IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2022 002305

FINDING INTO DEATH WITH INQUEST

Form 37 Rule 63(1)

Section 67 of the ***Coroners Act 2008***

Deceased:	Amrita Varshini Lanka
Delivered on:	14 October 2026
Delivered at:	Coroners Court of Victoria, 65 Kavanagh Street, Southbank
Hearing dates:	Directions Hearings: 1 November 2023 (before Coroner Lorenz); 22 April 2024 Inquest: 26-30 August 2024 Final Submissions: 12 December 2024
Findings of:	Deputy State Coroner Paresa Antoniadis Spanos
Counsel Assisting the Coroner:	Ms Megan Fitzgerald of Counsel, instructed by Ms Grace Horzitski, Senior Coroner's Solicitor.
Representation:	Mr Paul Halley and Ms Genna Angelowitsch, both of Counsel, instructed by Slater + Gordon for the Family. Ms Fiona Ellis of Counsel, instructed by Meridian Lawyers for Monash Health. Ms Rachel Ellyard of Counsel, instructed by Avant Law for Dr Srinidhi Rao. Mr Raph Ajzensztat of Counsel, instructed by K&L Gates for The Royal Children's Hospital.

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INTRODUCTION

1. Amrita Varshini Lanka (**Amrita**) was the much-loved eight-year-old daughter of her mother, Satya Tarapureddi (**Satya**), and her father, Venkata Chandra Sekhar Lanka (**Chandra**). Amrita is also survived by her brother and is greatly missed by all her family and broader community. In a coronial impact statement, Satya described her daughter as the most precious, talented and beautiful child who loved art and animals, especially birds. Amrita played the piano, was very smart and was the centre of their universe.

2. Amrita lived with her family in Clayton South and had no significant medical history or chronic medical problems. Nevertheless, Amrita died in the Paediatric Emergency Department (**ED**) at Monash Medical Centre (**MMC**) on 30 April 2022 having presented there shortly before 1300 hours the previous day. Subsequently, the cause of her death was found to be lymphocytic myocarditis.

AN OVERVIEW OF AMRITA'S CLINICAL COURSE[1]

3. On 29 April 2022,[2] Amrita was referred to the ED by the family general practitioner (**GP**) who suspected appendicitis. This came following two days of nausea, vomiting, diarrhoea and abdominal pain. She was triaged shortly before 1300 hours when she was alert, and her vital signs were within normal ranges. Amrita's symptoms continued through the afternoon, evening and overnight with some variation as will be discussed below.

4. At about 1500 hours that day, Amrita was medically reviewed for the first time by an ED registrar who arranged an abdominal ultrasound and blood tests. The ultrasound was performed in the late afternoon, and a surgical review took place at about 1900 hours. At that time, the diagnosis of appendicitis was determined to be unlikely, and given her overall presentation, the working diagnosis was gastroenteritis.

5. With the change of shift in the evening, Amrita's care was handed over to the incoming ED registrar.

6. At about 0300 hours on 30 April, the overnight ED registrar reviewed Amrita at the request of nursing staff. During that review, Satya raised concerns about Amrita's shortness of breath and chest pain, as well as the unusually high reading displayed on the heartrate monitor in the

[1] This is a broad overview of the circumstances in which Amrita's death occurred, intended to assist understanding of the finding. The timeline and broader circumstances will be discussed in more detail below by reference to the evidence. While I believe the overview is uncontroversial, to the extent of any inconsistency, the latter is to be preferred.
[2] As these events all took place within a 24-hour period from 29-30 April 2022, the year is omitted hereafter.

room. The registrar conducted a review of Amrita and nursing staff documented her vital signs and performed an electrocardiogram (**ECG**) which was completed at 0330 hours.

7. The ECG trace was abnormal leading the registrar to suspect myocarditis. He consulted with his ED colleagues as well as a more experienced hospital medical officer from the adult ED who also recognised the ECG results were abnormal. However, neither doctor appears to have appreciated the extent of the abnormality shown on the ECG and the severity of Amrita's condition. This failure to recognise and respond to the severity of Amrita's condition will be discussed in some detail below, including its causal significance and the 'preventability' of Amrita's death.

8. Given the suspicion of myocarditis, the ED registrar ordered venous blood gases and troponin levels, among other blood tests. Amrita was noted to have had developed a fever, but her vital signs were otherwise normal according to the Victorian Children's Tool for Observation and Response (**ViCTOR**) charts used for paediatric observations in Victoria. Relevantly, no blood pressure readings were taken at this time.

9. At 0352 hours, venous blood gases showed an elevated lactate of 5.9 which was high but thought by the ED registrar to be spurious as he did not think Amrita looked very unwell. Nevertheless, the test was not repeated until about 0647 hours. In the meantime, apart from the one set of incomplete vital observations, there was no further attendance on Amrita until the troponin level results became available to the ED at about 0530 hours.

10. Those troponin results were grossly elevated at greater than 27,000 nanograms per litre where the normal range is less than 10. The results prompted the ED registrar to ask that Amrita be moved to a resuscitation cubicle in the main ED. None were immediately available and Amrita was moved into the main ED shortly before 0600 hours. Vital observations taken at this time included a low blood pressure of 72/49. The ED registrar was called and attended Amrita's bedside. At 0628 hours, another low blood pressure reading of 70/56 prompted a medical emergency team (**MET**) call and transfer to a resuscitation cubicle.

11. From about 0600 hours, the ED registrar escalated Amrita's care to a range of senior clinicians and specialist units, including the Paediatric Intensive Care Unit (**PICU**) and the on-call cardiology consultant.

12. In the meantime, Amrita's condition continued to deteriorate. At 0730 hours, Amrita suffered a brief cardiac arrest with a return of spontaneous circulation after two minutes of cardiopulmonary resuscitation (**CPR**).

13. At about 0740 hours, the ICU registrar suggested that the ED registrar contact the Paediatric and Infant Perinatal Emergency Retrieval (**PIPER**) service at the Royal Children's Hospital (**RCH**) to facilitate Amrita's transfer to the RCH for Extra Corporeal Life Support (**ECLS**) or Extracorporeal Membrane Oxygenation (**ECMO**)[3]. The apparent delay in making these arrangements and its causal significance will be discussed in some detail below.

14. Ultimately, the PIPER retrieval team arrived at the ED at 0851 hours. Unfortunately, shortly after their arrival, Amrita went into prolonged cardiac arrest and could not be saved despite over 45 minutes of cardiopulmonary resuscitation and she was pronounced deceased at 1046 hours.

INVESTIGATION AND SOURCES OF EVIDENCE

15. This finding is based on the totality of the material the product of the coronial investigation of and inquest into Amrita's which includes witness statements, the forensic pathologist's report, medical records and expert reports.[4] This finding is also based on the evidence of those witnesses who were required to testify at inquest and any documents tendered through them and the final submissions of Counsel for each of the parties.

16. All this material, together with the inquest transcript, will remain on the coronial file.[5] In writing this finding, I do not purport to summarise all the material and evidence but will only refer to it in such detail as is warranted by its forensic significance and the interests of narrative clarity.

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[3] Extracorporeal Life Support (ECLS) also referred to as Extracorporeal Membrane Oxygenation (ECMO) is a life-support technique for patients with severe, life-threatening heart or lung failure. The machine acts as an artificial lung and/or heart, pumping blood outside the body to oxygenate it, remove carbon dioxide, and return it to circulation to allow the organs to rest and heal. See page 352-A of the brief. RCH's ECLS is the designated Victorian centre for extracorporeal membrane oxygenation for children under 16 years of age. The PIPER service coordinates patient transfer to RCH where ECLS/ECMO is required for patients at other health services. In the remainder of this finding, the abbreviation ECMO will be used for convenience.

[4] The compilation of material sometimes referred to as an inquest brief (designated Exhibit A at inquest) will be referred to as the "brief" in the rest of this finding.

[5] 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. Unless otherwise stipulated, all references to legislation that follow are to provisions of the Act.

PURPOSE OF A CORONIAL INVESTIGATION

17. The purpose of a coronial investigation of a reportable death[6] is to ascertain, if possible, the identity of the deceased person, the cause of death and the circumstances in which death occurred.[7]

18. Amrita's death clearly falls within the definition of reportable death in section 4 of the *Coroners Act 2008* (**the Act**), satisfying both the jurisdictional nexus with the State of Victoria required by section 4(1) of the Act, and section 4(2) which includes a death that appears to have been *unexpected*, unnatural or violent or to have resulted, directly or indirectly, from an accident or injury (section 4(2)(a)) [emphasis added].

19. The medical cause of death, includes 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 all those circumstances which might form part of a narrative culminating in death.[8]

20. 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.[9]

21. Coroners are 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.[10] These are effectively the vehicles by which the coroner's prevention role can be advanced.[11]

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[6] The term is exhaustively defined in section 4 of the Act.
[7] Section 67(1).
[8] This is the effect of the authorities – see for example *Harmsworth v The State Coroner* [1989] VR 989; *Clancy* v *West* (Unreported 17/08/1994, Supreme Court of Victoria, Harper J.). Note that coroners are not empowered to determine the civil or criminal liability arising from the investigation of a reportable death and are specifically prohibited from including in a finding or comment any statement that a person is, or may be, guilty of an offence. However, a coroner may include a statement relating to a notification to the Director of Public Prosecutions if they believe an indictable offence may have been committed in connection with the death. See sections 69 (2) and 49(1) of the Act.
[9] The 'prevention' role is now explicitly articulated in the Preamble and purposes of the Act, compared with the *Coroners Act 1985* where this role was generally accepted as 'implicit'.
[10] See sections 72(1), 67(3) and 72(2) regarding reports, comments and recommendations respectively.
[11] 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.

IDENTITY

22. Amrita Varshini Lanka, born 7 October 2013, aged eight years, was identified by her father Venkata Chandra Sekhar Lanka who signed a formal Statement of Identification to this effect before emergency consultant, Dr Adnan Bilgrami, from Monash Health on 30 April 2022.

23. Identity was not in issue and required no further investigation.

CAUSE OF DEATH

24. Amrita's body was brought to the Coronial Services Centre in Southbank. Forensic pathologist Dr Paul Bedford, from the Victorian Institute of Forensic Medicine (**VIFM**) reviewed the *Police Report of Death to the Coroner* (VP Form 83), the Medical Deposition from MMC, Monash Health medical records and post-mortem CT (computed tomography) scanning of the whole body undertaken at VIFM (**PMCT**), before performing a full postmortem examination or autopsy on Amrita's body.

25. Having done so, Dr Bedford provided a seven-page written report of his findings and opinion about the cause of death[12] in which he summarised the autopsy findings as mildly enlarged heart for age at 147 grams; no evidence of intraabdominal pathology; and serous effusions involving the heart, lungs and abdomen.

26. Dr Bedford also provided commentary about matters germane to the coronial investigation and inquest. He stated that the cause of death related to marked inflammatory activity involving extensive areas of the heart. Microbiology studies showed some Epstein Barr virus (**EBV**) in the myocardium, however, serology indicated this was evidence of past rather than recent EBV infection. There was no evidence of intraabdominal pathology, in particular, no evidence of appendicitis or gastroenteritis.

27. When reporting histology, Dr Bedford advised that sections showed florid myocarditis with the majority of cells being lymphocytes and occasional polymorphs and macrophages.[13] Lung

[12] Dr Bedford's autopsy report dated 23 June 2022 is at pages 1-14 of the brief, including the ancillary toxicology report.
[13] *Lymphocytic myocarditis* is a common form of heart muscle inflammation where lymphocytes or white blood cells infiltrate and damage myocardial tissue. It is most frequently triggered by viral infections but can be caused by autoimmune disorders and some drug reactions. *Polymorphs* (short for polymorphonuclear leucocytes or neutrophils) are a type of white blood cell. A high polymorph count on a blood test, known as neutrophilia, usually indicates the immune system is actively fighting a bacterial infection, severe inflammation, or experiencing physical stress. *Macrophages* are specialized, large white blood cells of the innate immune system. They are involved in the detection, phagocytosis and destruction of bacteria and other harmful organisms.

tissue was congested. There was no acute inflammatory activity of significance involving the gastrointestinal tract. Other organs examined were within normal limits for age.

28. Dr Bedford attributed Amrita's death to *1(a) Lymphocytic myocarditis*, which he described as a death due to natural causes.

