



FINDING OF INQUEST

An Inquest taken on behalf of our Sovereign Lady the Queen at Adelaide in the State of South Australia, on the 21st day of July, the 23rd, 26th, 27th and 30th days of September, the 6th and 28th days of October 2022 and the 27th day of March 2024, by the Coroner's Court of the said State, constituted of Ian Lansell White, Deputy State Coroner, into the death of Jennifer Ann Collins.

The said Court finds that Jennifer Ann Collins aged 30 years, late of 24 Solero Avenue, Reynella East, South Australia died at Reynella East, South Australia on the 6th day of September 2018 as a result of tricuspid valve bacterial endocarditis. The said Court finds that the circumstances of her death were as follows:

1. Introduction

- 1.1. On 6 September 2018, 30-year-old Jennifer Collins died in her bedroom at her stepfather's house in Reynella East. In the previous weeks before her death she had been noticeably unwell and struggling with her health, including having cold sweats, non-specific chest tightness and heaviness, together with mild diarrhoea. Her caring and dutiful brother, Mr Bryon Collins,¹ was very concerned about her health, as was her stepfather, Mr Michael Poldervaart and her mother Sarah Collins.
- 1.2. Unfortunately, Ms Collins' health was complicated with issues of her use of illicit drugs, in particular methylamphetamine which she took intravenously. Basically, this caused her to be identified as an intravenous drug user.² This was not a derogatory description at the Inquest, but a significant one concerning her liability to heart disease

¹ Bryon

² IVDU

because of intravenous ingestion of this drug. Her drug use was a critical factor not only in the consideration of her cause of death, but in the clinical assessment undertaken at the Noarlunga Hospital and by SA Ambulance Service³ shortly before her death.

2. **Cause of death**

2.1. Ms Collins' cause of death was related to a condition of her heart. A post-mortem examination of her was done by forensic pathologist, Professor Roger Byard AO, from Forensic Science SA.⁴ His examination was conducted on 10 September 2018.

2.2. He found her cause of death to be endocarditis.⁵ This is a life-threatening situation of inflammation of the inner lining of the heart's chambers and valves.

2.3. Professor Byard further noted that her death was:

'... due to marked infective endocarditis⁶ involving much of the tricuspid valve with inflammatory infiltration into the heart including the conduction tracks. This would be the explanation for her history of an irregular heart beat in recent times ... No other underlying organic diseases were present which could have caused or contributed to death. There was no evidence of recent trauma.'⁷

2.4. Professor Byard referred Ms Collins' heart for further examination to Professor Anthony Thomas.

2.5. Professor Thomas is a Professor in Anatomical Pathology at the Flinders University who has devoted much of his professional life to the study and analysis of the heart since obtaining his Medical Degree from London University in 1973.

2.6. His extensive career achievements were set out in his curriculum vitae⁸ which outlined his clinical, research and academic achievements.

2.7. Professor Thomas refined Ms Collins' cause of death to be '*tricuspid valve bacterial endocarditis*'.⁹ This is consistent with the cause of death and comments of Professor Byard.

³ SAAS

⁴ FSSA

⁵ Exhibit C2a – Post-Mortem Report

⁶ IE

⁷ Exhibit C2a, page 1

⁸ Exhibit C3b

⁹ Exhibit C3d

2.8. Accordingly, I find that Ms Collins' cause of death is tricuspid valve bacterial endocarditis.

3. Ms Collins' personal history

3.1. Much of Ms Collins' personal history comes from her brother Bryon who assisted the Inquest by providing a statement¹⁰ and giving oral evidence. He also attended the Inquest after his evidence and had an obvious love for his sister.

3.2. Ms Collins was the eldest of Sarah Collins' three children. Bryon was the next born, followed by Marlon who was the son of Sarah Collins and Mr Michael Poldervaart. Sarah Collins attended the Inquest but was not called on to give evidence. Sarah Collins' care of her daughter when young was not easy due to her relationship with Ms Collins' father. Unfortunately, Ms Collins' childhood was marred by the behaviour of her father, who was '*mentally unstable and incredibly abusive*'¹¹ towards Sarah Collins. Despite her father being subject to a restraining order preventing contact with her, Bryon or their mother, he stalked them. Unsurprisingly as a result, Ms Collins suffered childhood trauma.

3.3. Ms Collins was an academically bright student who completed Year 12 at Mount Barker High School, before enrolling at Flinders University to study psychology. Ms Collins engaged in the psychology course for only one year before leaving and commencing work as an exotic dancer in Adelaide. As already indicated, she was an IVDU. She also used marijuana until the time of her death.

3.4. Ms Collins' health was complicated further when she was diagnosed with bipolar personality disorder¹² in her young adulthood.

3.5. Ms Collins had a son who was about 6 years old at the time of her death. She shared custody of her son with the father.

3.6. Bryon described her as '*very empathetic and kind*'.¹³

3.7. As can be seen from the description of her life, she had significant struggles outside of her physical health issues which became acute in the weeks preceding her death.

¹⁰ Exhibit C14

¹¹ Exhibit C12a, page 2

¹² BPD

¹³ Exhibit C14

4. Ms Collins' health in the weeks preceding death

- 4.1. Ms Collins' health at this stage of her life was complicated by her attempts to withdraw from methylamphetamine use. She became essentially house bound, and more acutely bedbound, during this period save for medical intervention.
- 4.2. The following times and dates set out when Ms Collins sought or received medical treatment.
- 4.3. 11:02am on 20 August 2018
- 4.4. Ms Collins called triple zero¹⁴ for an ambulance.¹⁵ Features of this call were that Ms Collins described herself as having a heart attack with tightness and struggling to breathe. She also complained of being clammy and having cold sweats, she admitted on this call she was a smoker, heavy drug user and had a 'tachy' heart. Finally, she admitted cannabis and 'ice'¹⁶ use in the past 12 hours. This call was played in open Court¹⁷ and I have listened to it independently a number of times.
- 4.5. 11:23am on 20 August 2018
- 4.6. SAAS arrived and assessed Ms Collins. Ambulance officers Vass and Dunn attended to her. A detailed history was recorded on the SAAS Patient Clinical Record,¹⁸ including the following information, namely:
- i. Her presenting complaint was chest tightness.
 - ii. The past history indicated tachycardia, anaemia, preeclampsia, anxiety, borderline, psychosis, HTN.¹⁹
 - iii. History given – 30-year-old with *'two days history of non-specific chest tightness/heaviness and minor diarrhoea. Pain ongoing today'*.
 - iv. It was noted that Ms Collins met SAAS at the front door and was assessed in the ambulance.

