IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2008 004559

FINDING INTO DEATH WITH INQUEST

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

Inquest into the Death of: Iman KASSIS

Delivered On:	30 September 2014
Delivered At:	Coroners Court of Victoria 65 Kavanagh Street Southbank Victoria 3006
Hearing Date:	15 July 2013
Findings of:	Coroner Paresa Antoniadis SPANOS
Representation:	Ms Deborah FOY of Counsel, instructed by Ms Jan MOFFATT of Corporate Counsel, appeared on behalf of the Royal Melbourne Hospital
	Mr Paul HALLEY of Counsel, instructed by Mr Andrew MARIADASON of Avant Law, appeared on behalf of Dr Ken Lu
Police Coronial Support Unit assisting the Coroner:	Leading Senior Constable Tania CRISTIANO.

I, PARESA ANTONIADIS SPANOS, Coroner,

having investigated the death of IMAN (also known as EMMA) KASSIS

and having held an inquest in relation to this death at Melbourne on 15 July 2013

find that the identity of the deceased was IMAN (also known as EMMA) KASSIS

born on 14 June 1962, aged 46

and that the death occurred on 9 October 2008

at 89 Clarinda Road, Moonee Ponds, Victoria 3039

from:

I (a) HEMOPERICARDIUM

I (b) DISSECTION OF THE THORACIC AORTA

CONTRIBUTING FACTORS

II EHLER'S DANLOS SYNDROME.

in the following circumstances:

BACKGROUND & PERSONAL CIRCUMSTANCES

1. Imam Kassis, also known as Emma Kassis, was a 46-year-old woman who resided with her family at the above address. Ms Kassis was in receipt of Commonwealth benefits and was unemployed at the time of her death. She had a significant medical history that included cellulitis right leg, obesity and chronic lymphoedema (2004), obstructive sleep apnoea, hypertension and pulmonary hypertension, morbid obesity, depression, respiratory failure and ruptured iliac artery secondary to Ehlers-Danlos Syndrome[1] surgically repaired (2007), and acute incisional hernia and severe obstructive sleep disorder (2008).

MEDICAL HISTORY PROXIMATE TO DEATH

2. In addition to the above, Ms Kassis presented to the Royal Melbourne Hospital (RMH) Emergency Department (ED) on a number of occasions in 2008, for what could be broadly described as cardiac/vascular problems and investigations.

[1] A connective tissue disorder that predisposes, inter alia, to aortic aneurysm and aortic dissection. Ms Kassis was thought to have Ehlers-Danlos Syndrome Type 4, a defect in type-III collagen synthesis that pertains specifically to the vascular system. See also Professor Leanne Grigg's evidence at transcript page 39.

3. On 6 May 2008, Ms Kassis' presenting complaint was palpitations. Investigations revealed an elevated D Dimer at 1232ug/L (where normal is <500ug/L), and a SPECT scan revealed no evidence of pulmonary embolus. Ms Kassis presented again with palpitations on 13 May 2008, when following investigations, her dose of Flecainide was doubled to 100mg twice daily to treat recurring supra-ventricular tachycardia.[2] Following another presentation with palpitations on 24 July 2008, Ms Kassis underwent CT angiogram on 29 July 2008 that revealed an enlarged aortic root at 5.00 cm.[3]

4. On 15 September 2008, Ms Kassis presented to the ED once again with palpitations, on this occasion associated with throat discomfort and, two days earlier, an unconscious collapse. She also gave a history of intermittent facial numbness that was unrelated in time to the palpitations. Ms Kassis was admitted overnight and CT angiogram performed the next day revealed a dilated aortic root (5.50 cm), with no evidence of dissection. She was discharged with a plan for outpatient trans-oesophageal echocardiogram (TOE).

5. On 18 September 2008, when the TOE demonstrated severe aortic incompetence, markedly dilated ascending aorta and mildly dilated arch and upper descending aorta, Ms Kassis was booked for elective angiogram.[4]

6. The coronary angiogram performed on 26 September 2008 demonstrated normal coronary arteries and left ventricular function, and confirmed valvular disease in the form of aortic regurgitation and dilated aorta. The recommendation of the cardiologist who performed the procedure was for referral to the cardiology audit meeting regarding further management/treatment.[5]

PRESENTATION TO RMH EMERGENCY DEPARTMENT ON 8 OCTOBER 2008

7. Ms Kassis was well enough when she woke on the morning of 8 October 2008. However, by 9.00am she had developed a sudden onset of severe throat pain, and at 9.20am called for an ambulance. Ambulance paramedics arrived at 9.33am, took a history from Ms Kassis herself

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[2] There are some discrepancies about the dose increase from 50mg twice a day to 100mg twice a day, in terms of when it first occurred (19 March 2008 or 13 May 2008) and about Ms Kassis' dosage immediately prior to the presentation of 8 October 2008. Medical records pertaining to the admission for coronary angiogram on 26 September 2008 suggest 50mg twice a day, while on 8 October 2008, Drs Walsh and Lu decide to "halve" her dosage from 100mg twice a day to 50mg twice a day in order to address her bradycardia. See transcript page 80-83 and discussion at paragraph 41 and following.