29. I accept Dr Bedford's opinion, and the cause of Amrita's death as formulated.

FOCUS OF THE CORONIAL INVESTIGATION & INQUEST

30. The focus of the coronial investigation and inquest into Amrita's death was on the circumstances in which the death occurred, broadly, the adequacy of the clinical management and care provided to her in the paediatric ED at MMC over about 20 hours between 29 and 30 April. A detailed Scope of Inquest (**Attachment A**) was accepted by the parties without demurrer. In brief, and sufficient for present purposes, the main questions at inquest were: -

    (a) Was there was an earlier opportunity for the diagnosis of fulminant myocarditis?

    (b) Was there a delay in escalating Amrita's care to a senior clinician?

    (c) When did Amrita's family raise concerns and what was the response?

    (d) Was there a clear Patient and Carer Escalation (**PACE**) pathway at Monash Health?

    (e) Did Monash Health have capacity to provide ECMO for paediatric patients?

    (f) Was there a delay in arranging ECMO via the PIPER retrieval service?

    (g) Was Amrita's death preventable?

Concessions made by Monash Health

31. At the commencement of the inquest, Ms Ellis, counsel representing Monash Health, made concessions on behalf of Monash Health. While the concessions are captured in the transcript, it is appropriate to reiterate them here in the interests of transparency and clarity:

> *Monash Health expresses its genuine condolences to Amrita's family on her passing. From approximately 0330 hours on 30 April 2022 following performance of the ECG, there was consideration of the potential diagnosis of myocarditis.*
>
> *Monash accepts that there was a failure by it to appreciate the rapidly progressive nature of this condition and the need for timely treatment. It further accepts that Amrita's blood pressure should have been monitored more frequently, and that the*

results of her blood tests and investigations required that her care be quickly escalated to the on-call consultants and emergency medicine, paediatric cardiology and to the paediatric intensive care unit by approximately 0400 hours.

Since Amrita's passing, Monash Health has reviewed her presentation to the Emergency Department carefully and developed and implemented recommendations to educate, support and assist its staff in the early recognition of this extremely rare but devastating illness.[14]

32. I commend Monash Health for making these concessions which appeared to have been well-received by the family. As discussed at the inquest, the concessions went some way to simplifying the inquest, at least theoretically. However, as a coroner, I am required not only to identify any failures or inadequacies in clinical management or care but to understand their causes and the context within which they occur; to understand the rationale behind any changes remediation made or proposed by Monash Health; and to evaluate their efficacy where appropriate.[15]

Amrita's presentation, triage and initial management on 29 April 2022

33. On the morning of 29 April 2022, Amrita presented to the family GP accompanied by her father. The GP documented a history of severe vomiting, fever and abdominal pain since the preceding day; loose stools since that morning; no history of similar symptoms in other members of the family; and no consumption of food prepared outside the home. On examination, Amrita had a fever, was mildly dehydrated and had mild abdominal tenderness but no guarding or rebound tenderness. The GP advised the family to attend the ED immediately and provided a referral letter in which he queried whether Amrita was in the initial stages of appendicitis.[16]

34. According to Monash Health electronic medical records (**EMR**), Amrita present to the ED at 1257 hours on 29 April 2022. The triage nurse's assessment records Amrita's presenting complaint as one day of peri-umbilical pain with associated diarrhoea, vomiting and fevers and noted the referral from her GP querying possible appendicitis. On arrival, Amrita rated her abdominal pain 4/10 in severity and complained of nausea. Vital signs were recorded as temperature 37.1°C, peripheral pulse rate 118 beats per minute (**bpm**), oxygen saturations 97

[14] Transcript page 4.
[15] Transcript page 5.
[16] The GP clinic note regarding this attendance is at page 183 of the brief, and the referral letter at page 184.

percent and GCS[17] 15. Amrita's weight was recorded as 27.1 kilograms. She was assigned triage category 3 and remained in the waiting room.[18]

35. At 1441 hours, Amrita was moved to cubicle C10 in the ED, a non-nursed cubicle not intended for prolonged patient use. Unfortunately, while the cubicle afforded the family some privacy, Amrita was not allocated to a particular nurse and this had consequences for Satya, in particular, who felt challenged in having Amrita's needs addressed and escalating her concerns.[19]

36. Amrita's first medical review was by Dr Claudia Silva shortly after 1500 on 29 April. Dr Silva provided a statement for the brief but was not required to testify at inquest as there did not appear to be any issues with the clinical management and care she provided to Amrita at this stage.[20] According to the EMR, Dr Silva assigned herself to Amrita's care at 1443 and documented her assessment of Amrita at 1504.[21]

37. Dr Silva noted a two-day history of feeling unwell with leg pain and that Amrita had become more lethargic one day prior with loose stools, persistent vomiting, high temperatures, abdominal/periumbilical pain, and decreased oral intake due to vomiting. Amrita denied any urinary symptoms, rash, cough, shortness of breath or chest pain. Dr Silva obtained a collateral history from Satya that Amrita was previously well, had no known allergies, was up to date with her immunisations and there was no family history of any medical history or recent illness. On examination, Amrita appeared a bit pale but did not look unwell. She was afebrile with strong pulses and a capillary refill time of less than two seconds. Heart sounds were normal with no murmur and her chest was clear. Her abdomen was soft and tender over the epigastrium and right upper quadrant and there was minimal pain in the right and left iliac fossa. There was no neck stiffness or rash.

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[17] The Glasgow Coma Scale (**GCS**) is the most common scoring system used to describe the level of consciousness in a person following a traumatic brain injury. A score of less than 8 indicates a severe brain injury; a score of 9 to 12 indicates a moderate injury; and a score of 13 to 15 indicates a mild injury such as concussion.

[18] See Dr Adam West's first statement dated 27 October 2022, page 18 of the brief.

[19] Satya's statement, pages 224-228 of the brief and transcript pages 6-28 for her evidence.

[20] Dr Silva provided a statement dated 4 April 2024, pages 290-294 of the brief that includes details of her formal qualifications and work experience. Dr Silva graduated in medicine in Brazil in 2002 before undertaking paediatric training and qualifying as a fellow of the Brasilian Society of Paediatrics in 2006. She completed a Masters with a focus on paediatrics; published a thesis; and worked as a general paediatrician between 2009 and 2010 in emergency, outpatient and community settings before moving to Australia. In August 2020, Dr Silva commenced working full time as an unaccredited paediatric registrar at MMC where she was still working at the time of Amrita's presentation. As at the date of her statement, Dr Silva had commenced basic paediatric training on an accredited pathway at The Royal Children's Hospital.

[21] Dr West's statement, page 18 of the brief.

38. Dr Silva noted the vital observations taken at triage. While no vital observations were taken at time of her review, in her statement, Dr Silva observed that the vital observations documented in the EMR at 1529 were stable with the triage observations. [22]

39. The management plan documented by Dr Silva following her initial review of Amrita included an abdominal ultrasound (which had already been requested during Amrita's fast track assessment) and a capillary blood gas and urine dipstick; she provided orders for analgesia, anti-nausea medication and for intravenous (**IV**) fluids if Amrita was unable to tolerate oral fluids. Dr Silva requested a bed in the short stay unit (**SSU**) but there was no bed immediately available.[23]

40. According to Dr Silva, a bedside ultrasound of Amrita's abdomen was performed at about 1600.[24] At about 1800, she recalled being advised by nursing staff that Satya was concerned about the ultrasound and that Amrita had not been reviewed or offered any food. Dr Silva reviewed Amrita again and spoke to Satya indicating that they were waiting for the ultrasound report and that depending on the result, Amrita could be offered a trial of food and oral fluids. Dr Silva also told Satya that Amrita's proposed management would be discussed with the surgical team once the ultrasound report was available. Dr Silva conceded she did not document this review in the EMR.

41. A short time later, Dr Silva was asked to review Amrita again as she was in pain, vomiting, feeling nauseated and not able to tolerate food. Dr Silva inserted an IV cannula in Amrita's right arm and drew blood for testing. She also attempted to draw a venous blood gas sample but was unsuccessful and asked nursing staff to collect another blood sample for a venous or capillary blood gas after Amrita was moved to the SSU.[25]

42. Amrita was reviewed by the paediatric surgical team once the ultrasound results were available. They commenced their notes in the EMR at 1907 hours.[26] Their conclusion was

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[22] Dr Silva's statement, pages 290-291. The vital observations referred to by Dr Silva as having been documented in the EMR at 1529 are spread over pages 172-178 of the brief, depicted visually on a trending chart at page 180A and more conveniently summarized in Dr West's statement at page 19 of the brief.

[23] Dr Silva's statement, page 291 of the brief. Note that Dr Silva described a second review of Amrita at about 1800 which was not documented in the EMR and primarily concerned Satya's concerns that Amrita had not been reviewed or offered any food and advice given to the effect that once the ultrasound report was reviewed and subject to the findings, Amrita could have something to eat.

[24] Dr Silva's statement, page 291 of the brief. Relying on the EMR, Dr West suggested a larger time window - *"Sometime between 1532 and 1714 hours"* and referred to an abdominal ultrasound performed in the ultrasound department. The discrepancies are not material.

[25] Dr Silva's statement, pages 292-293 of the brief.

[26] EMR at pages 162-163 of the brief, including the ultrasound findings – *"The appendix was not identified. Small amount of free fluid and mildly echogenic fat noted in the RIF. 12-15 lymph notes are seen right iliac fossa. They appear normal in size. There is local tenderness over the lymph nodes. There is a small amount of simple fluid in the right iliac fossa".*

that appendicitis was unlikely and documented a plan for Amrita to be kept in the SSU; either remain or be discharged as determined by ED registrar; and, if ED wanted Amrita admitted, she could be admitted under paediatric surgery overnight for review by the surgical registrar in the morning.[27] It is not entirely clear where Amrita's surgical review was undertaken and whether it took place before or after Amrita's transfer to the SSU.[28]

43. According to Dr Adam West whose account was based on the EMR, Amrita was moved to a bed within the SSU at 1940 hours. Intravenous fluid was commenced at 2045 hours, and pantoprazole 25mg was administered intravenously at 2132 hours to treat presumed gastritis which was the working diagnosis at the time.[29]

44. Dr Silva became aware of a set of vital observations documented by nursing staff in the EMR at 2149 which she considered normal – respiratory rate of 22 breaths per minute; heart rate 119 bpm; blood pressure 89/56. A repeat capillary blood gas showed lactate at 2.3 mmol/L (reference range 0.5-2.0 mmol/L) and bicarbonate at 20.3 (reference range 22-32 mmol/L). Dr Silva discussed these results with a paediatric fellow and it was considered that the elevated lactate was spurious and that the other results (capillary blood gas and blood tests) were reassuring.[30]

45. Amrita was reviewed for the last time by Dr Silva at 2200, before the end of her shift. She recalled Satya asking when Amrita could go home and explained that although the blood tests were reassuring, the agreed management plan was for Amrita to remain in the SSU overnight as the ultrasound result was inconclusive and did not rule out appendicitis; Amrita would be reviewed in the morning and either discharged or admitted to the surgical ward if she had not improved and was still unable to tolerate food and fluid. Dr Silva examined Amrita and auscultated her heart and chest with a stethoscope, palpated her abdomen and checked her pulse. There were no abnormal findings and her condition remained unchanged from the previous examination.[31]

46. During the course of the coronial investigation, Satya complained that her concerns about Amrita's *"strange breathing"* and *"chest pain or discomfort"* were ignored by clinicians.

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[27] Dr West's statement, page 19 of the brief, at para 12.
[28] The sequence of Dr West's account of clinical management suggests the surgical review occurred prior in cubicle 10; the surgical review as documented in the EMR is ambiguous about location; and Dr Silva's statement has the review occurring in the SSU. While I do not suggest the place where the surgical review took place is material, it is indicative of the difficulty in gleaning information from the EMR in printed form
[29] Dr West's statement, page 19 of the brief, at para 13.
[30] Dr Silva's statement, page 292 of the brief, at para 2.12.
[31] Dr Silva's statement, page 292 of the brief, at paras 2.13 & 2.14.