¹⁴ '000'

¹⁵ Exhibit C9 - Audio recording of call

¹⁶ Methylamphetamine

¹⁷ Transcript, page 366-367

¹⁸ Exhibit C9o

¹⁹ Hypertension

- v. A provisional diagnosis was given of anxiety / drug induced tachy / chest tightness and a recommendation that SAAS transport her for assessment of chest tightness / tachycardia and ? infective process.²⁰
- 4.7. I find the final entry of this note to be a perceptive entry concerning her health in light of the history given and known by SAAS.
- 4.8. Ms Collins refused SAAS advice to be transported via ambulance due to the anticipated costs involved. She indicated that she would be taken to hospital by private vehicle.
- 4.9. It was also a correct decision by SAAS in my view to recommend transport to hospital by ambulance.
- 4.10. Arrival at Noarlunga Hospital - 20 August 2018
- 4.11. In light of her refusal to use an ambulance, Ms Collins' stepfather was advised to take her to hospital '*as soon as possible*'.²¹ Despite her initial reluctance, Mr Poldervaart was able to convince her to go. He took her there in his car and into the Emergency Department.²² He waited with her until she was examined. She indicated that she did not want him to stay. Therefore, he left. Later that evening he received a phone call from a doctor at Noarlunga Hospital advising that he could take Ms Collins home and that she was '*okay*'.²³ He was advised that she '*needed plenty of rest and fluids*'.²⁴ It eventuated that Ms Collins' mother, Sarah Collins, collected her.
- 4.12. Her treatment that day at the hospital was subject to a significant amount of evidence and expert analysis. It was suggested that this was a critical moment in time with respect to her care that was not correctly managed.
- 4.13. The evidence went so far as to state that had infective endocarditis²⁵ been diagnosed on 20 August 2018 her survival would have been '*the likely outcome*'.²⁶

²⁰ My emphasis

²¹ Exhibit C5b, paragraph 8

²² ED

²³ Exhibit C5b, paragraph 10

²⁴ Exhibit C5b, paragraph 10

²⁵ IE

²⁶ Exhibit C16, Report of Professor Kelly

4.14. Noarlunga Hospital - 20 August 2018

- 4.15. I turn now to the specifics of her attendance this day at the Noarlunga Hospital. At 12pm she was subject to an initial assessment by medical staff.
- 4.16. Notes of her triage recorded by the registered nurse in the medical records²⁷ included that upon presentation Ms Collins had a pulse rate of 150 and complained of chest pain which was '*heavy*'.²⁸ Ms Collins reported at triage that she had been using '*meth and THC*²⁹ and every day for the past 18 months. Today she had sudden onset chest pain approx 0430, had not slept yet, called SAAS who did ... ECG and patient then self presented to ED'. The severity of her pain was recorded as '*mild*'. She also reported decreased oral intake. The triage finished no later than 12:23pm. At 12:30pm Ms Collins provided a sample of urine.
- 4.17. I note the inconsistency of the duration of the chest pain in the history Ms Collins gave to Noarlunga Hospital compared with that given to SAAS at her home approximately one hour before.
- 4.18. The hospital records also indicated a personal factor raised by Ms Collins concerning shared custody of her 6-year-old son with her ex-partner. She was due to look after him from Thursday 23 August 2018 and that she '*didn't want to be an inpatient during her week*' which added to her stress about her medical condition.³⁰
- 4.19. I therefore acknowledge that over and above the stress concerning her health, her difficulties with drugs and long-standing mental health issues, Ms Collins' personal situation regarding her son would have been a significant additional difficulty for her to deal with that day.
- 4.20. Dr Nic Tiekink was the resident medical officer³¹ who examined Ms Collins after triage. He had obtained his medical degree in 2016 from Flinders University and had been employed at Flinders Medical Centre³² in 2017 and 2018. As well as his work at the FMC, he was also based at Noarlunga Hospital as an RMO.

²⁷ Exhibit C8, pages 17-19

²⁸ Exhibit C8, page 17

²⁹ Cannabis

³⁰ Exhibit C8, page 20

³¹ RMO

³² FMC

- 4.21. By 2018 he described himself as an RMO ‘*doing a general year, essentially a year to gain experience and future exposure*’.³³
- 4.22. The medical records showed with certainty that after triage a urine sample was taken at 12:30pm and a blood test ordered at 12:50pm. Dr Tiekink had ‘*very minimal*’³⁴ recollection of treating Ms Collins. Therefore, he placed great reliance on the hospital notes.³⁵ I do not criticise him for this given that this was his only encounter with Ms Collins, the passage of time between seeing her and giving evidence and no doubt the many other patients he had seen since that day.
- 4.23. Consequently, his memory outside of the notes he was associated with was basically non-existent. This always makes it difficult to give evidence without the element of reconstruction.
- 4.24. What is important to consider is the issue of what did and did not happen that day with her treatment. This issue will rely on the hospital notes which I have assumed are accurate.
- 4.25. There are some key documents in these notes that were authored by Dr Tiekink, in particular the discharge summary made at 7:22pm after her seven-hour stay. This document summarised her arrival, personal details and history of her complaint. Further, it outlined the tests done, together with the results. It is clear from these notes that the following treatment occurred during that seven hour stay, namely:
1. An electrocardiogram.³⁶
 2. Blood tests including to identify inflammatory markers and a troponin test.³⁷
 3. Chest X-ray.
 4. Urine test.
 5. Simple analgesia.

³³ Transcript, page 121

³⁴ Transcript, page 121

³⁵ Exhibit C8

³⁶ ECG

³⁷ Test to gauge whether an acute cardiac event such as a heart attack is occurring

- 4.26. The results of those tests indicated the following, namely:
1. A normal white cell count, which usually indicates an elevated level if an infection was present.³⁸
 2. A CRP³⁹ level of 17, was an elevated level, but '*not extremely high*' to make it a non-specific finding concerning infection. Dr Tiekink explained that it tended to make endocarditis '*slightly less likely, but still not excluded*'.⁴⁰
 3. The ECG revealed a sinus rhythm which indicated good cardiovascular health. In other words, a normal rhythm of her heart was found.⁴¹
 4. The chest X-ray revealed a good result as well showing no enlargement of the heart and no problems in the lungs of infection.

4.27. 'Blood cultures'

4.28. A blood culture⁴² is a blood test for the purpose of determining whether an infection is present within the blood.

4.29. This topic was the subject of extensive evidence, in particular as to whether such a test should have been conducted on Ms Collins on 20 August 2018.