[3] Professor Grigg's Summary of Admissions at page 38 of the inquest brief (Exhibit I) and Dr Guy Sansom's statement dated 2 May 2013 at page 21-3 (Exhibit G).

[4] Pages 21-3 and 38 of the inquest brief (Exhibit I).

[5] Page 42 of the inquest brief (Exhibit I). The outcome of this referral is discussed below at paragraph 33.

and took a series of vital observations. Apart from initial pain rated as 9/10 that responded to a Penthrane inhaler (methoxyflurane, an analgesic) all documented vital signs were within normal parameters.[6]

8. Ms Kassis arrived in the ED and was seen by the triage nurse at 10.19am.[7] The documented triage notes are *"Sudden onset of throat pain associated with right arm weakness 90 minutes ago. On assessment drowsy pinpoint pupils. GCS 14. Past history AAA repair and aortic regurgitation obesity."*[8] The triage nurse allocated Ms Kassis triage category 3, with a target assessment by a medical officer within 30 minutes. There was no suggestion at inquest that the allocation of Ms Kassis to triage category 3 was inappropriate.[9]

9. The cubicle nurse's assessment is documented at 10.55am, contains the first observation of bradycardia at 39bpm and a history of sudden onset throat ache and epigastric pain at 09.00am. The plan documented by the cubicle nurse was for an intravenous line, bloods and ECG, blood sugar level, chest x-ray and assessment by a medical officer.[10]

10. Emergency Registrar Dr Matthew Walsh conducted the first medical assessment of Ms Kassis some time after 11.00am. At the time, he was an advanced trainee emergency physician who had passed his fellowship examinations six months earlier. The clinical management and care provided to Ms Kassis in the ED is discussed in some detail below, as this was the primary focus of the coronial investigation of her death.

11. Suffice for present purposes to say that Dr Walsh ordered a number of investigations, reviewed Ms Kassis, consulted with Cardiology Registrar Dr Lu, and discharged Ms Kassis home to continue with the cardiology follow-up already in place, and to see her GP if her symptoms persisted. He diagnosed a gastrointestinal cause for her pain and commenced her on omeprazole, treated the bradycardia noted during her ED stay with a reduction in the dose of

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[6] The history documented by the paramedics under Case Description includes the following – *'patient states she has had left upper abdominal pain for past three months not investigated, feels lethargic, states felt well when woke this morning, no recent medication changes'* and under Secondary Survey – *'Left upper quadrant pain, ongoing past three months, neck generalised pain described as aching radiating to no other area, denies aggravation; Right arm generalised weakness; no facial droop; grips strong bilaterally; speech show; does not hurt to swallow, no shortness of breath or nausea.'* I have paraphrased and interpreted their notes and abbreviations to some extent. Pages 24-27 of the inquest brief (Exhibit l).

[7] According to the VACIS electronic patient care report made by the ambulance paramedics (referred to as AV records in this finding) the ambulance arrived at the RMH ED at 10.09am, triage commenced at 10.15am and Ms Kassis was "off stretcher" and therefore within the care of ED staff at 10.24am. There is a slight but immaterial discrepancy with the time-stamp on the ED triage assessment – 10.19am.

[8] Page 28 of the inquest brief (Exhibit l).

[9] See the Australasian Triage Scale accessible at www.health.gov.au.

[10] Page 29 of the inquest brief (Exhibit l).

Flecainide from 100mg twice a day to 50mg twice a day, and advised caution with the use of her prescribed analgesic Tramadol, as it could contribute to bradycardia.

12. After a period of some four hours observation in the Short Stay Unit, Ms Kassis was discharged at about 6.00pm.[11] No medical records pertaining to this short admission were located or available at inquest. Consequently, there is no documented evidence of her vital signs over this period, her pain and, perhaps more significantly, if the bradycardia observed in the ED resolved whether due to a reduction in the dose of Flecainide, or otherwise.

13. According Ms Kassis' brother Mr George Kassis who took her home, she looked unwell, tired and weak and had been given a vomit bag to take with her. When they arrived home, Ms Kassis was cold and refused anything to eat. She spent the evening by the heater in the lounge room watching television, and remained there after 11.00pm when her mother retired for the night. When her mother woke at about 4.30pm, she checked on her daughter and found her hands were cold and she was not responding. Mrs Kassis called her son who came immediately, attempted cardiopulmonary resuscitation and called 000.

14. Ambulance paramedics confirmed that Ms Kassis was deceased. They called the police who attended a short time later and commenced the coronial investigation of Ms Kassis' death. The police were provided with a discharge summary from the RMH ED addressed to Dr Hore, Ms Kassis' treating GP. They noticed the vomit bag was filled with pink coloured fluid, and concluded that Ms Kassis had vomited through the night.

PURPOSE OF A CORONIAL INVESTIGATION

15. The police reported Ms Kassis' death to the Coroner on the basis that it was an unexpected death and fell within the definition of a *reportable death* in the Coroners Act 2008,[12] as it clearly did. The purpose of a coronial investigation of a reportable death is to ascertain, if possible, the identity of the deceased person, the cause of death and the circumstances in which

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[11] See under departure time in the medical records at page 30 of the inquest brief (Exhibit I). I note that there are no documented nursing/progress notes or observations after 1.45pm and the last medication administration is documented at 1.55pm – see pages 32-35 of the inquest brief (Exhibit I). Dr Walsh's notes at page 31 of the inquest brief (Exhibit I) have no time noted, or date for that matter, but appear to be made as one entry.