Dr Silva addressed this in her statement by confirming that while she did not recall any report or complaint of chest discomfort during her care of Amrita, she did recall Satya mentioning an episode of strange breathing on two occasions, the first during her review at about 1930 and the second during her last review at about 2200. Dr Silva conceded she should have documented the reports of strange breathing as this had not been reported previously. However, she gave plausible explanations why she did not consider the reports to be clinically significant at the time given Amrita's overall condition, the treatment she was undergoing and her vital observations during the last review.[32]

47. The handover of Amrita's care from Dr Silva to the incoming overnight ED registrar, Dr Patrick Tan, occurred at 2341 hours. There is agreement in their accounts about the substantive information handover between them verbally which was then documented in the EMR by Dr Tan under the heading "*Task/To Do*".[33]

48. In her statement, Dr Silva clearly states that she did not inform Dr Tan about the reported episodes of strange breathing and provides her rationale: *"At the time I did not consider that this needed further investigation given that my impression was that the episodes were likely related to nausea, that my findings on examination were normal and Amrita otherwise appeared to be settled."*[34]

Medical review at 0300 hours on 30 April including the ECG

49. Before turning to Dr Tan's evidence, it is worth noting that Amrita's repeat vital observations documented by nursing staff in the EMR at 0018 and 0248 on 30 April were within the normal range. Relevantly, no blood pressure was taken at either time, presumably because nursing staff did not want to disturb Amrita's sleep.[35]

50. As Dr Tan was the incoming night shift ED registrar and, was managing Amrita overnight, his evidence was critical to an understanding of her clinical course. Dr Tan provided a statement and gave evidence at inquest where he was cross-examined at length by counsel assisting and Mr Halley on behalf of the family.[36] While I acknowledge this was a confronting

[32] Dr Silva's statement, page2 292-293.
[33] Dr Silva's statement, page 294 of the brief, para 5. Dr Tan's statement at page 296 of the brief, para 2.7.
[34] Dr Silva's statement, page 294 of the brief.
[35] Dr West's statement, page 20 of the brief.
[36] Dr Tan's dated 4 April 2024 is at pages 295-300 of the brief and includes his qualifications and experience. Dr Tan graduated in medicine from the University of Queensland in 2016 and completed an internship at Ipswich Hospital in 2017. In 2018, he worked as a hospital medical officer at MMC and Dandenong Hospital and then worked as an ED locum for most of 2019, predominantly at MMC. In 2020 he was employed by Monash Health as an unaccredited ED registrar and has been on the accredited training pathway since 2021. On 29-30 April 2022, Dr Tan was an ED registrar on rotation in the Paediatric ED, working the night shift 2300-0830 hours.

experience for him, it was crucial to an understanding of the circumstances and appreciation of the efficacy of any changes made by Monash Health in the aftermath.

51. Significantly, Dr Tan made no contemporaneous entries in the EMR as events unfolded. The totality of his contribution to the EMR consists of two retrospective notes, one commenced at 0841 hours on 30 April which reads as broadly chronological but contains no times and a second retrospective note made on 11 May 2022 upon reflection of the events of 29-30 April.[37] Dr Tan's statement and his evidence at inquest were based on these notes and any residual recollection of events he had when he made his statement and when he testified at inquest.[38]

52. Dr Tan did not understand that there were any concerns about Amrita during handover and, while he was aware of the capillary blood gas results of the sample collected at 2149 hours, he considered her overall picture was not concerning based on the nature of Amrita's presentation. As a result, he did not review her following handover.[39] In this context, given he had not yet seen Amrita, Dr Tan's reference to *"presentation"* is presumably a reference to what he understood from handover or had read about Amrita in the EMR.

53. It is important in this regard to note that Dr Tan did not receive a handover of just Amrita's case from Dr Silva. He was handed over about 18 patients at the commencement of the shift and assumed the 'supervising doctor or clinician-in-charge' role' – an administrative role involving the overall coordination of the ED. Furthermore, he was responsible for new patients who presented to the ED for triage and their management during the shift, some with significant acuity.[40]

54. Dr Tan did not review Amrita until after 0300 hours on 30 April, and when he did so, it was not a review that he had planned to do but occurred in response to nursing staff informing him that Amrita's mother wanted to take her home.[41] It is now tolerably clear that Satya did not really want to take Amrita home. Rather, she was upset and frustrated by her perception that nothing was being done for Amrita and that the absence of an allocated nurse and/or her efforts to escalate her daughter's care were to no avail. Irrespective of what Dr Tan was told by nursing staff, Satya made it clear to him at the outset that *"she had only asked to go home as*

[37] EMR, page 165-166 and 167-168 respectively of the brief.
[38] Transcript pages 31-34.
[39] Dr Tan's statement, page 296 of the brief. See also para 44 above for Dr Silva's interpretation of these results.
[40] Dr Tan's statement, page 300 of the brief and transcript pages 35-38.
[41] Transcript page 23 and Dr West's statement, page 20 of the brief. According to Dr West, nursing staff alerted Dr Tan to Satya's indication that she wanted to take Amrita home at about 0300 and he reviewed her closer to 0320 when a repeat set of vital observations was taken and the ECG ordered – pages 20-21 of the brief.

Amrita was not getting any attention and her complaint of chest discomfort and 'hard breathing' had not been addressed."[42]

55. Dr Tan was taken aback by Satya's concerns and woke Amrita to review her. He found she appeared comfortable; reported feeling better and being hungry; was still nauseous but no longer vomiting; with no signs of respiratory distress or increased work of breathing. On examination, there were no focal findings. Amrita's chest was clear and her heart sounds were normal on auscultation. There was some right upper quadrant tenderness which Dr Tan considered likely represented likely gastritis due to recent recurrent vomiting. Amrita was febrile with a temperature of 38.3°C, but was otherwise haemodynamically intact, with ongoing warm peripheries and normal central capillary refill time.[43]

56. At inquest, Dr Tan minimised the significance of Amrita's weak radial pulse in this regard but conceded it may indicate reduced perfusion, reduced blood pressure and, potentially, developing haemodynamic compromise.[44]

57. Repeat vital observations were taken by a nurse at 0320 hours showing a heart rate of 127 bpm, respiratory rate 22 breaths per minute and confirming a temperature of 38.3°C. While the nurse was taking vital observations, peripheral oximetry displayed an elevated pulse rate of about 250 bpm on the monitor, discrepant with the heart rate auscultated by Dr Tan. The elevated pulse rate alarmed Satya and a second device was brought in which showed a pulse rate closer to 120 bpm. The pulse rate was displayed on the device itself and not the monitor and did not reassure Satya.[45]

58. According to his statement, Dr Tan's rationale for an ECG was to ascertain the ventricular rate with more accuracy. However, at inquest he conceded that the ECG was performed to reassure Satya about the elevated pulse rate she had seen displayed on the monitor and had nothing to do with reports that Amrita had complained about chest discomfort and/or had hard breathing, despite the presence of other signs and symptoms that suggested a need to conduct cardiac investigations.[46]

59. Dr Tan's interpretation of the ECG trace was pivotal. While he acknowledged it was relatively commonplace and good practice to do so, he did not make a contemporaneous notation of his

[42] Dr Tan's statement, page 297 of the brief.
[43] Dr Tan's statement, page 297 of the brief.
[44] Transcript pages 32-33 and 84-85.
[45] A notation of *?weak radial pulse* is part of Dr Tan's first retrospective note at page 165 of the brief but not mentioned in his statement.
[46] Transcript pages 84-90.

interpretation on any of the ECG traces timestamped 03:30:09 in the EMR and gave no explanation for this omission.[47] The relevant part of Dr Tan's first retrospective note reads *"sats monitoring 250! however on ECG HR 130 but abnormal wide complex rhythm with ventricular ectopics likely sinus hr 120…decision to Ix [investigate] for myocarditis…"*[48]

60. Dr Tan assessed the ECG as abnormal, raising a suspicion for potential myocarditis. However, as Amrita looked quite well, he was not diagnostically certain that she had myocarditis and wanted to do further investigations to confirm the diagnosis. He requested a venous blood gas sample to investigate any emergent electrolyte abnormality, in particular hyperkalaemia, that may have been causing the wide complex rhythm seen on the ECG and asked for another set of blood tests, including serum electrolyte for potassium and magnesium as well as "add-on" troponin levels.[49]

61. Both in his statement and at inquest Dr Tan accepted that Amrita's blood pressure should have been taken at this time.[50] Arguably, a blood pressure should have been taken earlier, even before the ECG as part of a set of complete vital observations, but certainly after the completion of the ECG.

62. At inquest, Dr Tan was challenged about an apparent 20-minute delay between completion of the ECG and his consultation with the Career Medical Officer (**CMO**) in the adult emergency department some twenty metres from the paediatric ED. Dr Tan testified that he could not account for the time lapse, except that he recalled showing the ECG briefly to the other paediatric registrars before discussing the ECG with the CMO.[51] The CMO annotated a copy of the ECG, signed and dated it, included the time (0350) and wrote his name.[52]

63. According to Dr West, the interpretation of the ECG made by the CMO, a senior emergency medicine doctor working in the adult ED, was similar to Dr Tan's with annotations made on

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[47] EMR pages 180C,180D, and 180G of the brief. Dr Tan's only notations were Amrita's name, date of birth and patient number and "limb leads correct".
[48] EMR pages 165-166 of the brief.
[49] Dr Tan's statement, pages 297-298 of the brief. According to Dr West, Dr Tan *"interpreted the ECG as being abnormal with a likely underlying sinus rhythm but broad QRS complex with ventricular ectopics",* page 21 of the brief. Dr West also explains the ramifications of Dr Tan's request for an 'add-on troponin' in the following terms – *"At 03:41 a request was also made to perform a troponin level on previously collected blood sample on the assumption that this would be quicker than obtaining a new sample. When no result had returned on the sample collected at 19:25 hours a fresh sample was obtained at 03:52 hours."*
[50] Dr Tan's statement, page 298 of the brief and transcript page 34.
[51] Transcript pages 94, 99.
[52] EMR, page 180G of the brief. The notations that are legible to me are *"RAD ?RBBB RSR in V1 …ATRIAL RATE 144, Regular Broad QRS multiple ventricular ectopics".*

the ECG of an atrial rate of 144 regular, broad QRS complex and multiple ventricular ectopic beats.[53]

64. It is uncontentious that both Dr Tan and the CMO failed to appreciate the extent of the abnormality demonstrated by the ECG and that, consistent with the concessions made by Monash Health, precious time was lost and there was a missed opportunity to escalate Amrita's care once the ECG was completed and certainly by about 0400 hours on 30 April.[54]

65. More evidence of Amrita's acuity became available at 0352 hours when venous blood gas results showed a significantly increased lactate of 5.9mmol/L (reference range 0.5-2.0mmol/L) and low bicarbonate of 20mmol/L (reference range 22-32mmol/L).[55] These results show a significant deterioration since the earlier venous blood gas results at 2149 hours on 29 April.

66. Dr Tan dismissed the results as spurious as Amrita did not appear to be very unwell (as would be associated with such results). He also hypothesised that there may have been an error in the sampling technique employed by nursing staff, including prolonged tourniquet or recent administration of IV fluids through the same cannula. This hypothesis does not withstand scrutiny. Firstly, it would have been a simple matter to enquire about the sampling technique used and he could not recall doing so. In the second place, while he intended to ask for a repeat test to verify the result, he did not do so. Dr Tan conceded that he should arranged ordered repeat venous blood gas testing.[56]

67. At inquest, Dr Tan made a broad concessions, in keeping with the concession made by Monash Health, that by 0400 when the ECG results and elevated lactate were known, Amrita's care should have been escalated both to cardiology and the paediatric intensive care unit.[57] However, he appears to have made this concession on the basis of reflection after the event and with hindsight.[58]

68. As a result of Dr Tan's failure to recognise the severity of Amrita's illness, there was no escalation in her management plan. Between about 0330 and 0530, the EMR shows that the only addition to her management was an incomplete set of vital observations documented at

[53] Dr West's statement, page 21 of the brief.
[54] This is supported by the weight of the expert evidence and is discussed in some detail below at paras 115 and following.
[55] Both results show a deterioration since 2149 when the lactate was slightly elevated at 2.3mmol/L (reference range 0.5-2.0mmol/L) and the bicarbonate was 20.3mmol/L low (reference range 22-32mmol/L) – see para 51 above.
[56] Dr Tan's statement, page 298 of the brief and transcript pages 49-53, 94-96.
[57] A narrower concession regarding the need for escalation once the troponin results were available at about 0520 was made in Dr Tan's statement, page 298.
[58] Transcript pages 99-100.

0441 – heart rate of 108bpm; respiratory rate of 23 breaths per minute and alert conscious state.[59] Notably, no blood pressure was taken and venous blood gas testing was not repeated.

Response to the troponin results at 0528 hours on 30 April

69. As discussed at inquest, the EMR were not the most accessible medical records to interpret and work with, at least not in the printed form in which they were provided to the court. At first blush, the EMR appeared to suggest that the troponin results were available in the ED as early as 0352.

70. Dr West assisted the coronial investigation by reviewing the EMR and associated records and providing a statement confirming that the troponin results in Amrita's case were not available in the ED until 0528 on 30 April.[60] However, there was no record of exactly when these results were communicated to Dr Tan. Dr West assumed that Dr Tan was advised of the results shortly after as Amrita's location within the ED changed from the SSU to the acute section of the ED at 0537 at Dr Tan's direction apparently in response to the results.[61] This inference drawn by Dr West appears reasonable.