4.30. As stated in a tendered article authored by Emergency Medicine Australasia:⁴³

'When appropriate, BCs continue to have an important place in our armamentarium against infection and excessively limiting collection may adversely affect patient outcomes. A true-positive BC can provide a definitive diagnosis of invasive infection and allows for targeted antimicrobial therapy, reducing the harms of misdiagnosis, treatment delay and unnecessarily broad-spectrum antimicrobials. However, overzealous BC collection increases the incidence of false-positive tests leading to inappropriate treatment, prolonged hospital admissions, as well as patient discomfort and the economic costs of unnecessary investigation.'⁴⁴

4.31. This quote by EMA defined the area of dispute on this topic in this Inquest.

4.32. The discharge summary for Ms Collins indicated that a BC test was considered, but not pursued.

³⁸ Transcript, page 123

³⁹ C-reactive protein - a CRP test is a blood test that checks for inflammation in your body

⁴⁰ Transcript, page 124

⁴¹ Transcript, page 134

⁴² BC

⁴³ EMA

⁴⁴ Exhibit C16m

4.33. The recorded reason in the discharge summary was that there was:

‘No requirement for blood cultures/ABx given no peripheral features of IE
Likely viral illness + methamphetamine withdrawal
Continue simple analgesia, stat dose Diazepam’⁴⁵

4.34. The decision by the Noarlunga Hospital not to order a BC was authorised by Dr Ng, the ED consultant. Dr Ng maintained in evidence that this was the correct decision at the time and even with hindsight analysis.

4.35. Dr Tiekink candidly accepted that in hindsight, given that he now has more experience, he would have recommended a BC test. This is in line with expert reviewer Professor Kelly’s report and evidence.

4.36. Professor Kelly’s opinion was that:

‘Ms Collins’ death is likely to have been prevented if the doctors at Noarlunga Hospital ED took blood cultures at the index ED presentation (the most important action) and/or investigated for possible pulmonary embolism. If these actions had been taken, it is highly likely that infective endocarditis would have been identified. Survival would have been the likely outcome.’⁴⁶

4.37. Before expanding on the reasons supporting this position, I wish to deal with the evidence of the counter view maintained by Dr Ng. This was addressed directly by him in his affidavit.⁴⁷ I remind myself that he does not have ‘*an independent recollection of assessing Ms Collins or being involved in her care*’.⁴⁸ He referred to her presentation as recorded in the medical notes and in particular the discharge summary completed by Dr Tiekink.⁴⁹ He also had the opportunity to read and respond to Professor Kelly’s report,⁵⁰ Professor Byard’s post-mortem report,⁵¹ and Professor Thomas’ report⁵² in giving his evidence by affidavit and in Court.

4.38. Dr Ng’s curriculum vitae⁵³ indicated that he became a Fellow of the Australasian College of Emergency Medicine⁵⁴ in February 2016 and had been working in various positions in emergency medicine and/or retrieval medicine since 2010. He had been a

⁴⁵ Exhibit C8, page 20

⁴⁶ Exhibit C16, pages 12-13

⁴⁷ Exhibit C15 - sworn 21 September 2022

⁴⁸ Exhibit C15, paragraph 2

⁴⁹ Exhibit C8, pages 19-24

⁵⁰ Exhibit C16

⁵¹ Exhibit C2a

⁵² Exhibit C3a

⁵³ Exhibit C15a

⁵⁴ ACEM

consultant since June 2016 with significant training and experience in this area. He expanded upon his opinion about BCs and Ms Collins' treatment in oral evidence.

4.39. He nominated a number of points against obtaining or performing a BC test on Ms Collins, acknowledging '*in hindsight (with a knowledge of Ms Collins' diagnosis), obtaining blood cultures would likely have identified Ms Collins' infective endocarditis*'.⁵⁵

4.40. He identified the following:

1. BCs are not commonly performed for patients who are not admitted. This is due to the length of time, namely between two and five days for the cultures to develop and results being obtained. He believed such tests are '*not cost effective*'⁵⁶ and '*commonly*' produce false positives or are contaminated and therefore not usable.
2. He accepted that had Ms Collins been admitted on 20 August 2018 the justification for BCs would have increased.
3. The only clinical sign of IE and complications of IE based on the listed criteria in Professor Kelly's report,⁵⁷ was a fever.
4. An elevated heart rate could be explicable by Ms Collins' admitted history of long term and recent drug use and anxiety. Testing for a pulmonary embolus, known as a PERC, and a follow-up test if positive, would not have necessarily identified any clots or emboli.⁵⁸
5. The presentation as documented of Ms Collins was not '*particularly indicative of infective endocarditis*'⁵⁹ and her fever had many possible diagnoses.

He also noted that Ms Collins was recommended to follow-up this hospital visit with her GP if symptoms worsened. A follow-up appointment was made by Ms Collins with her GP for 22 August 2018 which she attended but resulted in no further treatment or investigation.

4.41. Dr Ng explained his view that BCs '*more often than not*' produce a false positive result,⁶⁰ which often means the test is repeated.⁶¹ As the results do not come back on

⁵⁵ Exhibit C15, paragraph 5

⁵⁶ Exhibit C15, paragraph 4.1

⁵⁷ Exhibit C16, page 9

⁵⁸ Clot formed by bacteria and/or foreign material such as fats

⁵⁹ Exhibit C15, paragraph 6

⁶⁰ Transcript, page 154

⁶¹ Transcript, page 155

the shift in which they were ordered, it is only by good fortune that the same doctor that ordered the test will be able to relay the results to the patient. He believed this made management of the patient more difficult.

- 4.42. He relied upon academic support from articles on this topic, one of which was authored by Professor Kelly.⁶²
- 4.43. He reiterated that even in hindsight he would not have ordered a BC test as her recorded condition did not indicate she had a '*significant bacterial infection*',⁶³ together with the fact that she was not placed on, or supplied with, any antibiotics.
- 4.44. Secondly, she was not admitted to hospital.⁶⁴

5. **Failure to diagnose infective endocarditis in Ms Collins**

- 5.1. Dr Ng accepted that it was likely that Ms Collins had IE as at 20 August 2018 when she presented to the Noarlunga Hospital.⁶⁵ He emphasised that IE was '*rare*',⁶⁶ quoting '*it presents one in every 100,000*' patients. This statistical evidence was challenged by Professor Kelly as not being relevant for a patient that is an IVDU.