[12] The *Coroners Act 2008,* like its predecessor the *Coroners Act 1985*, requires certain deaths to be reported to the Coroner for investigation. Apart from a jurisdictional nexus with the State of Victoria, the definition of a reportable death in section 4 includes deaths that appear *to have been <u>unexpected</u>, unnatural or violent or to have resulted, directly or indirectly, from accident or injury* and the *death of a person who immediately before death was a patient within the meaning of the Mental Health Act 1986".*

death occurred.[13] The *cause* of death refers to the *medical* cause of death, incorporating where possible the *mode* or *mechanism* of death. For coronial purposes, the *circumstances* in which death occurred refers to the context or background and surrounding circumstances, but is confined to those circumstances sufficiently proximate and causally relevant to the death, and not merely all circumstances which might form part of a narrative culminating in death.[14]

16. The broader purpose of any coronial investigations is to contribute to the reduction of the number of preventable deaths through the findings of the investigation and the making of recommendations by coroners, generally referred to as the *prevention* role.[15]

17. Coroners are also empowered to report to the Attorney-General in relation to a death; to comment on any matter connected with the death they have investigated, including matters of public health or safety and the administration of justice; and to make recommendations to any Minister or public statutory authority on any matter connected with the death, including public health or safety or the administration of justice.[16] Effectively, the prevention role is advanced by these vehicles.[17]

18. It is important to stress that Coroners are not empowered to determine the guilt of any person, or the extent of any civil liability arising from a death.[18]

INVESTIGATION – SOURCES OF EVIDENCE

19. This finding is based on the totality of the material the product of the coronial investigation of Ms Kassis' death. That is the brief of evidence compiled by Leading Senior Constable Tania Cristiano from the Police Coronial Support Unit (PCSU), the statements, reports and testimony of those witnesses who testified at inquest and any documents tendered through them, and the

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[13] Section 67(1) of the *Coroners Act 2008*. All references which follow are to the provisions of this Act, unless otherwise stipulated.

[14] This is the effect of the authorities – see for example <u>*Harmsworth*</u> v <u>*The State Coroner*</u> [1989] VR 989; <u>*Clancy*</u> v <u>*West*</u> (Unreported 17/08/1994, Supreme Court of Victoria, Harper J.)

[15] The 'prevention' role is now explicitly articulated in the Preamble and purposes of the Act, cf: the *Coroners Act 1985* where this role was generally accepted as "implicit".

[16] See sections 72(1), 67(3) and 72(2) regarding reports, comments and recommendations respectively.

[17] See also sections 73(1) and 72(5) which requires publication of coronial findings, comments and recommendations and responses respectively; section 72(3) and (4) which oblige the recipient of a coronial recommendation to respond within three months, specifying a statement of action which has or will be taken in relation to the recommendation.

[18] Section 69(1). A Coroner must not include in a finding or comment any statement that a person is, or may be, guilty of an offence. However, if a Coroner believes an indictable offence may have been committed in connection with a death, they must refer the matter to the Director of Public Prosecutions. Sections 49(1) and 69(2).

final submissions of Counsel. All of this material, together with the inquest transcript, will remain on the coronial file.[19] In writing this finding, I do not purport to summarise all the material and evidence, but will refer to it only in such detail as is warranted by its forensic significance and in the interests of narrative clarity.

FINDINGS AS TO UNCONTENTIOUS MATTERS

20. In relation to Ms Kassis' death, most of the matters I am required to ascertain, if possible, were uncontentious from the outset. Her identity, the date, time and place were never at issue. I find, as a matter of formality, that Iman Kassis, also known as Emma, born on 14 June 1962, aged 46, late of 89 Clarinda Road, Moonee Ponds, Victoria 3039, died at her home on or about 9 October 2008.

THE MEDICAL CAUSE OF DEATH

21. Nor was the medical cause of death controversial. On 14 October 2008, Forensic Pathologist Dr Paul Bedford from the Victorian Institute of Forensic Medicine (VIFM) performed a full post-mortem examination or autopsy. Dr Bedford also reviewed the circumstances as reported by the police to the Coroner, and post-mortem CT scanning of the whole body (PMCT) also undertaken at VIFM, and provided a written report of his findings.

22. Dr Bedford attributed Ms Kassis' death to *hemopericardium*[20] secondary to *dissection of the thoracic aorta,* noting *Ehler's Danlos Syndrome* as a contributing factor. He commented that Ms Kassis had a family history of Ehler's Danlos Syndrome, which is a genetic disorder affecting connective tissue in the body, and is known to be associated with abnormalities of the aorta and an increased risk of aortic dissection.

23. Dr Bedford's findings read in the context of the reports of the various clinical investigations undertaken between May and October 2008, support a finding that the tear and/or dissection of

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[19] From the commencement of the *Coroners Act 2008* (the Act), that is 1 November 2009, access to documents held by the Coroners Court of Victoria is governed by section 115 of the Act.