71. In his statement, Dr Tan states he became aware of the troponin result at about 0530 and noted that at >27,000 ng/L, the result was *"beyond the likely resultable assay limits"*. In response, he ordered cessation of IV fluids in the setting of presumed myocarditis to avoid possible fluid overload and asked that Amrita be moved to a resuscitation or acute monitored cubicle. According to the EMR, Amrita was moved from the SSU to the acute section of the ED at 0537 hours.[62]

72. At about the time when Dr Tan became aware of the troponin results, he could not review Amrita due to his involvement in the management of a Category 1 patient arriving in the ED. Dr Tan decided to become involved in that patient's care given their acuity and having considered the skill mix of immediately available staff. He did so in the absence of any known significant deterioration in Amrita's clinical state and without appreciating the severity of her myocarditis having never seen a case of fulminant myocarditis previously. In his statement, Dr Tan conceded that if he understood time was of the essence, he would have escalated

[59] EMR, page 171 of the brief and Dr West's statement, page 21.
[60] Dr West's statement dated 19 July 2024, at page 346 of the brief. This statement was based on a review of Amrita's EMR, Medipath phone log records and the Webstro pathology results system. See also Dr West's evidence about the complexities involved in arriving at his explanation, transcript pages 261-272.
[61] Dr West's statement, page 346 of the brief.
[62] Note that Dr Tan requested a resuscitation cubicle but as one was not immediately available, Amrita was moved to C4 in front of Associate Nurse Manager's desk.

Amrita' care to the on-call Consultant Emergency Physician and on call Paediatric Cardiologist once the troponin results were available. [63]

73. Amrita had a set of vital signs taken at 0559 – heart rate of 118 bpm, and respiratory rate of 21 breaths per minute both within the normal range; alert conscious state; oxygen saturations 99 percent on room air; and low blood pressure at 72/49 mmHg. [64] Dr Tan reviewed Amrita at about 0600 after nursing staff advised she was hypotensive. He recalled her looking tired and unwell but noted that she was talking and, apart from a low blood pressure, her other vital signs were normal. [65]

74. According to Dr West, Amrita's blood pressure at 72/49 mmHg was displayed in red in the EMR and *should have* triggered a medical emergency team response (**MET call**). There was no explanation why this did not happen. [66]

75. Repeat vital signs taken at 0628 again showed an even lower blood pressure at 70/56, this time triggering a MET call, and at 0633 Amrita was moved to a resuscitation cubicle in the ED. [67]

Telephone consultation between Dr Tan and Dr Rao

76. After resolution of the MET call for hypotension, at about 0640 hours, Dr Tan escalated Amrita's care by calling the on call Paediatric Cardiologist, Dr Srinidhi Rao. There are discrepancies between Dr Tan's and Dr Rao's account of this conversation that are apparent in their respective statements and were the focus of their cross-examination at inquest. [68] In this finding, I focus on their evidence at inquest which demonstrates their miscommunication, an incomplete handover of important clinical information and a failure to convey/appreciate the severity of Amrita's condition and need for exigent clinical intervention.

77. At inquest, Dr Tan testified that he could not recall much of the conversation. While he personally felt a sense of urgency at the time of the call and felt anxious, he conceded that he may not have conveyed this to Dr Rao. He said he was concerned for Amrita as she was (by

[63] Dr Tan's statement, page 298 of the brief. Note that Dr Tan conceded that he should have escalated Amrita's care by consulting cardiology and PICU earlier, by 0400 when the ECG had been done and elevated lactate was known.
[64] EMR, pages 175, 177 and 179 of the brief; Dr West's statement, page 22 of the brief.
[65] Dr Tan's statement, page 298 of the brief.
[66] EMR, pages 177 and 179 – RR 23; HR 80; BP 70/56; mean arterial pressure 62; conscious state alert.
[67] Dr West's statement, page 22 of the brief.
[68] Dr Srinidhi Jayamangala Vasudeva Rao's statement dated 10 April 2024 is at pages 325-332 of the brief and an attached journal article entitled "Diagnosis and Management of Myocarditis in Children" at pages 333-345. The statement includes his formal qualifications and experience. Dr Rao has been working in paediatric cardiology since 2011; has been employed at Monash Health since 2017; and was the overnight/on call paediatric cardiologist due to commence work on the morning shift of 30 April 2022. His account of the telephone conversation with Dr Tan is at page 326 of the brief and following. Dr Tan's account is in his statement, at para 6.15, page 299 of the brief.

then) an unwell child with presumed myocarditis, hypotension and an abnormal ECG. He said Amrita had grossly elevated troponins but could not recall mentioning the actual troponin level or any blood pressure readings and did not believe he advised Dr Rao that Amrita had already been the subject of a MET call for hypotension. He agreed that it was very likely he advised Dr Rao about the elevated lactate and that it was to be repeated as he believed it was a spurious result.[69]

78. As regards the ECG trace, Dr Tan believed he said that it showed a sinus rhythm with wide complex ventricular ectopics (ectopic beats) and could not recall mentioning a right bundle branch block. He agreed that the two descriptions were significantly different. Although he would not say he was very confident in his interpretation of the ECG, he could not recall asking ask Dr Rao to review the ECG or whether Dr Rao requested the ECG be sent to him. In any event, it was clear he did not provide the ECG trace to Dr Rao.[70] I interpose to note that the description *"right bundle block"* was part of the annotation made by the CMO in the adult ED to whom Dr Tan had shown Amrita's ECG trace, as well as part of the automatic report generated by the ECG machine itself.[71]

79. Dr Tan's call to Dr Rao at 0640 was Dr Rao's first involvement in Amrita's care. At the time, Dr Rao was getting ready for a morning shift at MMC. He did not know Dr Tan's precise role but knew he was a registrar working in the paediatric ED overnight.[72] He recalled being told of a grossly elevated troponin, that was over 20,000 and 'definitely significantly elevated' but did not recall the figure 27,000 being mentioned. In his evidence, he described such a troponin result as 'very abnormal', a 'high level' and 'a very concerning finding'.[73]

80. Dr Rao recalled being told that Amrita's blood pressure was low but did not recall being given a value and was not told that there had already been a MET call for hypotension. When counsel assisting drew his attention to the blood pressure taken just before the call being 72/49, Dr Rao testified that this was more than slightly low (the description he had used in his statement) and would warrant a MET call in and of itself. He conceded that he should have asked for the blood pressure reading and should have pressed for an answer, if necessary.[74]

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[69] Transcript pages 60-64.
[70] Transcript pages 64-65.
[71] See paragraphs 68-69 above and page 180D.
[72] Transcript pages 121-122.
[73] Transcript page 123.
[74] Transcript page 128.

81. Similarly, Dr Rao recalled being told a venous blood gas had been performed some hours earlier with a high lactate result, but he did not recall being given a number. When counsel assisting suggested that a lactate of 5.9 was very high and would also warrant a MET call in and of itself, Dr Rao agreed but added that he felt Dr Tan did not believe the high lactate was a true number and the test was to be repeated. Dr Rao's evidence was that he did not ask why the lactate result was thought to be spurious or why it had not already been repeated. He conceded that he could have asked but considered the priority at the time of the call was to ensure the tests were being repeated.[75]

82. As regards Amrita's ECG, Dr Rao maintained that Dr Tan described the ECG as showing a sinus rhythm with right bundle branch block and *not* a wide complex rhythm with ventricular ectopic beats (as was Dr Tan's account). While Dr Rao agreed that wide QRS complexes would be expected in both cases (and were there to be seen), there are subtle or nuanced but important differences between the two descriptions. In any event, both descriptions were an incorrect interpretation of Amrita's ECG trace and when conveyed to a clinician without access to the ECG trace would not have given an accurate picture of her cardiac function.[76]

83. Relevantly, Dr Rao testified that he would likely have asked Dr Tan to send him a copy of the ECG trace if he understood he was *"completely unsure"* of his interpretation. It is apparent that Dr Tan did not convey that level of concern about his interpretation of the ECG and Dr Rao did not ask for a copy of the ECG trace to be sent to him.[77] When Dr Rao did see the ECG trace, he described it as a "*severe presentation",* the trace showing a *"a very broad low voltage ECG suggestive of myocarditis … very grossly abnormal."*[78]

84. While the facility for transferring ECG traces between clinicians was discussed at inquest, and Monash Health has since made improvements in this regard, it is clear that in Amrita's case, even a photograph of the ECG sent via mobile phone would have conveyed the acuity of her condition and conveyed to Dr Rao a very different picture that which he deduced from the conversation with Dr Tan.[79]

85. As it was, Dr Rao did not perceive Amrita to be in extremis or requiring urgent intervention.[80] Given Dr Tan was already planning to repeat the venous blood gases and take a repeat blood

[75] Transcript pages 128-129.
[76] Transcript page 131-132.
[77] Transcript pages 132, 146
[78] Transcript pages 130 - 131. While Dr Rao resiled from the description *"pre-terminal"* as this would involve consideration of the entire clinical picture, he agreed Amrita's ECG was *"very worrying"* and *"grossly abnormal"*.
[79] Transcript pages 166, 168.
[80] Dr Rao's statement, page 325 of the brief.

pressure reading, Dr Rao's advice/plan was that Dr Tan should contact the PICU and also contact him if the results were abnormal. [81]

86. At inquest, Dr Rao accepted he should have asked for Amrita's actual blood pressure reading and should have obtained the precise lactate levels. His evidence was that had he done so, it does not follow that his advice to Dr Tan would have been significantly different, the crux being the need to involve the PICU in Amrita's care. [82] That said, had Dr Rao been aware of all of Amrita's concerning clinical parameters without the confounding (and ill-founded) concern that results were spurious, it is likely he would have appreciated the acuity of Amrita's condition and impressed on Dr Tan the need for exigent management. [83]

Escalation to other specialists/units

87. Following Dr Tan's call to Dr Rao, and at about 0700, Dr Girish Kumar attended Amrita in his capacity as a senior registrar in the PICU. [84] According to his recollection, Dr Tan had called him to come to the ED to review another patient, but when they met in the corridor, asked him to review Amrita instead. Dr Kumar recalled that Dr Tan's impression was of likely myocarditis based on Amrita's low blood pressure, abnormal ECG and grossly abnormal troponins, but he did not recall Dr Tan expressing any particular concerns about Amrita's condition. [85]

88. When Dr Kumar examined Amrita, he made a contemporaneous note of his findings in the EMR, including a repeat blood gas that confirmed an elevated lactic, and documentation of his agreement with the diagnosis or impression of myocarditis. [86]

89. Dr Kumar felt Dr Tan was concerned enough to ask for PICU assistance to stabilise Amrita and that she was an 'unwell child'. That is, unwell enough to warrant transfer to the PICU, but not 'extremely unwell' in the way that term is understood clinically. [87] Dr Kumar recognised a delayed response to the elevated lactate of 5.9mmol/L noted shortly before 0400 hours and gave some sense of what he would have done had he been consulted about Amrita's

[81] Dr Rao's statement, page 325 of the brief and transcript pages 117-173.
[82] Transcript pages 160, 166.
[83] Ibid.
[84] Dr Girish Kumar's statement dated 3 April 2024 includes his formal qualifications and experience and is at pages 286-289 of the brief. Dr Kumar graduated in medicine from The University of New Delhi and moved to Australia in 2011 commencing as a paediatric registrar at The Children's Hospital, Westmead, NSW. Since 2013, Dr Kumar has been working in intensive care in both adult and paediatric settings.
[85] Dr Kumar's statement, page 287 of the brief.
[86] Dr Kumar's statement, page 287 and EMR at pages 160-161 of the brief, transcript page 204. Note that Dr Kumar also proffered an alternative/differential diagnosis of Post Inflammatory Multisystem Syndrome (PIMS).
[87] Transcript pages 203-204.

care at that time. The management plan he proposed for Amrita was to commence peripheral IV adrenaline (0.05mcg/min), arrange an urgent cardiology review and admit her to the PICU as soon as a bed became available.[88]

90. As well as remaining in the ED to ensure adrenaline was administered correctly, Dr Kumar contacted the incoming PICU consultant Dr Ingrid Petrasovicova about Amrita's presentation. Dr Petrasovicova confirmed that Amrita would need transfer to the RCH via PIPER and suggested initiation of continuous positive airway pressure (**CPAP**). As for the obvious need for urgent cardiological review, Dr Kumar understood that the consultant paediatric cardiologist (Dr Rao) was on his way to undertake a cardiological review.[89]