5.2. Duke Criteria

- 5.3. This was first mentioned in the Inquest by Dr Ng in oral evidence.⁶⁷ It is a list of medical conditions that are said to be relevant to be considered for diagnosis of IE developed by Duke University in the USA. Strong debate followed about the appropriateness of this criteria in a clinical setting. Professor Kelly was adamant that the Duke Criteria was:

'... not a clinical tool and it was never designed to be a clinical tool. It's a research tool that's applied to cases after the fact, *not* prospectively in clinical practice. So it is not suitable to be part of diagnostic decision making, it was certainly never intended or designed for that purpose.'⁶⁸

- 5.4. In contrast, a written opinion was provided by Dr Claire Allonby-Neve.⁶⁹ She has been a senior consultant at the FMC since 2009 with three years as Clinical Director of the

⁶² Transcript, page 158; See Exhibit C15c, article by Professor Kelly dated 14 January 1998 titled Clinical impact of BCs taken in the emergency department

⁶³ Transcript, pages 161-162

⁶⁴ Transcript, page 162

⁶⁵ Transcript, page 178

⁶⁶ Transcript, pages 177-178

⁶⁷ Transcript, page 178

⁶⁸ Transcript, page 349 (my emphasis)

⁶⁹ Exhibit C21

ED at the FMC from 2012 to 2014 and then again from 2019. She obtained a Fellowship of the Royal College of Emergency Medicine in England in 2004. She worked in emergency medicine in England and New Zealand up to 2009. She agreed with Professor Kelly that the Duke Criteria was '*developed as a research classification and not as a clinical instrument*',⁷⁰ but further explained it did have a significance in a clinical setting:

'Under the Duke Criteria (the primary method used by clinicians to consider if infective endocarditis is possible or likely) a minimum number of minor criteria or major and minor criteria are required for infective endocarditis to be considered as possible. In the absence of further guidance, a physician could consider an absence of sufficient criteria to be insufficient to "suspect" infective endocarditis and to therefore perform blood cultures. There would therefore still be a level of ambiguity if these criteria were introduced as to the relevant "standard" in their current form.'⁷¹

- 5.5. Professor Kelly responded with further reference to worldwide articles to support and strengthen her opinion evidence that the Duke Criteria is relevant once a '*definitive diagnosis*' is made rather than a differential diagnosis.⁷² A differential diagnosis is a general diagnosis that involves a range of possible medical conditions to be considered for a presenting complaint and/or results of a medical investigation.
- 5.6. What is plain is that Dr Ng relied on the Duke Criteria for excluding IE as an explanation for Ms Collins' condition. Dr Ng was satisfied based on his review of the notes that Ms Collins did not, or would not, have been identified under the criteria to allow a finding of confirmed IE or probable IE. Her condition would have been rejected as showing IE using the Duke Criteria.⁷³
- 5.7. Professor Kelly argued that for Duke Criteria to be possibly used in a clinical setting it needs a global examination of the results of three sets of investigation, namely BCs, clinical assessment from presentation and echocardiography.⁷⁴ Professor Kelly argued:
1. As BCs were not performed, that of itself is a bar for the use of the Duke Criteria.
 2. In any event, to use it in a clinical judgment is not the correct application.

⁷⁰ Exhibit C21, paragraph 19

⁷¹ Exhibit C21, paragraph 19

⁷² Exhibit C16e

⁷³ Transcript, pages 178-179

⁷⁴ A cardiac ultrasound

5.8. Discharge from Noarlunga Hospital

5.9. As the notes indicated in the discharge summary, Ms Collins was encouraged to contact Drug and Alcohol Services⁷⁵ and to consult with her GP if she had any further concerns or her symptoms worsened. There is no evidence she did contact DASSA after her discharge.

5.10. A call was made to Mr Poldervaart from the hospital saying that Ms Collins was ‘okay’ and could come home. It was recommended by the caller, who Mr Poldervaart believed was a doctor with an Indian accent, that she needed plenty of rest and fluids. Mr Poldervaart and Sarah Collins collected her.

5.11. GP visit - 22 August 2018

5.12. Ms Collins presented to her GP, Dr Lin, at the Morphett Vale Family Practice to discuss the results of tests done at Noarlunga Hospital on 20 August 2018.⁷⁶ At this appointment Ms Collins indicated that she ‘no longer had chest pain’. The results from the hospital testing showed no worrying signs with respect to her heart function, no abnormalities in her chest were revealed on X-ray and her urine sample was free of infection. However, the urine test indicated use of amphetamines and benzodiazepines.

5.13. Based on these results Dr Lin reasonably decided that she need not investigate Ms Collins’ physical health further. Discussion also occurred about Ms Collins’ mental health and prescriptions. Dr Lin refused to write another prescription for Valium on request from Ms Collins as she had been provided with one at the Noarlunga Hospital. She wrote a script for contraception. Ms Collins admitted in this consultation that she used amphetamine that day prior to the appointment and used ‘one point (0.1 grams) of ice every three days, including intravenous use’.⁷⁷

5.14. GP visit - 28 August 2018

5.15. Ms Collins had another scheduled appointment with Dr Lin, however she failed to attend. The reason for her non-attendance is not known, but it is a reasonable proposition to contemplate that she may have felt physically unable to attend.

⁷⁵ DASSA

⁷⁶ Exhibit C13

⁷⁷ Exhibit C13, paragraph 13

5.16. 28 August 2018 - 4 September 2018

5.17. This is the period between the missed GP appointment and the attendance of SAAS at her home by paramedic, Mr Shaun Falls. Only general descriptions and evidence is available as to her condition between these two dates, but it is clear that her state of health, at the very least, did not improve in any significant way. On the contrary, nearing 4 September 2018 she was declining significantly which caused Bryon to call SAAS via '000' at 5:39pm.⁷⁸ He relayed that she was in '*immense pain, 'breathing rapidly', 'yellow complexion', 'lips going black', 'clammy', having 'cold sweats' and 'major chest pain'*'.

5.18. The history she gave to Mr Falls was that her right shoulder and left wrist had been sore for '*a couple of weeks*'.⁷⁹ She reported that her symptoms for the diagnosed viral infection from Noarlunga Hospital had been '*fairly consistent*'⁸⁰ since her attendance at the hospital.

5.19. She disclosed to Mr Falls that she had been using marijuana regularly and smoked '*ice*',⁸¹ but had not done so for '*a couple of weeks*'.⁸²

5.20. The other general source of evidence of her state between these dates was from Bryon who had visited her and had kept himself informed of her state of health via his stepfather, Mr Poldervaart. He gave detailed evidence on this topic.⁸³

5.21. Based on this observation evidence and the expert evidence concerning the state of her heart post-mortem, I am willing to say that her extent of pain and suffering by Ms Collins on 4 September 2018 was elevated.

