. And people who have this heart disease...often don't survive, despite best treatment."[102]

82. Associate Professor Raftos commented that: "the earlier the treatment...the earlier the diagnosis was made and treatment was given, the better the outcome would've been."[103]

83. Professor Dart commented that if Dean had been at a cardiac centre on 6 September, his chance of survival would have improved by 50 percent or more.[104] He noted however that there are a number of additional risks, relating to ECMO and transplantation that would have affected Dean's survivability.[105]

84. Based on the totality of the evidence, and on the balance of probabilities, I consider that Dean probably would not have survived given the severity of his underlying cardiac condition and that Dean's treatment and management on 7 September 2008 did not adversely affect upon his prospects of survival. I further find that Dean's death was not preventable.

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[100] Transcript of evidence, p838.

[101] Transcript of evidence p887.

[102] Transcript of evidence p854.

[103] Transcript of evidence p887.

[104] Transcript of evidence p874.

[105] Transcript of evidence p874.

COMMENTS

Pursuant to section 67(3) of the **Coroners Act 2008**, I make the following comment(s) connected with the death:

85. As previously indicated, Mr and Mrs Lovett raised a number of concerns throughout the coronial investigation. I may not have specifically addressed each individual concern in these Findings, however I have considered them all throughout my investigation. I have not dealt with them individually due to the limited weight I have attached to them, based on the totality of the evidence.

86. In relation to the fluid administered to Dean, I find that the documentation was difficult if not impossible to interpret and created confusion regarding what fluid had in fact been administered. Due to the inconsistencies in evidence, I am unable to determine with certainty the quantity of fluid administered, when they were ceased and therefore whether the fluid administration was appropriate in the circumstances.

87. In coronial matters where the circumstances surrounding the death are associated with medical intervention, the standard of communication and documentation amongst health care professionals usually comes under scrutiny. The absent or inaccurate recordings of significant vital observations, medical interventions and chronology of events are commonly the catalysts for the need for an Inquest to be held so the deceased's clinical course can be factually understood.

88. To make a recommendation that health care professionals attend more accurately and consistently to their documentation is trite but I am prepared to suggest that this matter serve as a reminder that clinical notes function as crucial evidence in a coronial investigation. This is particularly highlighted as an issue, when it is inconsistent and/or inaccurate, which makes it impossible for witnesses to comprehend and recall the circumstances of a tragic event such as in Dean's case. Accurate clinical notes serve as an aide memoir and when completed comprehensively, allow for an accurate reflection of what occurred, and what systems, if any, can be improved.

89. In relation to the triage process, Counsel for Southern Health made submissions to the Court that since Dean's death, Casey Hospital have introduced "Symphony", a new

computer system that tracks a patient from the point of triage through to discharge.[106] Dr Chan advised the Court that:

> Symphony allows us to electronically enter...clinical notes...vital signs parameters...that's available for...staff to see...allows for the consultant and the nurse in charge to also see... whom is waiting...and have a look at the triage notes...it also has...a scoring system... based on particular signs parameters, if a patient exceeds...certain... parameters...then that alerts an ED mandatory score...which necessarily means that the patient...needs to be seen more urgently.[107]

90. Casey Hospital has also received funding for the introduction of a Peak Flow Nurse, who functions to support the triage nurse by commencing procedures and ensuring that ED patients are safe whilst waiting to be seen. I am satisfied that these changes have been implemented with the aim of improving the triage system at Casey Hospital and preventing a similar future situation and therefore make no recommendations for additional change.

91. Save for these concluding comments, I make no adverse finding against individual healthcare providers involved in the medical management of Dean at the Casey Hospital ED and made no adverse findings in relation to the management of his collapse and resuscitation. The appropriateness of the clinical decisions made prior to his collapse, at the time of his collapse and during resuscitation attempts must be assessed in the temporal context of his changing clinical presentation and I am satisfied on the evidence that the clinical decisions were appropriate in the circumstances.

92. There is no one point of Dean's catastrophic clinical course that I have identified in the evidence that could have or should have been acted upon in some different way that, on the balance of probabilities, I can find that the outcome could have been altered or would have been different. It was neither foreseen nor able to be rectified with any certainty once suspected. It thus follows, that I cannot find that Dean's death was preventable.

93. Dean had an unrecognised underlying cardiac condition, which ultimately caused his death, which was and remains a real tragedy.

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[106] Transcript of evidence p968.

[107] Transcript of evidence p968.

FINDINGS

1. The response to Dean's collapse in the resuscitation bay of the Casey Hospital Emergency Department was prompt and involved appropriately qualified medical practitioners who at all times were collaboratively attempting to rectify Dean's precarious condition. The underlying cardiac condition was not foreseen until his collapse and hence the outcome was not preventable despite the tragic outcome.

2. The evidence indicated that upon Dean's attendance at Casey Super Clinic, **I find** that Dr Gunawardana should have acted on investigating her suspicion of Dean's underlying cardiac cause in a more timely manner. Had investigations commenced earlier, his cardiac cause may have been diagnosed earlier and he may have been referred to a cardiac medicine specialist, which may have increased his chance of survivability. However, it has not been proved to a *reasonable satisfaction*[108] that this delay caused Dean's cardiac arrest or that his death could have been prevented.

3. I accept and acknowledge Southern Health's concession that Dean should have been triaged as a Category 3 and therefore seen by medical staff within 30 minutes of his arrival at Casey Hospital. The evidence shows that despite the fact that he was triaged as a Category 4, a medical practitioner did not see him until approximately three hours after his arrival. **I find** that Dean was incorrectly triaged as a Category 4,[109] however, I am neither able to equivocally say that had he been triaged as a Category 3, he would have been seen within the recommended 30, minutes nor that an earlier medical assessment could have prevented his death.

4. In relation to his medical assessment and management by the medical and nursing staff at Casey Hospital, **I find** that there were a number of issues that were sub-optimal relating to the timing of assessments and treatments and the corresponding documentation. However, I acknowledge that it was a complex, dynamic and stressful situation, making it considerably difficult for the treating medical and nursing staff to maintain adequate control of Dean's rapid deterioration.

5. Save for the inadequate documentation made by Casey Hospital medical and nursing staff, I make no criticism of the management of Dean during his collapse and resuscitation. I

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[108] *Briginshaw v Briginshaw* (1938) 60 CLR 336.

[109] Transcript of evidence p970.

find the response after he arrested, whilst not well documented due to the rapidly changing events, was prompt and well supported by medical and nursing staff.

6. In consideration of the reports and oral evidence provided by Dr Matthew Lynch, I am persuaded that the probable antecedent cause of Dean's rapid collapse and subsequent death was unrelated to the management of his hospital presentation and was in fact an undiagnosed dilated cardiomyopathy. I accordingly accept the medical cause of death as identified by Dr Lynch and **I find** that Dean Lovett died on 8 September 2008 from *dilated* cardiomyopathy and I intend to direct the Registrar of Births, Death and Marriages to amend to cause of death to be dilated cardiomyopathy.

7. I direct that the Finding be published on the internet.

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

   a) Ms Kathryn Booth, Maurice Blackburn Lawyers on behalf of Mr Ted and Mrs Wendy Lovett
   b) Ms Fiona Ellis, Counsel Assisting the Coroner
   c) Ms Priyanthi Milton, K& L Gates Lawyers (formerly Middletons Lawyers) on behalf of Southern Health
   d) Ms Kim Bowers, Avant Law on behalf of Dr Gunawardana

Signature:

AUDREY JAMIESON
CORONER
Date: **26 February 2014**