91. Shortly after Dr Kumar's review of Amrita, at about 0730, Amrita suffered a sudden cardiac arrest, her first. CPR was commenced with a return of spontaneous circulation within two minutes and a quick return to GCS 15. Dr Kumar increased the rate of the adrenaline infusion (0.1mcg/min), added IV magnesium to treat the ventricular rhythm post-arrest and gave a stat dose of metaraminol to improve her blood pressure.[90]

92. Meanwhile, at 0710, Dr Tan had escalated Amrita's care to Dr John Unwin, the incoming consultant paediatric emergency physician who had been on call from midnight and was due to commence the morning shift at 0800. Dr Unwin agreed with the management plan that had already been implemented which included escalation to the PICU and Cardiology teams; transfer to a resuscitation cubicle in the ED; commencement of peripheral inotropes; continuation of close cardiac monitoring; and to update him of any changes whilst enroute.[91]

93. At 0730, just as he was leaving home, Dr Unwin received a second call from a hospital medical officer (**HMO**) giving him an update about Amrita's cardiac arrest and response, including advice that PCIU were in attendance by Amrita's bedside; that the PICU consultant was also being updated; that the paediatric cardiologist had been updated and was enroute; and that a referral was being made to PIPER to discuss a potential transfer for ECMO. Dr Unwin considered this management plan was reasonable and felt there was nothing further he could do until his arrival in the ED.[92]

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[88] Dr Kumar's statement, page 287 of the brief and transcript page 205.
[89] Dr Kumar's statement, page 287 of the brief and transcript pages 204-205.
[90] EMR, page 148 of the brief and Dr Kumar's statement, page 287 of the brief. Note that Dr Kumar described this first cardiac arrest as a VT/VF arrest and added magnesium to treat the ventricular rhythm post-arrest. The arrest is also described in Dr West's statement, para 31 page 23 of the brief.
[91] Dr Unwin's statement, pages 302-303 of the brief.
[92] Dr Unwin's statement, page 303 of the brief.

94. At 0745, whilst still enroute, Dr Unwin sought an update about Amrita's condition. He did not recall being told of any change in her condition since the last phone call and confirmed that PIPER had been called and the PICU consultant had been called and was also enroute.[93]

95. When Dr Unwin arrived in the ED shortly before 0800, he assumed the primary role of coordinating and managing Amrita's care in the resuscitation bay with support from the PICU team, the paediatric cardiologist Dr Rao and then the paediatric anaesthetist Dr Eamonn Upperton whilst awaiting the arrival of the PIPER team. Dr Unwin observed Amrita to be talking to family and staff with a GCS 15 and that she had a persistent tachycardia ranging between 130-150 bpm; labile mean arterial pressure between 60-80mmHg; and oxygen saturations at 96 percent on room air. Amrita had IV access lines in each antecubital fossa delivering adrenaline and magnesium sulphate. Dr Unwin attempted to secure another IV access line to obtain a venous blood gas sample but was unsuccessful with attempts in both the left and right hands.[94]

96. At inquest, Dr Unwin's evidence was that upon arrival in the ED, he agreed that Amrita likely had myocarditis; considered she appeared relatively well; but still needed to be transferred to the PICU. Dr Unwin indicated surprise that Amrita was still in the ED and said he would have come in earlier had he been made aware of the elevated lactate three to four hours earlier; would probably have obtained a fresh sample and repeated the lactate; and, if confirmed, would possibly have initiated earlier PIPER transfer.

97. After Dr Unwin's arrival in the ED, Amrita's clinical management was multidisciplinary with high level input from the various specialties involved. A bedside echocardiogram was performed by Dr Rao and, in consultation with Dr Petrascovicova, a decision made to administer amiodarone which was ordered by Dr Unwin. Amrita was also commenced on CPAP.

98. Paediatric anaesthetist Dr Upperton was updated by Dr Unwin on his arrival. Careful consideration was given to the need for airway and access support given Amrita's critical and precarious situation as any further medications that would stimulate or depress her heart had the potential to make her condition worse. It was therefore decided that intubation was not an

[93] Ibid.
[94] Dr Unwin's statement, page 303 of the brief.

immediate priority given the risk of cardiac arrest associated with the medications required for induction and Amrita was conscious and maintaining her own airway.[95]

First contact with the PIPER service

99. Aspects of the RCH's PIPER service and the provision of ECLS for paediatric cases in Victoria were addressed in the evidence of Dr Roberto Chiletti and Dr Christopher James from those services and will be discussed below. However, some understanding of both services is required to contextualise the evidence that follows concerning contact with the PIPER service in Amrita's case.[96]

100. The PIPER service is a 24/7 emergency retrieval service capable of being dispatched to retrieve sick children and transfer them back to the RCH for treatment when stipulated "Go Now" criteria are met. PIPER is a standing service that operates via a roster that provides a consultant rostered to assist with the taking and triaging of phone calls made to PIPER seeking the transfer of ill children to RCH; at least one doctor and one nurse rostered to attend any PIPER emergency retrievals during the shift; and readily available ambulances to transport the PIPER retrieval team and bring children back to the RCH. A standard PIPER team typically includes a paediatric physician or registrar (according to the nature of the child's condition) and a paediatric nurse but does not have the capability to provide ECMO.[97]

101. The RCH is the only health service in Victoria capable of cannulating children of all ages. However, the RCH does not offer a standing emergency ECMO retrieval service or remote paediatric cannulation service. While it has ECMO capability, that is, trained staff and the equipment required, these resources are not readily available to provide ECMO at other hospitals.[98] Rather, the RCH ECLS program team, within the RCH PICU, endeavours to facilitate retrieval of children who have been cannulated at other hospitals. The provision of ECMO assistance by the RCH generally arises in three scenarios, the rarest by far (five cases in the five years to late 2024) arises where the RCH is asked to dispatch a team to cannulate a child at another location and bring the child back to the RCH for treatment.[99]

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[95] Dr Unwin's statement, pages 303-304 of the brief.
[96] See paras 104 and following below.
[97] This aspect of the evidence was not controversial and is most accessible in the submission of K&L Gates, lawyers for the RCH, dated 18 October 2024.
[98] This is to be contrasted with the adult Victorian Extracorporeal Membrane Service (**VECMOS**) service, commissioned by the Department of Health through Safer Care Victoria which is managed by Alfred Health which does provide a standing emergency ECMO retrieval service with dedicated specialist staff rostered on 24/7 to the service.
[99] Ibid.

102. Such an ECMO team would need to comprise a paediatric cardiac surgeon, a paediatric cardiac surgical fellow, a PICU specialist, a perfusionist and at least one ECMO trained nurse, as well as specialised ECMO equipment that not all hospitals would have on site. Clinical staff are not rostered on to be on standby for ECMO retrieval and resources would need to be drawn from rostered staff without compromising the care of RCH patients during any retrieval, or called in. Other logistical challenges include transportation of the equipment and the time taken to prime the ECMO circuit all of which takes precious time. In total, these realities mean that it is rarely feasible to mobilise an ECMO team within two hours.[100]

103. As regards Amrita's management, the first call to the PIPER service was made at 0740 hours by Dr Tan at the suggestion of Dr Kumar. Dr Tan's account of the phone call includes a statement that *"PIPER did not provide any advice during this call and asked that him to arrange for the PICU consultant to call back"*.[101]

104. A comparison of statements of Dr Tan and Dr Chiletti, the ECMO consultant at RCH brought into the call, demonstrates they were somewhat at cross-purposes.[102] While the transcript of the call makes for unedifying reading and suggests communication could have been improved on both sides.[103]

105. According to Dr Chiletti, Dr Tan's request for ECMO services was not in accordance with the standard ECMO referral process. This was not simply a complaint about process. As explained, ECMO referrals are always directed to the PIPER consultant on call who then involves the ECMO consultant to discuss eligibility and supports the retrieval team organisation. The process ensures that critically unwell children are managed clinically first and ideally transferred to RCH for management and/or ECMO if required because of the length of time it takes to mobilise an ECMO team which is two hours on average, longer than transferring an unstable patient via PIPER to the RCH for management and/or ECMO if required. Similarly, Dr Chiletti's request that Dr Tan arrange for a call back from PICU, was

[100] Ibid and pages 352A and following where the RCH ECMO referral and transport process it set out.
[101] Dr Tan's statement, page 299 of the brief and transcript page 65.
[102] Dr Chiletti was not required to attend the inquest. His statement dated 25 July 2024 is at pages 351-352 of the brief and includes the following description of his role – *"I have been a full-time Paediatric Intensive Care Specialist at Royal Children's PICU since 2012, the RCH ECMO medical lead since 2015, and a casual Specialist at Monash Children's Hospital from 2018-2021."*
[103] Exhibit D is a transcript of the calls to PIPER

not about process or hierarchy, but reflected an expectation that a critically unwell child was being (or should be) managed by PICU ahead of retrieval.[104]

106. Despite Dr Tan's impression that his call was to no avail, at the end of the call, Dr Chiletti contacted the PIPER paediatric consultant, Dr James, to take the lead on the referral and management of Amrita. He also called the cardiac surgeon on call and the perfusionist in anticipation of a potential ECMO retrieval thus progressing deployment of an ECMO team to Monash as far as possible.[105]

Second contact with the PIPER service

107. Dr Kumar made the second call to the PIPER service at 0808 and spoke to Dr James, paediatric intensive care and PIPER paediatric consultant at the RCH.[106] Dr James provided a statement, primarily about his involvement in Amrita's management and gave evidence at inquest, primarily about the PIPER service and whether their response in Amrita's case was delayed.[107] It was apparent at inquest that Dr Kumar was troubled by the apparent delay or lack of response to first call to PIPER made by Dr Tan.[108] Otherwise, Dr Kumar's account of this conversation was broadly consistent with Dr James' account.[109]

108. Relevantly, Dr James was already aware of Amrita's case, confirmed that the *"Go Now"* criteria had been met and advised that a PIPER team was being mobilised.[110] Dr James made two suggestions regarding Amrita's management, both to address his perception of Amrita's acuity. Firstly, he suggested Amrita required intubation which should be performed by an experienced anaesthetist due to her risk of cardiovascular collapse. Further, he suggested the involvement of the cardiothoracic team at MMC to cannulate Amrita. Dr James was aware that they rarely cannulated children for ECLS, and it would be "off protocol" to do so, however, he felt this might be Amrita's only chance of survival given the likely time lapse

[104] Dr Chiletti's statement, page 351-352. Dr Chiletti noted there is no on-call roster for ECMO retrievals at RCH. Mobilising a team Monday to Friday during daytime hours can be done within 60 minutes. At other times, it takes longer as there are no in-house surgeons or perfusionists. They are on-call and mobilizing a team on weekends and at night potentially mean that the RCH will be left without cover for the duration of the retrieval.
[105] Dr Chiletti's statement, pages 351 and 352 of the brief. Transcript pages 65 and 216.
[106] Dr James' statement dated 25 July 2024 is at pages 347-348 of the brief.
[107] Dr James' evidence is at transcript pages 214-229.
[108] Transcript page 208.
[109] See Dr Kumar's statement, page 288 of the brief and Dr James, page 348 of the brief.
[110] Documented in the PIPER records as occurring at 0811, just three minutes into Dr James' conversation with Dr Kumar, and likely documented by the PIPER coordinator, page 201 of the brief and transcript pages 215-216.

before arrival of the ECMO retrieval team from RCH and his perception of Amrita's imminent need for ECMO.[111]

109. While paediatric anaesthetist Dr Upperton was available to assist with Amrita's management, Dr Kumar was advised that the Monash cardiothoracic surgery team did not have the capability to provide cannulation for a patient of Amrita's age. Given her critical state, Dr Kumar pressed the issue and was advised to contact the department head. Dr Kumar contact Professor (**Prof**) Julian Smith, (then) Head of the Cardiothoracic Surgery, who confirmed they had no capability to provide ECMO support for an eight-year-old and suggested he revert to PIPER. It appears clear that Dr Kumar shared Dr James' sense of urgency and concern for Amrita at this time.[112]

110. Prof Smith provided a statement confirming the accuracy of Dr Kumar's evidence in this regard and was not required to attend the inquest.[113] According to his statement, at the time of Amrita's presentation, the cardiothoracic surgery team did not have the capability to provide ECMO support for a patient under the age of 13 years and/or who weighed less than 30kg. As at July 2024 (the date of his statement), Prof Smith's understanding was that Monash Health still did not have paediatric ECMO capability and the responsibility for supporting ECMO had been transferred from the cardiothoracic surgery team to the ICU team.[114]

111. After the conclusion of the evidence, Professor Jayme Bennetts, Director of Cardiothoracic Surgery at Monash Health from February 2024, provided an update about the capability of the adult cardiothoracic surgical team at Monash Health to cannulate paediatric patients for ECMO.[115] Prof Bennetts confirmed that at the time of Amrita's presentation to the ED

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[111] Dr James' statement, page 348 of the brief and transcript pages 223-225. In Prof Bennetts' statement discussed at paras 111-112, the suggestion made by Dr James was roundly criticized as 'misconceived and incredibly disappointing'; the type of scenario clinical governance guidelines are designed to prevent; having 'zero' chance of success' and 'inconsistent with the rationale for having a statewide ECMO service designed to deliver timely, high level expertise required for a low volume, complex procedure.'