6. SA Ambulance Service

6.1. Mr Shaun Falls

6.2. Mr Falls is a long-serving Intensive Care Paramedic⁸⁴ for SAAS. He began that role in 2010. He responded to Bryon's call and attended as a sole responder in a '*response*

⁷⁸ Exhibits C9 and C9a

⁷⁹ Exhibit C17, paragraph 8

⁸⁰ Exhibit C17, paragraph 9

⁸¹ Methylamphetamine

⁸² Exhibit C17, paragraph 10

⁸³ See Transcript, pages 66-72

⁸⁴ ICP

car'.⁸⁵ Within that SAAS car was a mobile data terminal⁸⁶ which he explained displays information taken from the caller by the SAAS operator.

- 6.3. The system of SAAS receiving calls from members of the public is subject to a strict system of operation that was the subject of extensive evidence in another Inquest I conducted into the deaths of the late Ms Virginia Weekes and Mr Craig Files.⁸⁷
- 6.4. It is not necessary to go into extensive detail in this Inquest about that system, but I refer to that previous Finding to indicate that I have a knowledge of how it operates.
- 6.5. Mr Falls explained that in the circumstances of working alone and responding to an emergency callout it is not possible to absorb all the information on the way to the scene but, where possible, he would identify matters relevant to the callout.
- 6.6. He arrived at Ms Collins' house at approximately 5:50pm and was met by Bryon at the front before making his way to Ms Collins' bedroom. This was within the prescribed time limits for SAAS.
- 6.7. As was normal, he made a general assessment of Ms Collins and took a history from her which was recorded on the SAAS Patient Clinical Record.⁸⁸
- 6.8. He tested her vital signs including temperature, pulse rate, blood pressure, oxygen saturation and respiratory rate. All of these indicators were within acceptable ranges, save for her pulse rate history recorded on the PCR which was elevated in the two readings at 110 bpm and 112 bpm. This was a result '*of interest*' and caused further investigation.⁸⁹ These manually recorded readings were inaccurate when compared to the readings recorded on the ECG he conducted on her at that time. These results showed readings of 136 bpm and 137 bpm.⁹⁰ This was a major issue as will become evident.
- 6.9. Mr Falls described Ms Collins' general appearance as one where:

'... she didn't look very well kept at that stage and it looked like she was going through a fair bit but in terms of her physical health, I thought that she was well enough to see a GP the next day.'⁹¹

⁸⁵ Transcript, page 202

⁸⁶ MDT

⁸⁷ Inquest 91/2020 delivered 26 October 2022

⁸⁸ PCR; Exhibit C9c

⁸⁹ Transcript, page 212

⁹⁰ Exhibit C9d

⁹¹ Transcript, page 231

- 6.10. Mr Falls confirmed that, despite responding to a Priority 2 callout that signified some urgency and seriousness about the response, he downgraded the urgency to a Priority 3 before he arrived to see Ms Collins.⁹² He explained that this was '*not unusual*' and reconstructed that he must have seen some information on his MDT that allowed him to presume he could deal with Ms Collins without a transport ambulance attending as well. He had assumed he was responding because no transport ambulance was available within the Priority 2 response time of 16 minutes.⁹³
- 6.11. Mr Falls was not aware of the specific complaints in the '000' call made by Bryon, in particular of chest pain, cold sweats and clammy skin. He provided an explanation that it would have been difficult for him to have been across all of this information as he was responding as a solo paramedic. He also believed that the information passed on via the MDT contained a lot of codes and '*irrelevant information*'.⁹⁴ This made it difficult to isolate the relevant information '*especially when you're working by yourself, you can't drive lights and sirens and read this at the same time*'.⁹⁵
- 6.12. In particular, he responded on numerous occasions in evidence that he was unaware of her complaint of chest pain and therefore did not explore that important complaint in his examination of her.⁹⁶
- 6.13. Mr Falls cancelled the transport ambulance within four minutes of arrival. That suggests that his assessment of her for that matter, including taking a history from her, must have been swift. I accept he was armed with some information via the MDT and of course from Bryon who had met him on arrival and taken him to Ms Collins' room.
- 6.14. Bryon was adamant that he relayed a history of ongoing chest pain to Mr Falls, and more accurately in his words:

'So I mentioned that she had tightness of the chest, that it felt like it was closing in on her, she felt like she was having a heart attack. I mentioned that she was struggling to get out of bed and she had serious back pain when she would try. I believe that was about all I managed to cover by the time we reached the room.'⁹⁷

⁹² Transcript, pages 235-236

⁹³ Transcript, page 236

⁹⁴ Transcript, pages 262-263

⁹⁵ Transcript, page 263

⁹⁶ Transcript, pages 265-266

⁹⁷ Transcript, page 77

- 6.15. Further, Bryon stated he heard Mr Falls ask Ms Collins about her symptoms in which she described *'tightness in chest, back pain, fatigued, etc ... she did mention that she has been using drugs ... frequently using cannabis ... coming down off ice'*.⁹⁸
- 6.16. Mr Falls did not recall exactly what *'Bryon said out the front'*.⁹⁹ He accepted Bryon might have told him about chest pain, but *'also at the same time I always make sure the patient gives me the information. At the end of the day the patient is the person who knows themselves best and quite often information you get from a third party or second-hand is not accurate'*.¹⁰⁰
- 6.17. These answers indicated that Mr Falls either did not consider Bryon's information important, or did not absorb it for the purpose of his clinical assessment as to how to proceed with her.
- 6.18. Therefore, accepting that Bryon did give him this information, it did not translate to an exploration on the topic of chest pain with Ms Collins. Unfortunately this was not ideal and may have led to a different method of treatment that day. As it eventuated, she was not offered the option of transportation to hospital via ambulance. Whether she would have accepted it given her last rejection on 20 August 2018, is a matter that will never be resolved. However, it is likely that either Bryon or Mr Poldervaart would have offered and/or arranged to take her to hospital as occurred on 20 August 2018. Again, her response to this potential offer cannot be definitively predicted. I find it is clear she respected Bryon and her stepfather and may have followed their advice.
- 6.19. In the end Mr Falls' recommendation to Ms Collins, Bryon and Mr Poldervaart was that she should stay at home and see her GP the next day on the proviso that she could call SAAS should anything further of concern or new symptoms arise.¹⁰¹
- 6.20. To re-summarise, Mr Falls' evidence was that he was unaware Ms Collins was an IVDU and Ms Collins' reported history of *'smoking ice and marijuana'*.
- 6.21. He was not aware of her complaining to him about chest pains, sweats and clammy skin.