[20] An accumulation of blood within the pericardial sac surrounding the heart – page 726 Mosby's Medical, Nursing and Allied Health Dictionary (4th edn). See also Dr Bedford's autopsy report at pages 1-6 of the inquest brief (Exhibit I) where he sets out his findings as to the cardiovascular system and includes the following – *"The pericardial sac is intact. There is approximately 800ml of fluid and clotted blood in the pericardial cavity...On cross section the myocardium shows no evidence of recent infarction [another potential cause of hemopericardium]...There is a ragged 7cm tear in the posterior aspect of the ascending aorta. There is extensive dissection of the aorta along the thoracic component."*

the aorta seen at autopsy occurred at the same location as the dilated aortic root and ascending aorta seen clinically.[21]

24. I find that the medical cause of Ms Kassis' death is hemopericardium secondary to dissection of the thoracic aorta with Ehlers-Danlos syndrome noted as a contributing factor.

FOCUS OF THE CORONIAL INVESTIGATION AND INQUEST

25. As foreshadowed above, the primary focus of the coronial investigation of Ms Kassis' death, including the inquest, was on the adequacy of the clinical management and care provided to Ms Kassis between her arrival in the ED on the morning of 8 October 2008, and her discharge home on the evening of the same day. Specifically, whether medical staff in the ED should have diagnosed aortic dissection, and if so, whether Ms Kassis would have or could have survived?

26. Dr Walsh provided a statement[22] and testified at inquest.[23] He documented a history of retrosternal burning chest pain, radiating to the throat that had commenced that morning, lethargy, but no other associated symptoms. Dr Walsh was aware that Ms Kassis had a complicated history including Ehlers-Danlos Type 4 with severe aortic regurgitation and iliac artery aneurysm in 2007, gastro-oesophageal reflux disease, hypertension, obesity and depression, and was also aware of Ms Kassis' current prescription medications.

27. On examination, Dr Walsh found Ms Kassis initially drowsy but easily rousable, and then alert and orientated. He heard dual heart sounds with a diastolic murmur in keeping with her known valvular disease, found she had a normal blood pressure, but was bradycardic (38 bpm). Ms Kassis had signs of mild congestive cardiac failure. In terms of investigations, Dr Walsh sighted an ECG that was unchanged from previous ECGs, and a chest x-ray that was normal for Ms Kassis.

28. Based on the history, examination and some investigations, Dr Walsh's impression was that Ms Kassis' pain was likely related to her known gastro-oesophageal reflux disease and he initiated

[21] Outlined at paragraphs 3 to 6 above. A/Prof Grigg's evidence was that the autopsy findings of a tear in the posterior aspect of the ascending aorta, and the "severe" dilatation of the ascending aorta seen on the CTA on 29 July 2008 and TOE on 18 September 2008 relate to the same part of the aorta. See transcript page 26.

[22] Statement of Dr Matthew Thomas Walsh at pages 13-16 of the inquest brief, amended at inquest by omission of the penultimate sentence on page 2, was Exhibit D.

[23] Transcript pages 14-24.

treatment with Mylanta/Lignocaine, Ranitidine, Omeprazole and Maxolon[24] and Panadeine Forte.[25]

29. At inquest, Dr Walsh testified that he was aware that ambulance paramedics had given Ms Kassis Penthrane (methoxyflurane via an inhaler) for pain relief. He also explained that while Panadeine Forte was the only analgesic proper that he prescribed, he also expected that the other medications to address the underlying cause of any pain associated with her known gastro-oesophageal reflux disease. [26] The nature and severity of Ms Kassis' pain was a significant matter, as Dr Walsh testified that in the event of aortic dissection (or more correctly, rupture of an aortic aneurysm), he would have expected Ms Kassis to be complaining of more pain and/or requiring greater pain relief, and he would have expected pain of a different quality, 'typically severe chest or back pain.'[27]

30. Dr Walsh testified that bradycardia was not a sign that he would expect as typical of an acute aortic dissection. In Ms Kassis, he was concerned that this was a new sign that had not been noticed before, that made him wonder about the underlying cause and prompted his consultation with the cardiology unit. Indeed, he conceded that Ms Kassis appeared to have developed bradycardia whilst in the ED as she was not bradycardic while being treated by the ambulance paramedics.[28]

31. Another symptom or feature of Ms Kassis' presentation was right arm weakness that was documented by both the ambulance paramedics[29] and the triage nurse,[30] but not Dr Walsh. His explanation at inquest was that Ms Kassis must have omitted this symptom when she gave him

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[24] These are in order an antacid/local anaesthetic, an H2 blocker and anti-ulcer drug, a proton pump inhibitor anti-ulcer drug, and a brand name for metoclopramide, an anti-emetic.

[25] A combination of paracetamol (a non-opioid analgesic), and codeine (an opioid analgesic).

[26] Transcript pages 16-18.