[112] Transcript pages 208-210.

[113] Prof Smith was department head at the time of Amrita's presentation to the ED and had been for more than 20 years. At the time he made his statement dated 2 April 2024, at pages 284-285 of the brief, he was no longer department head but remained employed as a senior cardiothoracic surgeon at Monash Health.

[114] When cross-examined by Ms Ellis on behalf of Monash Health, Dr James accepted Prof Smith's evidence that the cardiothoracic surgery team did not have the capability at the time. See transcript pages 227-229 where Dr James gives evidence that the 'capability to cannulate children under 13 and <13 kg' refers to having cannulas small enough for young children's blood vessels and a level of experience or practice in cannulating smaller vessels but is otherwise much the same as cannulating adults and *"would have just been a bridge for us to come to them, but they would have been able to – to maintain Amrita's life on – on an adult ECMO circuit until we got there."*

[115] Prof Bennetts' statement dated 7 October 2024 was circulated to the parties. Relevantly, Prof Bennetts' CV includes an appointment at the Womens' and Children's Hospital in Adelaide (2006-2024) and over the past 5 years established the Paediatric ECMO service in South Australia.

"Monash Health did not have, and still does not have, the necessary expertise, skill, equipment or staff to cannulate paediatric patients for ECMO."[116]

112. Prof Bennetts drew attention to the 'Paediatric ECMO Procedure' formalised in September 2023 which was included in the brief.[117] Relevantly, that procedure clearly states that Monash Health does not have paediatric ECMO capability, Victoria does not have a standalone paediatric emergency ECMO retrieval service and that access to paediatric ECMO for patients presentation to Monash Health, "*relies on early identification, referral and transfer to the statewide paediatric ECMO centre (via PIPER/RCH PICU).*"[118]

113. At inquest, Dr James was questioned about the apparent delay of 25-30 minutes or so between Dr Tan's and Dr Kumar's calls to the PIPER service. While he conceded that there appeared to have been a delay of this order, for practical/logistical reasons, a suitable PIPER team could not have been deployed before 0800 hours in any event. He explained that doctors rostered to the PIPER service have different training and experience ranging from general paediatricians, emergency physicians in training and intensive care physicians in training. The doctor on duty for retrievals before 0800 was a general paediatrician with virtually no intensive care training who felt unable to deal with Amrita's case. Dr James agreed that although he would be appropriate for many retrievals, he was not suitable for Amrita's retrieval, as she was obviously very sick and required an intensive care doctor.[119]

114. The doctor commencing at 0800 hours was an intensive care clinician suitable to attend Amrita's case, and after a handover would have been ready to depart shortly after 0800 hours. According to Dr James, had he taken the 0740 hours call himself, he would have agreed that the first doctor was not suitable and would have been compelled to await the arrival of the intensive care clinician at 0800, thus sending the team that was ultimately deployed as a PIPER retrieval team, ahead of the ECMO retrieval team which was still being organised.[120]

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[116] Prof Bennetts went on to detail the requirements for paediatric ECMO both in terms of the specialist staff required and the broad range of equipment required. Moreover, international guidelines stipulate an annual volume of a minimum number of cases to ensure the service provided is safe and effective. According to those guidelines the volume of cases does not support the establishment of a second paediatric cardiac surgery service in Victoria.

[117] The procedure is set out at pages 271-283 of the brief.

[118] The procedure sets out three pathways – Option A, the "main option" involves time-critical transfer to the RCH PICU; Option B, the "limited option" involves the ECMO retrieval team attending and implementing ECMO in the MCH PICU; and Option C, escribed as "extenuating circumstances" involves a request to the Victorian Heart Hospital adult ECMO services assessing the patient for initiation of ECMO in the MCH PICU prior to transfer to RCH. In the latter case, the patient must weigh >/= 40 kg with patients weighing between 30-39 kg able to be referred for consideration. As to the likelihood of a patient between 30-39 kg being accepted, Prof Bennetts stated *"Realistically this consideration would rarely lead to ECMO being initiated at Monash Health for the reasons already outlined above."*

[119] Transcript pages 221-222.

[120] Transcript pages 222-223.

115. The PIPER retrieval team subsequently arrived in the ED at 0851 and were provided with a handover at about 0910 hours. At about 0920 hours, Amrita had a brief period of distress and agitation and suffered another cardiac arrest. CPR was commenced by Dr Unwin and there was a return of spontaneous circulation after about one minute.[121]

116. At about 0922 hours, Amrita had another cardiac arrest, and CPR was initiated again with the involvement of clinicians from Monash ED and the PIPER retrieval team. This was documented as pulseless electrical activity arrest followed by an asystolic rhythm within one cycle. CPR continued for more than 45 minutes before being ceased after discussion between all clinicians involved, given the prolonged arrest time and Amrita was verified deceased at 1046 hours.[122]

The expert evidence - Was Amrita's death preventable?

117. Whereas Dr Bedford attributed Amrita's death to lymphocytic myocarditis, based on histology findings, predominantly of lymphocytes,[123] at inquest, the consensus was that Amrita had fulminant myocarditis and this had consequences in terms of the preventability of her death. This is not an entirely different disease but a severe form of myocarditis that is a medical emergency and requires immediate intensive care support.[124]

118. A range of independent expert reports were available in relation to the preventability of Amrita's death. I have considered all of them, appropriately tempered by factual findings available to me at the conclusion of the inquest, in particular, the evidence of Dr West that despite the EMR suggesting the troponin results were available as early as 0330, they were not available to Dr Tan in the ED until 0528 at the earliest.

119. Associate Professor (**A/Prof**) Luke Lawton was commissioned to provide a report on behalf of the family from the perspective of an ED physician and ED practice.[125] A/Prof Lawton's review of the EMR is detailed and the focus of his opinion and analysis is on Amrita's management in the ED between 2200 and 2300 on 29 April. He identified a number of

[121] Dr Unwin's statement, page 304 of the brief; Dr Bilgrami's statement, page 265 of the brief and his notes of the resuscitation in the EMR at page 151.
[122] EMR, page 151 of the brief. The doctors involved at the time CPR ceased were Dr Petrasovicova (PICU consultant), Dr Adnan Bilgrami (ED consultant), Dr Kumar (PICU registrar), Dr Monica Brooks (PIPER/PICU).
[123] See paragraphs 26-27 above.
[124] *Myocarditis* is an inflammation of the heart muscle which can reduce the heart's ability to pump blood properly. *Fulminant myocarditis* is a rare, severe, rapidly progressive form of heart muscle inflammation characterized by sudden onset, profound haemodynamic instability (such as cardiogenic shock) and life-threatening arrythmias requiring immediate intensive care support.
[125] A/Prof Lawton's report dated 20 September 2022, at pages 353-388 of the brief includes his formal qualifications and experience.

"significant breaches of a standard of competent professional practice which meant the Patient's illness and deterioration were not recognised" – a failure to take and document vital signs at least hourly, particularly blood pressure; a failure to review and act findings and parental concerns, in particular the 2152 blood gas results which was concerning for evolving metabolic acidosis with respiratory compensation; and a failure to investigate the discrepancy at about 2200 between the measured heart rate and sats probe estimation by performing an ECG which would have led to a diagnosis of myocarditis.[126]

120. A/Prof Lawton was an outlier in asserting significant and causal failures in clinical management and care between 2200 and 2300 on 29 April. In my view, there is a degree of hindsight bias and speculation involved in reaching his conclusions about what vital signs and monitoring would have shown at this stage of Amrita's clinical course. At best, A/Prof Lawton's opinion support a *possibility* that more regular vital signs and a closer examination of Amrita and all available parameters may have led a clinician to a different conclusion and/or further investigations at an earlier time.

121. Consultant Paediatric Emergency Physician Associate Professor Fenton O'Leary was commissioned to provide an independent expert report for the court.[127] A/Prof O'Leary's report was critical of the lack of vital observations overall but especially once there was a clinical suspicion of an alternative diagnosis (to appendicitis/gastritis). Continuous ECG, heart rate, respiratory rate, oxygen saturations and 30-minutely blood pressure readings would have been reasonable after 0330 hours. It was possible that blood pressure monitoring may have revealed a drop in blood pressure earlier than 0559 hours and contributed to an earlier escalation in care.

122. According to A/Prof Leary, there was no indication to perform an ECG earlier than 0330 hours[128] and that the ECG was performed in response to Satya's concerns about the abnormally high heart rate observed on the saturation monitor and Dr Tan's perception of a need for reassurance. On A/Prof Leary's interpretation, Amrita's ECG at 0330 hours is very abnormal and difficult to interpret but he would expect any trained medical practitioner to

[126] Page 353 of the brief.
[127] A/Prof O'Leary's report dated 29 June 2024 is at pages 395- 435 of the brief and includes his formal qualifications and experience.
[128] A/Prof O'Leary's report, page 424 of the brief.

appreciate that it is a very abnormal rhythm even if they were unsure of the exact nature of the problem.[129]

123. A/Prof Leary accepted that Dr Tan may not have appreciated the nature of the ECG, nevertheless, he considered the correct diagnosis and ordered the appropriate blood tests to confirm the diagnosis including troponin and repeat venous blood gas. In addition, A/Prof O'Leary would have expected Amrita to be appropriately monitored, if possible, in a resuscitation bed, fully reassessed from a cardiological/circulatory perspective, and her care escalated to cardiology and/or the PICU.[130]

124. While this management was suggested by A/Prof O'Leary in response to the ECG alone, the venous blood gas results at 0352 hours, including a lactate of 5.9 only added to the need for immediate review and escalation to cardiology and intensive care in his view. As did the elevated troponin results which became available from 0528 hours. However, waiting for the troponin result with an already very abnormal ECG and raised lactate was not reasonable.[131]

125. On the question of the preventability of Amrita's death and given the formulation of the cause of death, most relevant were the opinions of paediatric cardiologists who reviewed the case, Dr Cameron Seaman provided a medico-legal opinion on behalf of the family and Dr Brian Edis who provided an independent expert report for the court[132] and both gave evidence at inquest.[133]

126. At inquest, Dr Seaman tempered his opinion somewhat when it was clarified that the troponin results were not available until 0528 hours at the earliest. However, he maintained that by about 0400 hours, the markedly abnormal ECG and elevated lactate of 5.9 indicated a significant myocardial problem and evidence of impaired blood flow around the body which would still raise concerns for severe myocarditis, even absent a chemical marker for inflammation of the myocardium (the troponin results).[134]

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[129] A/Prof O'Leary's report, page 425 of the brief. *"I would expect an ED Registrar to appreciate the very wide complex QRS and to realise that this is very unusual and abnormal. I would then expect them to go through the ECG from first principles if they were not sure of the approach. Using this approach would have enabled them to identify that the P waves have no relationship to the QRS. An example of the approach to Basic Paediatric ECG interpretation is provided by the Paediatric Care Initiative on the RCH Website."*

[130] A/Prof O'Leary's report, page 427 of the brief.

[131] A/Prof O'Leary's report, pages 428-431. Note too, page 428 where he states that if the lactate was thought to be erroneous it should have been repeated immediately and page 433 where he casts his conclusions in terms of *"missed opportunities"* for a changed of outcome.

[132] Dr Seaman's report dated 14 June 2023, pages 389-394 and Dr Edis's report dated 26 July 2024, pages 454-474.

[133] Transcript pages 311-330 and 330-340 of the brief respectively.

[134] Transcript page 315.