⁹⁸ Transcript, page 77

⁹⁹ Transcript, page 248

¹⁰⁰ Transcript, page 248

¹⁰¹ Exhibit C17, paragraph 14

- 6.22. As we know, Ms Collins died within 48 hours of this visit.
- 6.23. If Mr Falls did not absorb or regard the history given by Bryon, then that was an error in the circumstances that was significant.
- 6.24. Review of Mr Falls' visit on Ms Collins - 4 September 2018
- 6.25. Upon learning of her death, a review was held by SAAS into Ms Collins' treatment by Mr Falls on that day. He was interviewed on 11 September 2018 after which he filed a further statement with them.¹⁰²
- 6.26. This review involved Mr Falls' Manager, SAAS officer Mr Peter McEntee, who gave evidence at the Inquest. Mr McEntee had been with SAAS since 1987 and had worked in many areas within the organisation, including becoming a treating paramedic reaching the level of an ICP in 2000.
- 6.27. At the time of the Inquest he was classified as a Team Leader responsible for 21 paramedics including Mr Falls.
- 6.28. He regarded Mr Falls as an '*extremely competent*' ICP¹⁰³ who is second in command to him and acts in his role in his absence.
- 6.29. Ms Collins' death was also subject to a Safety Learning System¹⁰⁴ investigation.
- 6.30. This SLS was not conducted by Mr McEntee and his role was limited to a follow-up. Crucial to the review and SLS was the admitted mistake of Mr Falls in recording the heart rate readings on the PCR as 110 bpm and 112 bpm when the ECG record showed 136 bpm and 137 bpm. Mr McEntee believed that the incorrectly low recorded level was a crucial error that affected the attendance on Ms Collins.
- 6.31. This error had the consequence of affecting the decision whether or not to elevate the response of SAAS to Ms Collins on that visit.
- 6.32. As Mr McEntee explained, it involved the PCR and part of it known as the Rapid Detection and Response Observation Chart,¹⁰⁵ which is colour coded with respect to recommended follow-ups based on standard tests such as her pulse rate. It is a colour

¹⁰² Exhibit C17, Attachment SF-1

¹⁰³ Transcript, page 273

¹⁰⁴ SLS

¹⁰⁵ RDR chart

coded system as to what level or treatment response should be considered, on a result to the test, for ease of reference.

'So when someone has what we call a red flag, if someone has a symptom or a sign that's out of the ordinary it's a red flag, it goes into a different colour, so it automatically, as we said, gives a red flag to the paramedic to say be mindful of this.'¹⁰⁶

- 6.33. Unfortunately, the mistake of misrecording Ms Collins' heart rate caused the intended purpose of this system, as described above, not to be engaged. The ECG result was a red flag.
- 6.34. Mr Falls stated his standard practice was to record such standard readings on the outside of his protective glove and then transfer it at the correct time into the RDR chart on the PCR.
- 6.35. On examination of the PCR the readings for blood pressure, in particular the systolic component, have been transposed to the heart rate rather than the correct figures of 136 and 137 taken from the ECG readout at 6:02pm.¹⁰⁷
- 6.36. Had these figures been recorded correctly then it placed the result as an '*abnormal presentation – moderate risk*' and just under the border of being '*potentially critically unwell – high risk*'.¹⁰⁸ This should be remembered in the context that Ms Collins was bedbound and had been so for a significant number of days, and her death within 48 hours.
- 6.37. Mr McEntee was asked to comment on this error. He responded that '*only Shaun could answer that question for you*'.¹⁰⁹ He added that '*if he appreciated the rate of her heart he may have gone down a different tack*'.¹¹⁰
- 6.38. Further, Mr McEntee stated, when asked to assume that if Mr Falls was aware of the ECG reading of Ms Collins' high heart rate but decided not to arrange transport of her to hospital, he would have been '*concerned*' by that.¹¹¹

¹⁰⁶ Transcript, page 296

¹⁰⁷ Exhibit C9d

¹⁰⁸ See PCR of 4 September 2018, Exhibit C9c

¹⁰⁹ Transcript, page 321

¹¹⁰ Transcript, page 321

¹¹¹ Transcript, page 321

- 6.39. Mr McEntee's review of Mr Falls' care and behaviour that day with Ms Collins constituted a hindsight analysis of his actions.
- 6.40. Mr Falls accepted that his method of recording, then transposing the results of the test to the RDR chart needed to be refined.
- 6.41. Mr Falls expressed his sympathy and regret for Ms Collins' death and the role he may have played in it. The documents associated with that visit clearly showed an error was made in the recording of results on the PCR. I am concerned that Mr Falls may have either consciously or subconsciously assessed her as a drug user seeking to withdraw from her habit and that her body was suffering the physical consequences. His actions in downgrading the priority assessment before he arrived and the speed of cancelling ambulance transport does concern me as he may have come to a conclusion and/or decision about Ms Collins too rapidly and excluded the important option of having her presented to hospital for further medical assessment. Certainly Professor Kelly in her report and evidence was critical of the care taken of Ms Collins on this occasion.

7. Professor Anne-Maree Kelly AM

- 7.1. I turn now to Professor Kelly's evidence that has already been referred to in brief in this Finding. It is necessary to be more expansive about her evidence to place her criticisms of Ms Collins' care into proper context.
- 7.2. Professor Kelly is the director of the Joseph Epstein Centre for Emergency Medicine Research at Western Health Victoria, based at Sunshine Hospital. She has held this position since 2000. She was also Director of Emergency Medicine at Footscray Hospital for 10 years, initially from 1998 to 2006 and then again in 2016 to 2017. Her 28-page curriculum vitae¹¹² outlines her distinguished career in emergency medicine where she has held numerous important positions in that field and has been involved in, or solely authored, an extensive number of articles and discussions in papers concerning emergency medicine. At the time of giving evidence at the Inquest she was the Senior Emergency Physician at the Western Health Hospital in Footscray, Victoria.

¹¹² Exhibit C16a

7.3. Summary of Professor Kelly's review into Ms Collins' death

7.4. In short, Professor Kelly believed that Ms Collins' death was preventable. In reaching this important conclusion she believed that there were '*deficits in care provided to her by both Noarlunga Hospital ED and SAAS*'.¹¹³

7.5. Professor Kelly reached this view acknowledging the two important factors that must be respected at every Inquest, namely hindsight bias and outcome bias. Professor Kelly acknowledged these two independent forms of bias in her report.¹¹⁴

8. Hindsight bias and outcome bias

8.1. I warn myself concerning two vital considerations in the assessment of the evidence and any potential criticisms of witnesses in this Inquest, namely hindsight bias and outcome bias.

8.2. A description of '*hindsight bias*' is given in the Australasian Coroners Manual, namely as:

'The tendency after the event to assume that events are more predictable or foreseeable than they really were. What is clear in hindsight is rarely as clear before the fact. If it were, there would be far fewer mistakes made. It is an obvious point, but one that nonetheless bears repeating, particularly when Coroners are considering assigning blame or making adverse comments that might damage a person's reputation...