[27] Transcript pages 19 "...what symptoms would you have expected to find if you believed that she was at risk of aortic dissection on the day? --- *Aortic dissection can be difficult to diagnose as this case proves, often the patients present with severe chest or back pain with associated symptoms such as syncope or symptoms that mimic heart attack or stroke, examination – on examination their blood pressure is often raised or very low, and they usually have a fast heart rate or a normal heart rate.*" And at page 20 "...if a person was having a dissection would you expect their pain to require to be ongoing? --- *I would usually expect severe pain that required analgesia often – often strong.* Of a more significant level than Panadeine Forte? ---*Typically yes.*"

[28] Transcript page 19 & 22. AV records document four sets of vital observations from 9.34am to 10.09am, and on each occasion heart rate is 60 (and in sinus rhythm) – see page 28 of the inquest brief (Exhibit I).

[29] AV records under Secondary Survey "Right arm (generalised) weakness ... grips strong bilaterally" – see page 27 of the inquest brief (Exhibit I).

[30] See paragraph 7 above and page 28 of the inquest brief (Exhibit I).

the history. According to Dr Walsh's evidence, he would normally look at the triage notes and that it would be nice to have access to the ambulance paramedics' report to glean earlier versions of the patient's history.[31] He agreed that the symptom of right arm weakness raises a suspicion of aortic dissection,[32] and by inference, that it did not sit comfortably with the diagnosis of gastro-oesophageal reflux or indeed with a gastro-intestinal cause of pain.[33]

32. There are two references in the medical records of the consultation between Dr Walsh and Dr Ken Lu. The first is Dr Walsh's notation 'Discuss with cardiology, reviewed by Dr Lu, decrease Flecainide to 50 mg b d, no admission required'[34] twice a day. The second is a retrospective note was made by Dr Lu at 1500 hours on 9 October 2008 where he notes that the patient was discussed yesterday in the ED with Dr Walsh but not examined by him, that she was reported to have 1-2 days of lethargy, some retrosternal chest pain and no syncope. Dr Lu further notes that he reviewed the ECGs that showed no changes and sinus bradycardia, the chest x-ray that showed a widened mediastinum. Under "impression" Dr Lu wrote (1) query gastrointestinal pain and (2) sinus bradycardia, and under "recommendation to patient and Dr Walsh" he wrote does not require admission, decrease Flecainide from 100 to 50mg bd, await right heart study for aortic valve replacement and ascending aorta (repair).[35]

33. Dr Lu provided three statements in which he expanded on the retrospective note made on 9 October 2008,[36] and also testified at inquest.[37] It is significant that Dr Lu was the Cardiology Registrar who had presented Ms Kassis case to the RMH Cardiac Audit Meeting on 6 October 2008, and was very familiar with her history.[38] While she was in the ED, he told her of the outcome of that meeting, namely that she was to undergo a right heart study, in anticipation of elective surgery in the near future to replace her aortic valve and repair the ascending aorta.

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[31] Transcript pages 21-22.

[32] Transcript page 21.

[33] See Dr Sansom's evidence at transcript page 71.

[34] Page 31 of the inquest brief (Exhibit I) & transcript pages 22-23 where Dr Walsh deciphers his notes.

[35] See pages 36-37 of the inquest brief (Exhibit I). I have interpreted abbreviations and paraphrased to some extent. Initially, I was under the impression that there had been a telephone the consultation between the two doctors, but by the conclusion of the inquest it was apparent that the consultation took place in the ED while Dr Lu happened to be there reviewing other patients, and that although he did not formally review Ms Kassis himself, he did speak to her about the plan to await the scheduled right heart study by way of work-up before surgery for aortic valve replacement with or without repair of the ascending aorta aneurysm. See Dr Lu's evidence at transcript page 5 in this regard.

[36] Exhibit A is Dr Lu's statement dated 28 March 2010, Exhibit B his statement dated 15 September 2011 and Exhibit C his statement dated 8 March 2013. They are at pages 8-10, 11-12 and 12a respectively of the inquest brief (Exhibit I).

[37] Transcript pages 2-13.

[38] Transcript page 8-9 & 11.

34. At inquest, Dr Lu testified that he had noted a report of chest pain associated with lethargy, not retrosternal burning chest pain radiating to the throat, as described by Dr Walsh. The description of burning chest pain suggested a gastro-intestinal cause to Dr Lu, but did not exclude a cardiac cause, while the description of pain radiating to the throat suggested coronary ischaemia as a possible cause, 'in the right group of patients'.[39] Having reflected on Ms Kassis' case, and now as part of his general clinical practice, Dr Lu now *"always considers aortic dissection as a potential cause of any chest pain whether it radiates [to] the neck or not.'*[40]

35. Dr Lu based his clinical assessment of Ms Kassis on the stable findings demonstrated on recent extensive investigations, the clinical examination findings of Dr Walsh, the absence of ECG changes of coronary ischaemia, the absence of new findings on chest x-ray, her stability whilst in the ED, and the fact that her pain responded to oral antacids and modest analgesics. He therefore concluded that Ms Kassis' pain related to a gastro-intestinal cause rather than ischaemic heart disease, pulmonary emboli or aortic dissection, and that repeating recent investigations or admission to hospital were not warranted.[41]