127. He advised that one of the challenges in diagnosing myocarditis is that there is no typical ECG pattern, and ECGs can vary from being entirely normal to markedly abnormal. In Amrita's case, the ECG was very abnormal and in the context of a patient with no previous cardiac history, and her overall presentation, brought a diagnosis of myocarditis front of mind.[135] With the benefit of hindsight, Dr Seaman was confident that an echocardiogram performed at about 0400 hours would have confirmed the diagnosis of severe or fulminant myocarditis.[136]

128. Dr Seaman testified that outcomes are difficult to predict in severe myocarditis and he could not provide statistics for Amrita's age group. However, he thought that with appropriate escalation at 0400 hours Amrita's chances of survival would have been favourable.[137] That is, with immediate cardiac monitoring, frequent blood pressure monitoring and immediate referral to the on-call cardiologist (for an urgent echocardiogram) and also to PICU. Dr Seaman also envisaged insertion of an arterial line for blood pressure and arterial blood gas monitoring, and a referral to PIPER by 0500 hours for urgent transfer and consideration of ECMO. In those circumstances, his opinion was that Amrita's death would have reasonably been avoided.[138]

129. Dr Edis' had extensive experience in the interpretation of ECGs and his report included a very detailed description of Amrita's ECG, his interpretation of the ECG and how it may have been interpreted by an ED registrar. Consistent with other expert evidence he considered it a 'highly unusual ECG'. He considered that the ECG, the troponin results and the lactate indicated Amrita was 'definitely quite sick' and clearly supported a diagnosis of myocarditis. These finding also warranted a MET call, immediate transfer to PICU, and involvement of PIPER for retrieval and transfer to the RCH. In the meantime, Amrita should have been on continuous cardiac monitoring and had an echocardiogram as soon as possible.[139]

130. In his statement, Dr Edis expressed the opinion that Amrita would probably have survived had her condition been appreciated as a consequence of the tests initiated by Dr Tan at the 0300 hours review. Proper management in response to those tests would have involved an infusion of an inotrope and a request for the PIPER retrieval team to be dispatched to take her to the RCH before her first cardiac arrest.[140] He reiterated this opinion at inquest in testifying that it

[135] Transcript pages 315-316.
[136] Transcript page 316.
[137] Ibid.
[138] Dr Seaman's report, pages 393-394 of the brief.
[139] Dr Edis' report, page 467-468 of the brief and transcript pages335 and following.
[140] Dr Edis' report, page 474 of the brief.

was more likely than not that Amrita would have survived if her care had been escalated at 0400 hours.[141]

131. Additional evidence pertaining to the preventability of Amrita's death and the management that would have optimised her survival was provided by Dr James in the course of his evidence. He testified that if Amrita had been transferred to PICU around 0400 hours, he would expect she would have been intubated and started on inotropes which may well have been all she needed to stabilise her such that the PIPER team could be safely transfer for her to RCH for further management. If Amrita then deteriorated at the RCH, they would have been able to put her onto ECMO very quickly.[142]

Changes made at Monash Health following Amrita's death

132. Throughout the inquest there was reference by several witnesses and by counsel during submission to the changes made at Monash Health following Amrita's death. Monash Health was fairly described by Ms Ellis as having worked proactively to identify the systemic issues relevant to Amrita's death, and having made changes to its processes and policies reflective of a robust, comprehensive and considered response to her death.[143]

133. The main witness able to speak to these changes was Dr Adam West, Director of Paediatric Emergency Medicine at Monash Health.[144]

134. In a Supplementary Statement dated 5 April 2024, Dr West provided an update on all 14 recommendations made in the Sentinel Event Review of Amrita's case[145] and annexed copies of updated Monash Health procedures entitled Monitoring Vital Signs in the Emergency Department and Notifying the Emergency Physician as well as clinical guidelines concerning Paediatric 'Call Now' Criteria. He also provided a copy of the letter sent to Amrita's parents by way of 'open disclosure' dated 24 August 2022.[146]

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[141] Transcript page 340
[142] Transcript pages 225-226.
[143] Submissions made by Ms Ellis, Counsel for Monash Health, dated 6 December 2024.
[144] Dr West's evidence is at transcript pages 238-306. His first statement dated 27 October 2022 has been referred to extensively above at paras 18 and following above and provides an outline of the clinical management and care provided to Amrita based on his review of the EMR.
[145] Dr West's report dated 5 April 2024, pages 306-312. Annexed to this statement are Monash Health Procedures entitled "Monitoring Vital Signs in the Emergency Department", pages 313-317 of the brief; and "Emergency Department-Notifying the Emergency Physician, pages 317A-317C of the brief. Also annexed is Clinical Guideline entitled "Paediatric 'Call Now' Criteria" as at 23 Oct 2023, page 318 of the brief.
[146] The letter signed by A/Prof Georgia Soldatos321-324 of the brief. I note that the letter refers to the cause of death as lymphocytic myocarditis and states that *"This is a rare condition in children, estimated to occur every year in 1-2/100,000 children. Amrita had a more specific subset of that condition known as "fulminant myocarditis". Fulminant Myocarditis*

135. Important changes made by Monash Health relevant to the circumstances in which Amrita's death occurred include the requirement for ED clinicians to notify the on-call Consultant Emergency Physician for any paediatric patient meeting the Call Now criteria or in the event of a lactate of >3mmol/L. This includes a requirement for a repeat venous blood gas within 15 minutes if the lactate result is considered spurious.[147]

136. Another important change concerns the interpretation of ECGs in the ED. As at the date of the inquest, Monash Health's procedure on the interpretation of ECGs in the ED was being considered by Monash Health's Clinical Council. In the interim, all consultant staff in the ED (who are then charged with educating/informing all staff with whom they work) have been advised to discuss any ECG with the on-call paediatric cardiologist where it is thought that specialist input is required and a copy of the ECG can now be sent by email to the on-call paediatric cardiologist if required.[148]

137. As regards the troponin results in Amrita's case, education has been provided via email to all hospital staff that add-on pathology tests take longer than a new request and this has been incorporated into registrar training. This was also the subject of an education session by the pathology team to the Junior Medical Advisory Council held on 3 November 2022 and the ED orientation manual has been updated to indicate the extra time add-on tests can take and to consider this fact in relation to determining the type of test ordered.[149]

138. As regards concerns about suboptimal communication of information between Dr Tan and Dr Rao, Monash Health distributed a shared learning document to relevant staff reiterating that the use of ISBAR as essential when communicating between specialities noting learnings from the review of Amrita's case.[150]

139. Monash Health have also improved their Parent and Carer Escalation (**PACE**) process. At the time of Amrita's presentation, posters setting out the PACE process were placed in each

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is where there is evidence of low blood pressure and signs of a failing heart associated with the inflamed heart muscle. In addition, there can be life threatening arrythmias of the heart (irregular heart-beats). In some cases, the fulminant myocarditis progresses so rapidly that it is challenging to make the diagnosis and provide appropriate therapy before progression to severe cardiogenic shock and death."

[147] Dr West's statement, pages 305-306 and 317A of the brief. Transcript pages 183

[148] Dr West's statement, page 307 of the brief.

[149] Dr West's statement, pages 308-309 of the brief.

[150] The ISBAR framework is a structed communication tool used in healthcare to ensure clear, concise, and safe transfer of patient information during handovers or critical events. ISBAR is an acronym that stands for **Introduction / Identify:** State your name, your role or location, and the name or identifier of the patient you are discussing; **Situation:** Describe the immediate issue, presenting problem, or acute change in the patient's condition in a single sentence; **Background:** Provide relevant clinical history, recent procedures, or context that helps explain the current problem; **Assessment:** Share your evaluation or working diagnosis of the patient's condition, including relevant clinical findings or vital signs; **Recommendation:** State what action, help, or next steps you propose or require from the listener.

cubicle and set-out a three-tiered process for escalating concerns. Firstly, to the nurse or doctor attending to the patient; then to the nurse in charge if concerns are not satisfactorily addressed; and, if the concerns remain unresolved, by calling the hospital's dedicated escalation number.[151]

140. It was apparent from Satya's evidence that her inability to escalate Amrita's care overnight on 9-10 April was a matter of great frustration and distress. At first, Amrita was placed in an un-nursed cubicle in the ED, cubicle 10, that was not intended for ongoing patient care.[152] It is reasonable to infer that the absence of an allocated nurse compounded Satya's feeling that she was not being heard and that Amrita's care needs were not being addressed.

141. Dr West provided call bell data regarding the use of the call bell in cubicle 10 and cubicle 25 (in the SSU) when occupied by Amrita and that data suggests reasonable response times overall. However, a "response" in this setting means that someone has pressed the call bell in the cubicle to cancel the call but gives no information about what if any clinical response resulted. With that caveat, the call bell data provided is irreconcilable with Satya's evidence about the lack of response and/or lack of timeliness in having her concerns addressed.[153]

142. At inquest, Dr West identified the main change or improvement to the PACE as the addition of a <u>prompt to nurses taking vital observations to proactively ask the parent or carer if they are worried about a deterioration</u> in their child (or words to that effect). This change was being considered even before April 2022 but was fast-tracked after Amrita's death.[154] Of note, in reviewing staff uptake of this change and patient outcomes, there was evidence that parental concerns that their child was deteriorating seemed more predictive of a sicker child than abnormal vital signs. Dr West described this as an unexpected finding that he believed was generally 'not known around the world.[155]

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[151] Transcript pages 253-254.

[152] The call bell data is at pages 58-59 of the brief and Dr West's evidence regarding the data at transcript pages 251-252. According to Dr West, C10 was in an area the ED had been sharing with the adult ED while renovations were undertaken. Upon completion, some cubicles remained that were not intended for ongoing patient use as they were not commissioned with nursing staff but could be used (say) for an initial assessment of a patient. He assumed that everyone understood this limitation.

[153] Transcript page 253. Nor would the EMR contain a note of every interaction, unless it was of clinical significance.

[154] Transcript pages 255257.

[155] Transcript pages 257-258. Dr West went on to add that *"one of my emergency physicians who's been working on this project has been working with Safer Care Victoria and even across Australia because we think that this might actually be a more sensitive indicator of the risk of deterioration than even vital signs, and that will be a, I would imagine to many clinicians, no an intuitive outcome, that the reliance is on more objective measures of deterioration like vital signs but we actually now think that parental concern of even carer concern might be a better predictor than – an earlier predictor…"*

STANDARD OF PROOF

143. The standard of proof for coronial findings of fact is the civil standard of proof on the balance of probabilities, having regard to the 'Briginshaw sliding scale'.[156] When finding facts, a coroner has to reach a comfortable or reasonable satisfaction having regard to all of the available evidence relevant to the questions in issue in the investigation.[157] When considering whether that level of satisfaction has been achieved, regard must be had to the seriousness of the allegation; the inherent likelihood or unlikelihood of an occurrence of fact, and; the gravity of the consequences flowing from a particular finding.[158]

144. This is particularly so with regard to adverse comments or findings about an individual in their professional capacity which should only be made when a coroner has reached a state of comfortable or reasonable satisfaction based on the evidence that they departed materially from the standards of their profession and, in so doing, caused or contributed to the death.[159]

145. It is axiomatic that the materiality of any departure from applicable standards must be assessed without the benefit of hindsight and on the basis of what was known or should reasonably have been known at the time, and not from the privileged position of hindsight. Patterns or trajectories that may become apparent subsequently or may even be obvious once the tragic outcome is known, are to be eschewed in favour of a fair assessment made from the perspective of the individual at the material time.

FINDINGS AND CONCLUSIONS

146. Applying the standard of proof to all the evidence before me concerning Amrita's death, I find as follows:

    (a) The identity of the deceased is Amrita Varshini Lanka, born 7 October 2013, aged 8 years;

    (b) Amrita died in the Paediatric Emergency Department, Monash Medical Centre, 246 Clayton Road, Clayton, Victoria at 1046 hours on 30 April 2022;

    (c) The cause of Amrita's death is lymphocytic myocarditis;

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[156] Briginshaw v Briginshaw (1938) 60 C.L.R. 336.
[157] *Anderson v Blashki [*1993]2 VR 89 at 96; *Secretary to the Department of Health and Community Services v Gurvich* [1995] 2 VR 69 at 73;
[158] Briginshaw v Briginshaw, op cit, at 362.
[159] Ibid.

(d) Amrita's death occurred in the circumstances set out above.

147. Amrita's initial management in the ED encompassing the triage process and management by clinicians on the day and afternoon shifts on 9 April 2022 was reasonable and appropriate by reference to current standards.

148. *With the benefit of hindsight*, Satya's complaints that Amrita was exhibiting 'hard breathing' on the evening of 9 April and the slightly elevated lactate (2.3mmol/L) and slightly low bicarbonate (20.3mmol/L) were early concerning signs.

149. However, when considered by Dr Silva *without the benefit of hindsight* and in the setting of Amrita's presentation overall and normal vital observations documented at 2149 hours, these signs did not warrant escalation at the time or highlighting during the handover process.

150. There was accordingly no want of clinical management or care on the part of Dr Silva that caused or contributed to Amrita's death.