Hindsight, of course, is a very useful tool for learning lessons from an unfortunate event. It is not useful for understanding how the involved people comprehended the situation as it developed. The distinction needs to be understood and rigorously applied.'¹¹⁵

8.3. I am very mindful of this warning when considering evidence of her treatment and care by Noarlunga Hospital medical staff, her general practitioner¹¹⁶ and SAAS.

8.4. I also am very mindful of outcome bias. That is, the terrible outcome of Ms Collins' death should not lead me to more harshly assess the evidence of Ms Collins' medical treatment and care. In other words, the outcome of Ms Collins' death must not overwhelm or unduly influence my task of assessing the evidence about the issues in this Inquest.

¹¹³ Exhibit C16, page 13

¹¹⁴ Exhibit C16, page 3

¹¹⁵ The Australasian Coroners Manual, page 10

¹¹⁶ GP

- 8.5. For ease of reference, I also briefly refer to Professor Kelly's explanation of outcome bias as the '*influence of knowledge of the eventual outcome (in this case death) on retrospective evaluations of clinical care*'.¹¹⁷
- 8.6. Professor Kelly also acknowledged that her role as a reviewing expert is different from that as a treating clinician. She has extensive experience in both capacities as is evidenced in her curriculum vitae. She acknowledged that she is not a paramedic or a GP, but naturally in her field of emergency medicine has worked on many occasions with paramedics presenting patients to hospital EDs.
- 8.7. Professor Kelly's evidence has already been referred to in the BC issue and in particular the Duke criteria.
- 8.8. As I have noted earlier, she authored an article concerning the excessive use of blood culture tests in the 1990s. She explained that her conclusion at that time was based on her '*research many years ago which is I honestly admit is considerably out of date. When I was starting my career we were ordering blood cultures willy-nilly in otherwise immunocompetent patients with minor infections*'.¹¹⁸
- 8.9. She candidly preferred, and was willing to adopt, the research, data and conclusions of a more recent article by EMA authored by Mr Jeremy Brown and others to be relevant for this Inquest.¹¹⁹
- 8.10. She explained that despite still some controversy about BCs '*there is less controversy about ordering in high risk groups*' including IVDUs, suspicion of IE and immunocompromised patients.
- 8.11. She emphasised that Ms Collins and her presenting condition to Noarlunga Hospital warranted a BC test being performed on her. Professor Kelly referred to a further guideline called the '*Shapiro rule*', described to be '*a simple predictive rule that has been shown to predict bacteraemia with high sensitivity in an American and European context*'.

¹¹⁷ Exhibit C16, page 3

¹¹⁸ Transcript, page 341

¹¹⁹ Exhibit C16b, see also Exhibit C16c – Article from The Journal of Emergency Medicine, Vol. 51 by Drs Long and Koyfman

- 8.12. The rule is designed to overcome the problems identified by Dr Ng and to allow '*more judicious ordering of blood cultures as safe and cost effective*'.
- 8.13. Professor Kelly noted that two minor criteria of chills and temperatures about 38.3°C were met for a BC to be considered under this guidance. If that criteria was combined with the perceptive note of the attending SAAS officers at her home that day of '*? infective process*' then there was overwhelming support for a BC test to be performed.
- 8.14. She acknowledged the weakness in this guideline. She referred to a lack of consensus about it being used uniformly in emergency medicine due to concerns it omits high-risk groups of people such as IVDUs.¹²⁰
- 8.15. Professor Kelly suggested that the presenting conditions of Ms Collins were not subject to '*reasonable steps to investigate the nature of the illness and in particular whether or not the symptoms were representative or indicative of infective endocarditis*'.¹²¹
- 8.16. Ms Collins' condition as at 20 August 2018 at Noarlunga Hospital
- 8.17. Professor Kelly's opinion was that Ms Collins had a pulmonary embolism¹²² at the time of presentation.
- 8.18. I have already set out Professor Kelly's opinion that had a PE been investigated and discovered it was '*highly likely that IE would have been identified*'.¹²³
- 8.19. Her opinion is supported by esteemed cardiologist, Dr William Heddle AM.¹²⁴ His report was prepared after reviewing the following documents, namely:
- i. the reports of Professor Byard, Dr Thomas, Professor Kelly, the SAAS report of 20 August 2018 and the toxicology report.
 - ii. SAPOL statements of Bryon and Mr Michael Poldervaart.
 - iii. Noarlunga Hospital casenotes from 20 August 2018 and the statement of Dr Lin.

¹²⁰ Transcript, pages 421-422

¹²¹ Transcript, page 371 – Professor Kelly accepting proposition of question by Special Counsel Ms Roper

¹²² PE

¹²³ Exhibit C16, page 13

¹²⁴ Exhibit C22, Report of Dr Heddle dated 26 September 2022

- iv. September 2018 documents, namely SAAS records, statement and interview of Mr Falls.

8.20. Dr Heddle's report stated:

'If endocarditis had been diagnosed the likely course of treatment would have been an intensive and prolonged course of parenteral antibiotics, particularly those active against *Staphylococcus aureus*. In her case, surgical resection of the tricuspid valve would probably have been necessary.'¹²⁵

8.21. He further considers the prospects of survival if Ms Collins had been '*correctly diagnosed*' on 20 August 2018 noting the difficulty of giving a precise estimate. With those limitations he still stated that Ms Collins:

'... would have approximately 50% chance of surviving if correctly managed at that time. The reason for this high mortality is the large size of the lesions, extensive cardiac involvement, and the multiple microabscesses in the lungs. She had the severity of disease where surgery would have been indicated but surgery would have been very difficult because of the pulmonary problems.'¹²⁶

8.22. He was further asked to consider that, assuming her endocarditis had been diagnosed on 4 September 2018, whether her death would have been preventable and how she would have been treated.

8.23. His opinion was that the endocarditis would have been much more advanced from 20 August 2018. Consequently, a late diagnosis placed his '*clinical estimate of her survival ... in the order of 20% in the immediate term. If she managed to survive that, I estimate less than 50% chance of being alive at two years*'.