36. Neither the diagnosis of gastro-oesophageal reflux pain preferred by Dr Walsh, nor the broader suggestion of gastro-intestinal pain accepted by Dr Lu, accounted for Ms Kassis' bradycardia whilst in the ED. Dr Lu's conclusion was that this was a separate problem that likely arose from Flecainide that Ms Kassis was prescribed for supra-ventricular tachycardia and he accordingly recommended halving her dose from 100mg twice daily to 50mg twice daily.[42]

37. Dr Lu conceded in his third statement and at inquest that he should have personally examined Ms Kassis in the ED, rather than relying on another colleague's examination findings, and that there may have been subtle examination findings that he may have detected that would have prompted further investigation.[43] While he stood by his clinical reasoning at the time, maintaining that Ms Kassis' presentation was not typical for aortic dissection, he testified that

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[39] Transcript pages 5-6.

[40] Transcript page 7.

[41] Encapsulated in Exhibit A at page 9 of the inquest brief (Exhibit I). Exhibit B at pages 11-12 of the inquest brief is to the same effect. See also transcript page 8 where Dr Lu testifies that he doesn't think he saw the actual x-rays but likely accepted Dr Walsh's report of them and transcript page 10 where he concedes that Ms Kassis was administered Penthrane and Panadeine Forte as well as oral antacids.

[42] This reasoning is somewhat problematic and/or counter-intuitive. That is that Ms Kassis would have an episode of sudden onset 9/10 gastro-intestinal pain, have a normal heart rate of 60bpm as per AV records between 9.34-10.09am and then become bradycardic in the ED, in response to medication she had been taking for some months (at least) without any recent changes in dosage.

[43] Exhibit C at page 12a of the inquest brief (Exhibit I) and transcript page 11.

he had learnt more over time, had heeded Professor Esmore's comments and would 'certainly in his current practice have dissection as a differential diagnosis.'[44]

38. The Late Professor Don Esmore, Senior Cardiothoracic Surgeon, Alfred Hospital, provided an independent expert report assessing the clinical management of Ms Kassis in the ED on 8 October 2008.[45] Professor Esmore's report was included in the inquest brief and provided to the parties, but as he died prior to the inquest, the parties were unable to challenge his report by cross-examination in the usual way. That said, he was critical of clinical management on the basis of a stated belief and empirical policy that when assessing a patient with an acute problem, the worst case scenario or diagnosis should be excluded before settling on a relatively benign explanation for the presentation.[46]

39. Associate Professor Leeanne Grigg, Director of Cardiology, Royal Melbourne Hospital, provided an outline of Ms Kassis clinical course on 8 October 2008, including details of recent investigations, based on the medical records.[47] A/Prof Grigg also testified at inquest where she expressed the opinion that Ms Kassis had a severely dilated aorta, and that the site of dilatation corresponded with the tear of the ascending aorta seen at autopsy.[48] Her expectation was that given what was known about Ms Kassis, the differential diagnosis of aortic dissection would have been considered during her ED presentation on 8 October 2008. While she felt that Ms Kassis presentation was not typical for aortic dissection and lacked the "red flag" of syncope present during her September presentation and the *very severe pain traditionally radiating straight to the back* that suggests aortic dissection to clinicians without more, she testified that aortic dissection is very hard to diagnose and *we need to be thinking about it in every patient that presents with chest pain.* [49]

40. A/Prof Grigg testified that aortic dissection is difficult to diagnose and that it is inevitable that some cases will be missed, but that she would like to see clinicians document that they have considered aortic dissection, and their rationale for excluding it as a diagnosis. She felt that

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[44] Transcript page 12.

[45] His report dated 1 August 2011 is at pages 20-21 of the inquest brief (Exhibit I).

[46] Ibid, paraphrased.

[47] Her report dated 14 September 2009 is at pages 18-19 of the inquest brief and a Summary of Admissions and Outpatient Visits appears at page 38 (Exhibit I). Exhibit F is A/Prof Grigg's 11 page Curriculum Vitae including a list of publications.

[48] Transcript pages 25-27. See paragraph 21 and footnote 20 above.

[49] Transcript pages 28-30.

clinicians should focus on known predisposing factors such as hypertension and the connective tissue disorders such as Marfan's syndrome or Ehlers-Danlos syndrome.[50]

41. With respect to the risks of surgery, A/Prof Grigg stressed that Ms Kassis had a number of co-morbidities that made her a high-risk candidate for surgery. These included lung disease, pulmonary hypertension, obesity and the history of renal and respiratory failure and cardiac arrest following surgical repair of an iliac artery aneurysm in 2007.[51] Although there were clear cardiac grounds for considering major cardiac surgery, subject to certain investigations by way of work-up, it was always possible that Ms Kassis would be assessed as being at too high a risk for such surgery on an elective basis.[52]

42. Prof Esmore's opinion that that Ms Kassis had an excellent chance of survival if an aortic dissection was diagnosed on 8 October 2008, investigated and verified by TOE or CTA and urgent surgical repair undertaken.[53] A/Prof Grigg did not agree with this opinion. Her evidence was that once an aortic dissection of the ascending aorta is diagnosed, the risk of mortality is very high without intervention, aortic surgery is undertaken in that high risk context and the risk of mortality for urgent aortic surgery is significant at around 20-25% overall. In Ms Kassis the risk was much higher but it was difficult to be more precise.[54]

43. <u>Dr Guy Sansom</u> is an Emergency Physician and was asked to provide an independent expert assessment of the clinical management provided to Ms Kassis in the ED on 8 October 2008. He provided a comprehensive report dated 2 May 2013 and testified at inquest.[55]

44. Although not documented as such in the medical records, Dr Sansom accepted that Dr Walsh and Dr Lu were mindful of the possibility of aortic dissection, or some other complication of Ms Kassis' known aortic disease, when they discussed her presentation and clinical management on

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[50] Ibid.