151. Dr Tan's decision not to review Amrita until about 0300 hours when nursing staff alerted him to Satya's indication that she wanted to take Amrita home was reasonable given the management plan that was in place and had been communicated to him at handover and his additional administrative responsibilities for the ED overall.

152. That said, I accept Satya's evidence that she had no intention to take Amrita home but rather threatened to do so to ensure Amrita's complaints of chest discomfort/pain and her observations of Amrita's *"hard breathing"* which she felt had not been addressed, were addressed.

153. This action by Satya speaks to a failure of the parent and carer escalation processes in place at Monash Health at the time and, to some extent, to the placement of Amrita in an un-nursed cubicle for longer than was appropriate.

154. Dr Tan's initial response to Satya's concerns including his examination of Amrita, the taking of vital signs and the performance of the ECG were all reasonable and appropriate in the circumstances, except that he should have made contemporaneous notes of his findings, the diagnosis or suspicion of myocarditis and his management plan in the EMR.

155. While Dr Tan consulted his ED peers and the CMO about the ECG, they and he, did not appreciate just how abnormal it was and what it meant for Amrita's acuity. Given his uncertainty around interpretation of the ECG, Dr Tan could have consulted the on-call

consultant emergency physician, the on-call paediatric cardiologist or on site PICU clinical staff.

156. Nevertheless, Dr Tan did consider the correct diagnosis and did order the appropriate tests – venous blood gas analysis and troponin levels. As conceded by Dr Tan, in addition to the tests that were ordered, Amrita's blood pressure should have been taken as part of a complete set of vital observations around the time of the ECG.

157. At 0352 hours venous blood gas results showed an elevated lactate of 5.9mmol/L (significantly up from 2.3mmol/L) and a lower bicarbonate of 20mmol/L (down from 20.3mmol/L), signifying a deterioration since earlier venous blood gas results at 2149 hours on 29 April. Dr Tan's dismissal of these results as spurious based on his clinical assessment that Amrita was not 'very unwell' was unreasonable in the absence of a prompt repeat of the test. Dr Tan conceded that he should have ordered repeat venous blood tests sooner.

158. As conceded by Monash Health and Dr Tan, by about 0400 hours, the combination of the ECG results and the elevated lactate of 5.9mmol/L required immediate escalation of Amrita's care to both cardiology and the PICU.

159. Not only was there no such escalation, but the only apparent addition to Amrita's management between about 0330 and 0530 hours is an incomplete set of vital observations documented at 0441 hours, relevantly, not including blood pressure or repeat venous blood gases.

160. Amrita's troponin results were extremely high at >27,000.00ng/L but did not become available in the ED until 0528 hours. In part, this resulted from Dr Tan not knowing that 'add-on' pathology tests took longer than a fresh request.

161. Dr Tan likely became aware of the grossly elevated troponins at about 0530 hours when he ordered cessation of fluids to avoid possible fluid overload and asked that Amrita be moved from the SSU to the acute section of the ED.

162. However, Dr Tan did not review Amrita immediately the troponin results were available. At about the time the troponin results became available, Dr Tan involved himself in the care of a Category 1 patient arriving in the ED. Accepting his evidence that he did so having considered ED staffing, unaware of any known significant deterioration in Amrita, and without appreciating the severity of her myocarditis or having ever seen a case of fulminant myocarditis, I am unable to determine if the decision to involve himself in the care of another patient was reasonable and appropriate.

163. Dr Tan reviewed Amrita at about 0600 hours after nursing staff advised she was hypotensive (72/49). He described her as looking tired and unwell but talking and, apart from a low blood pressure, found all her vital observations were normal. The blood pressure alone should have triggered a MET call and there was no explanation for the failure to call one.

164. When repeat vital observations taken at 0628 hours showed an even lower blood pressure (70/56) a MET call was called and Amrita was moved to a resuscitation cubicle in the ED.

165. It was not until resolution of the MET call, at about 0640 hours, that Dr Tan call Dr Rao. Apart from the unreasonable delay in seeking Dr Rao's input, the consultation was deficient in that the information shared by Dr Tan was incomplete, failed to convey his sense of concern for Amrita, the severity of her acuity and the need for exigent clinical intervention.

166. For his part, Dr Rao did not elicit more detailed information about Amrita's blood pressure and lactate levels and conceded that he should have. Nor did Dr Rao ask Dr Tan to send him the ECG. Dr Rao's evidence was that he would likely have done so if he had apprehended Dr Tan was not confident in his interpretation. With hindsight, we know that the ECG was so abnormal, that even a photograph of the trace sent via text message would have alerted Dr Rao to Amrita's acuity and need for exigent clinical intervention.

167. The consultation between Dr Tan and Dr Rao was a missed opportunity to establish just how unwell Amrita was and just how urgent her need for escalation to the onsite PICU for life-sustaining interventions pending further investigations and/or initiation of PIPER retrieval.

168. Dr Kumar's involvement in Amrita's care commenced when he came to the ED at about 0700 hours and was asked by Dr Tan to review Amrita. Dr Kumar reviewed Amrita, documented his findings in the EMR, agreed with the diagnosis of myocarditis, assessed her as requiring transfer to the PICU and appropriately consulted with the incoming PICU consultant Dr Petrasovicova regarding Amrita's management.

169. There was no want of clinical management or care on the part of Dr Kumar that caused or contributed to Amrita's death.

170. With the arrival of Dr Unwin and Dr Rao by about 0800 hours, Amrita's clinical management and care involved high level input from all the specialities involved – emergency physicians, paediatric cardiology and PICU and there was no want of clinical management or care on the part of Monash Health that caused or contributed to Amrita's death from this time on. The die was already cast.

171. It is *possible* that vital observations taken overnight and into the morning, may have disclosed Amrita's deterioration and need for urgent escalation earlier than 0300 hours.

172. It is also *possible* that comprehensive assessment of Amrita in response to Satya's concerns may have led to recognition of myocarditis and the need for urgent escalation earlier than 0300 hours.

173. There is some support for the proposition that Amrita's care *could* reasonably have been escalated in response to the abnormal ECG trace alone, even without evidence of the elevated lactate that did not become available until 0352 hours. However, the available evidence does not support a positive finding that this *should* have been done.

174. <u>The weight of expert evidence supports a finding that Amrita's death was preventable.</u> There is a consensus in the evidence that certainly by about 0400 hours, when the ECG had been completed and the elevated lactate was available, Amrita's life could have been saved with timely escalation to PICU and paediatric cardiology, at Monash Health, and involvement of the PIPER retrieval service to transfer Amrita to the RCH for further management with or without ECMO.

175. Dr Tan was the clinician responsible for Amrita's clinical management and care from his acceptance of handover on 9 April until the involvement of Dr Kumar at about 0700 hours and other clinicians thereafter. While I accept that EDs are busy places and Dr Tan was a relatively junior doctor with many responsibilities, the clinical management and care he provided to Amrita was wanting as outlined in the body of this finding above and, in particular in paragraphs 155-165 and 167 of these findings/conclusions, and thereby caused or contributed to her death.

176. Engagement of the PIPER retrieval team was not as seamless as it could have been. However, there was no effective delay in the deployment of the team to the paediatric ED at Monash Health such that it caused or contributed to Amrita's death.

177. I convey my sincere condolences to Amrita's family for their loss, as well as to all her extended family members and friends.

178. I also acknowledge the impact of Amrita's death on the clinical staff of Monash Health involved in her clinical management and care, particularly those involved in attempts to resuscitate her on 30 April 2022 and those who participated in the inquest.

COMMENTS

Pursuant to section 67(3) of the *Coroners Act 2008*, I make the following comments on matters connected with the death, including matters relating to public health and safety or the administration of justice.

179. It is apparent that Monash Health has undertaken an internal review into Amrita's death and made several changes aimed at addressing the issues that arose with the clinical management and care provided to her. I commend Monash Health for their comprehensive internal review and response to Amrita's death which largely obviates the need for formal coronial recommendation and comments and, more importantly, should improve patient safety in the future.

180. I also commend Monash Health, and Dr Adam West in particular, for the assistance provided to the coronial investigation and for his constructive contribution to the inquest.

181. As was clarified during the coronial investigation and inquest, the RCH is the only health service in Victoria capable of cannulating children of all ages. It also has ECMO capability for paediatric patients and is the campus from which the PIPER retrieval service operates.

182. The Monash Health Paediatric Hospital and ED services a large part of the Melbourne Metropolitan area and lacks the capability to cannulate children like Amrita who are under 13 years of age and/or weighed less than 30/40 kilograms. They therefore lack the capability to provide ECMO for paediatric patients whether for myocarditis or otherwise and, as I understand it, this situation is unlikely to change in the foreseeable future.

183. The RCH is the only health service in Victoria capable of cannulating children of all ages. However, the RCH does not offer a standing emergency ECMO retrieval service or remote paediatric cannulation service. This is to be contrasted with the Victorian Extracorporeal Membrane Service (**VECMOS**) commissioned by the Department of Health through Safer Care Victoria, managed by Alfred Health, which does provide a standing emergency ECMO retrieval service for adult patients with dedicated specialist staff rostered on to provide a 24/7 service.

184. The RCH auspices the PIPER retrieval service and, through its ECLS program team (part of the RCH's PICU), endeavours to facilitate retrieval of children who have been cannulated at other hospitals, including some interstate hospitals. On rare occasions (roughly once a year)

the RCH is asked to dispatch a team to cannulate a child at another location and bring the child back to the RCH for treatment.

185. In these circumstances it is imperative that Monash Health and the RCH clinicians involved with the PIPER retrieval services and the ECLS/ECMO teams have well-established and well-understood processes to ensure that requests for assistance are as timely and effective as possible, particularly because of the logistics involved in deploying an ECMO team and the exigent needs of patients like Amrita who have life-threatening conditions.

PUBLICATION OF FINDING

Pursuant to section 73(1) of the Act, unless otherwise ordered by the coroner, the findings, comments and recommendations made following an inquest must be published on the internet in accordance with the rules. I make no such order.

DISTRIBUTION OF FINDING

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

Satya Tarapureddi and Venkata Chandra Sekhar Lanka c/o Slater + Gordon

Monash Health c/o Meridian Lawyers

Dr Shrinidhi J. V. Rao c/o Avant Law

The Royal Children's Hospital c/o K&L Gates Lawyers

Safer Care Victoria

Consultative Council on Obstetric and Paediatric Morbidity and Mortality

Commission for Children and Young People

Senior Constable Javier Chung Martinez, Victoria Police, reporting member

Signature:

Paresa Antoniadis Spanos

Deputy State Coroner

Date: 14 October 2026

NOTE: Under section 83 of the **Coroners Act 2008** ('the Act'), a person with sufficient interest in an investigation may appeal to the Trial Division of the Supreme Court against the findings of a coroner in respect of a death after an investigation. An appeal must be made within 6 months after the day on which the determination is made, unless the Supreme Court grants leave to appeal out of time under section 86 of the Act.

ATTACHMENT A

SCOPE OF INQUEST

Amrita's care

1. Was there an opportunity for the diagnosis of fulminant myocarditis to be made earlier? If so:
   (a) When should this have occurred?
   (b) What were the factors which delayed making this diagnosis?
   (c) Would this have changed the outcome?
2. Was there a delay in escalating Amrita's case to a senior clinician? If so:
   (a) When should this have occurred?
   (b) What were the factors which delayed this occurring?
   (c) Would this have changed the outcome?
3. Was there a delay in referring Amrita's care to PIPER? If so:
   (a) When should this have occurred?
   (b) What were the factors which delayed this occurring?
   (c) Would this have changed the outcome?
4. Was Amrita's death preventable? If so, at what point?

Patient and Carer Escalation (PACE)

5. When did Amrita's family raise concerns about Amrita's condition and what were the responses?
6. Was there a clear pathway for escalation of parental concerns? If so:
   (a) What was this pathway at the time and how has this changed since Amrita's death?
   (b) Were Amrita's parents aware of such a pathway?
   (c) How was this pathway communicated to families generally?
   (d) What were the barriers, if any, to the effectiveness of this pathway?
   (e) Were Amrita's family's concerns appropriately addressed and escalated?
7. What model of PACE should be in place for cases such as Amrita's?

Resourcing

8. Was staffing, resource constraints, or competing demands a factor in Amrita's death? If so, how?
9. What was the capacity for paediatric ExtraCorporeal Life Support (**ECLS**) at Monash Health at the time of Amrita's death?
10. What is the capacity for paediatric ECLS at Monash Health now?
11. What is the capacity of the RCH to provide paediatric ECLS to Monash Hospital and other centres in cases such as Amrita's?
12. Was the process for engagement of PIPER for ECLS adequately understood and followed at the time?