[51] Pulmonary hypertension previously documented in 2007 also needed to be investigated. Both Prof Esmore and A/Prof Grigg considered this likely to be secondary to severe sleep apnoea/severe lung disease. See Prof Esmore's report at page 20 of the inquest brief (Exhibit I) and A/Prof Grigg's evidence at transcript page 36.

[52] The risk of surgery needs to be balanced against the risk of not performing surgery as diagnosis of aortic dissection carries a very high mortality without intervention. Transcript pages 36-37.

[53] *"A transoesophageal echocardiogram or CT scan would have almost certainly confirmed the aortic tear/dissection and the patient would have proceeded to urgent cardiac surgery which would have had an excellent chance of a successful outcome for the patient, albeit as a moderate risk procedure in an obese female." Page 21 of the inquest brief (Exhibit I).*

[54] Transcript pages 36-37.

[55] Exhibit G at pages 21-1 to 21-7 of the inquest brief (Exhibit I) and transcript pages 46-83.

8 October 2008.[56] Dr Sansom was not critical of the plan to observe Ms Kassis for a period of time, to see if her symptoms resolved, and if not, to consider further investigations including CTA if necessary.[57] At inquest, he described this as a reasonable compromise and testified that this was a view shared by a number of his experienced colleagues.[58]

45. He stressed that, the absence of any progress notes after about 2.00pm, indeed any documentation from Ms Kassis admission to the Short Stay Unit,[59] made it difficult to assess the efficacy of the plan and the reasonableness of the decision to discharge Ms Kassis home to await outpatient cardiology review and/or surgery. The *assumption* was that she had been stable and well enough for discharge.

46. Dr Sansom had reservations about the rationale for attributing Ms Kassis bradycardia while in the ED to Flecainide. He testified that bradycardia is a known uncommon side effect that occurs in only about two per cent of patients and is more likely to occur when treatment is commenced and the patient is naive to the drug.[60] Ms Kassis had been taking Flecainide for some months, and although Dr Lu was of the belief that her dose had been increased recently from 50mg twice daily to 100mg twice daily, the evidence is far from clear about this.[61] Ms Kassis herself, told ambulance paramedics that she had no recent medication changes.[62] Moreover, if Ms Kassis' bradycardia were Flecainide-induced, as a consequence of the drug's half life, a longer period of observation of the order of at least 6-12 hours would have been required to test the hypothesis.[63]

47. Aside from the problematic dosage, in attributing Ms Kassis' bradycardia while in the ED to Flecainide, Drs Walsh and Lu did not appear to recognise that bradycardia is associated with

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[56] Transcript page 66.

[57] It is clear that the definitive test for diagnosing aortic dissection is CTA (aortogram). See transcript page 56. In terms of the usefulness of blood tests in diagnosing aortic dissection, see transcript pages 71-73 where Dr Sansom testifies that there is no universally accepted and reliable blood test for the condition, that D-Dimer has been suggested as a rule-out test that can inform the need for CTA but is unhelpful in people like Ms Kassis who have connective tissue disorders and generally live with an elevated D-Dimer. Although the cubicle nurse attempted to take blood for testing, she was unable to obtain a sample and no blood tests were undertaken during the 8 October 2008 presentation. A drop in haemoglobin was not likely to be helpful as it is usually a late sign in aortic dissection – see transcript pages 73-74.

[58] Transcript pages 56-57, 61, 73.

[59] By the end of the inquest, it was accepted that Ms Kassis had been in the Short Stay Unit from about 2.00pm until her discharge at about 6.00pm, and that the progress notes and other documentation pertaining to this admission had not found their way onto the medical records. Transcript pages 60 and following.

[60] Transcript page 64.

[61] See footnote 2 above and transcript pages 80 and following.

[62] AV records page 24 of the inquest brief (Exhibit I).

[63] Transcript page 63.

some aortic dissections. Dr Sansom testified that although tachycardia is much more likely to be associated with aortic dissection, *paradoxical* bradycardia may occur where the dissection is near the aortic arch and the carotid arteries.[64]

48. Dr Sansom also gave evidence about the risks of surgery for Ms Kassis, and while he agreed with Professor Esmore to some extent, he supported the wait and see approach taken by Drs Walsh and Lu, rather than rushing to perform another CTA when Ms Kassis had been subjected to several CT scans and was already at risk due to excessive exposure to radiation.[65] He recognised that Ms Kassis was constantly at risk of aortic dissection and that the risk changed from day to day. He agreed with the approach taken by the cardiology unit in conducting investigations in order to prepare for elective surgery. He testified that the risk associated with surgery is assessed differently in the setting of an acute aortic dissection. Dr Sansom also agreed with Prof Esmore's opinion that with urgent cardiac surgery Ms Kassis had an excellent chance of a successful outcome albeit at a moderate risk because of her co-morbidities, at the same time recognising that *all things going well with this patient, it's a significant chance of her not surviving the surgery.*[66]

CONCLUSIONS

49. The <u>standard of proof for coronial findings</u> of fact is the civil standard of proof, on the balance of probabilities, with the *Briginshaw* gloss or explication.[67] The effect of the authorities is that Coroners should not make adverse findings against or comments about individuals, unless the evidence provides a comfortable level of satisfaction that their departure from the prevailing standards of their profession, has caused or contributed to the death under investigation.

50. The weight of the evidence supports a finding that Ms Kassis had an unusual presentation for aortic dissection on 8 October 2008 and received reasonable clinical management from Drs

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[64] Transcript pages 64-65.

[65] Transcript pages 66-67.

[66] He went on to say *"If they had got the pulmonary hypertension under control that would have increased her chances somewhat but the chance of success in someone that's already dissecting, who's got these other co-morbidity problems, I can't comment. It's a cardio-thoracic – but I know for a fact that that's a – what we should say is very risky surgery and the surgeons, I'm sure, would have a bedside chat with her and the family explaining that "This is emergency procedure and there's a possibility you're not going to survive..."* at transcript page 67.

[67] *<u>Briginshaw</u> v <u>Briginshaw</u> (1938) 60 C.L.R. 336 esp at 362-363.* "The seriousness of an allegation made, the inherent unlikelihood of an occurrence of a given description, or the gravity of the consequences flowing from a particular finding, are considerations which must affect the answer to the question whether the issues had been proved to the reasonable satisfaction of the tribunal. In such matters "reasonable satisfaction" should not be produced by inexaet proofs, indefinite testimony, or indirect inferences..."

Walsh and Lu. However, the medical records are seriously deficient in that they do not document her admission to the Short Stay Unit, and, in particular, the resolution of her pain and bradycardia. While I recognise that sub-optimal documentation does not equate with sub-optimal clinical management, poor practices around documentation should not be condoned.

51. The evidence of A/Prof Grigg and Dr Sansom supports a finding that in patients presenting with chest pain generally, and in patients with a medical history such as Ms Kassis particularly, best practice requires that the differential diagnosis of aortic dissection is explicitly considered and convincingly excluded and documented accordingly, before arriving at any other more benign diagnosis.

52. In the finding into the death of Constandia (Connie) Petzierides,[68] I commented at length about the difficulties of diagnosing aortic dissections and made recommendations under section 72(2) of the ***Coroners Act 2008***. I do not propose to reiterate all those matters here, save to say that I am unaware of the outcomes of the recommendations addressed to the Minister for Health, the Secretary of the Department of Health and/or the Departments Emergency Care Improvement and Innovation Clinical Network and whether they have resonated to any extent.[69]

53. However, as in Mrs Petzierides' case, Ms Kassis' death was preventable in the sense that her presentation to the ED on 8 October 2008 was a lost opportunity for diagnosis of aortic dissection. It is apposite to repeat the observation that it may not be helpful for clinicians to think in terms of *classic* features of a disease that is a classic mimicker of other conditions, and/or because it is a dynamic process.

54. In finding that Ms Kassis' death was preventable, I mean that she could, not would, have survived. I am not disregarding the significant mortality associated with the disease, even when correctly diagnosed and treated in a timely manner, whether medically or surgically. Regardless, her death was preventable in the sense that with correct diagnosis, and the commencement of treatment before catastrophic rupture, Ms Kassis had a reasonable chance of surviving an otherwise lethal condition, whereas discharge home gave her no real chance.[70]

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[68] http://www.coronerscourt.vic.gov.au/home/coroners+written+findings/findings+-+157110+constandia+petzierides.

[69] The Court received a response from the Australasian College of Emergency Medicine. The response has been published on the Court's website above at fn 68.

[70] Perhaps expressed more pithily by Prof Esmore – *"The patient presented to her treating hospital with symptoms and some signs that should have made "the penny drop" as to the potentially life-threatening diagnosis and shortly after life-ending reality of aortic dissection". See page 21 of the inquest brief (Exhibit I).*

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

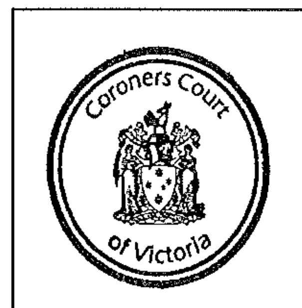
The family of Ms Kassis

Dr Ken Lu c/o Mr Andrew Mariadason, Avant Law

Melbourne Health c/o Ms Jan Moffatt, Corporate Counsel, Melbourne Health

Leading Senior Constable Tania Cristiano, Police Coronial Support Unit.

Signature:



PARESA ANTONIADIS SPANOS
Coroner
Date: 30 September 2014

cc: Manager, Coroners Prevention Unit