8.24. The treatment she would have received would have involved an extended treatment plan in the Intensive Care Unit.¹²⁷

8.25. Dr Heddle was not called or requested to be called to give evidence.

8.26. Further, Dr Heddle commented on the question of BCs, particularly for IVDU patients, noting as follows:

'The key to this diagnosis would be the taking of blood cultures. When a patient who is known to use illicit medication intravenously presents with a fever, the diagnosis of right-sided endocarditis needs exclusion. The characteristic clinical features of left-sided

¹²⁵ Exhibit C22, page 3

¹²⁶ Exhibit C22, page 3

¹²⁷ ICU

endocarditis recur relatively late (Osler's nodes and other peripheral signs). In my extensive clinical experience of patients with endocarditis these are uncommonly seen with most patients being diagnosed early on the basis of a febrile illness of unknown cause with positive blood cultures and/or a new heart murmur.'¹²⁸

- 8.27. Further, microabscesses in his opinion would have been detected in a CT scan known as a CTPA.
- 8.28. In Dr Heddle's opinion a CTPA would have led to a non-specific finding of pulmonary nodules which would have failed to lead to a firm diagnosis of IE.¹²⁹

9. Findings

- 9.1. I will now make findings concerning the circumstances of Ms Collins' death as required under the Act. The findings below are made on the basis that I am comfortably satisfied each of them are established on the evidence, including the opinion evidence of Professor Kelly, Professor Byard, Dr Thomas and Dr Heddle.
- 9.2. Some of these findings are adverse to some of the witnesses, in particular clinicians. In reaching the findings I was mindful of the potential adverse consequences considering the person subject of the finding, including the potential for damage to his/her reputation.
- 9.3. I am also very mindful of the need to be satisfied that such a finding should only properly be made based upon the relevant evidence presented being reliable and compelling.
- 9.4. I have applied the principles expressed by the High Court of Australia in '*Briginshaw v Briginshaw*'.¹³⁰ I also refer to the recent Supreme Court of South Australia analysis of the Briginshaw case in an appeal case of '*SJ Berry Pty Ltd v McEntee*'.¹³¹
- 9.5. I have also taken into account the important topics of hindsight and outcome bias in these findings. That is, these findings concern my assessment of the evidence of

¹²⁸ Exhibit C22, page 3

¹²⁹ Exhibit C22a, Addendum report of Dr Heddle, 17 October 2022; see also Dr Ng, Transcript, page 161

¹³⁰ (1938) 60 CLR 336 in particular Dixon J at 362, '*Briginshaw*'

¹³¹ (2022) 142 SASR 31

witnesses on the background of not being influenced by hindsight and outcome bias against them.

9.6. Ms Collins

9.7. Ms Collins was unwell for a significant number of days preceding her death. She presented with many symptoms during this time period including cold sweats, chest tightness and heaviness, diarrhoea, high heart rate and being significantly bed bound.

9.8. Ms Collins had a self-destructive habit and addiction of being an IVDU with methylamphetamine. She was also a cannabis smoker.

9.9. She also suffered from BPD and had endured significant childhood trauma due to the behaviour of her father towards her, her mother and her brother.

9.10. Ms Collins shared custody of her 6-year-old son with his father.

9.11. These personal issues are not underestimated by me in respect to her ability to cope with her serious life-threatening condition, her desire to look after her son during this time and her ability to convey her symptoms accurately on each occasion to medical professionals. In other words, she was at a very low point in her life physically and was struggling with many personal issues of drug addiction to a very destructive and addictive drug in methylamphetamine.

9.12. On the morning of 20 August 2018 at 11:02am Ms Collins made a correct assessment to call for an ambulance. I have set out details of this call earlier in paragraph 5.4 of this Finding, noting that she described herself as having a heart attack with tightness and she was struggling to breathe.

9.13. SAAS responded appropriately, arriving 20 minutes after the phone call. A provisional diagnosis was given to her after an appropriate examination and taking of her history. She was correctly assessed as needing to be transported via ambulance to hospital.

9.14. Unfortunately, due to her obvious tight financial situation, she declined on the basis of the costs involved by using SAAS. The consequence of this decision was that although she did go to hospital as recommended with her stepfather, she did not have SAAS to advocate and explain her condition that day. Rather, that was left with her to do.

- 9.15. The consequence of not being transported to Noarlunga Hospital that day by SAAS was that a lack of cohesion between the SAAS records and notes of their attendance on her being considered or ultimately becoming part of Noarlunga Hospital records and treatment.
- 9.16. In other words, Ms Collins had to advocate for herself and give another history in circumstances where she was not functioning at her best at all.
- 9.17. I have already set out in detail the treatment and care given to Ms Collins that day in Noarlunga Hospital at paragraphs 5.10 to 5.35 of this Finding. I also note that Ms Collins' personal circumstances of custody and care for her son in the near future was a factor in her own mind that probably would have been significant if she was given a choice as to whether to be admitted or not.
- 9.18. The important issue of the hospital declining to investigate her condition using BCs was a pivotal decision. I find that if this had been done then, her death was likely to have been prevented as IE would have been identified. Similarly, if she had been investigated for a possible PE then that would have led to the identification of IE.
- 9.19. This finding is supported by Professor Kelly's and Dr Heddle's evidence.
- 9.20. I have struggled to come to a conclusion as to whether it was unreasonable for BCs not to be done based on the available evidence and results to Dr Tiekink and Dr Ng at the time that decision was made. I note Dr Tiekink's belief in hindsight that it should have been done and Dr Ng's evidence that he has not changed his position on this topic in hindsight.
- 9.21. In the end, I was persuaded by Professor Kelly's evidence that a BC test should have been conducted. The possibility of IE as part of a differential diagnosis was obviously correct, but '*inappropriately discounted*'.¹³² I further find that had BCs been performed, there would have been an accurate result given by them in all probability, rather than an either inaccurate, false or misleading one.

¹³² Exhibit C16, page 10

- 9.22. The discounting of IE based on ‘*peripheral features of infective endocarditis and no murmur*’¹³³ was in error and that her presentation should have demanded an investigation for pulmonary embolism.
- 9.23. This finding is made after careful reconsideration of all of the evidence concerning Ms Collins’ presentation that day to Noarlunga Hospital.
- 9.24. Despite it being the incorrect decision to discharge her, I find that the advice given to her upon discharge was appropriate.
- 9.25. I find that her care by Dr Lin on 22 August 2018 was reasonable and appropriate.
- 9.26. I find that the missed visit by Ms Collins to Dr Lin on 28 August 2018 was not able to be fully explained as to why she did not attend. I find that Dr Lin had no obligation to follow-up with Ms Collins as to why she did not attend given the circumstances of the consultation on 22 August 2018.
- 9.27. 4 September 2018
- 9.28. I accept the general evidence of Bryon and Mr Poldervaart concerning their observations of Ms Collins’ health in general from her discharge from hospital up to the point where Bryon felt it necessary to call SAAS on 4 September 2018.
- 9.29. I refer to my detailed summary of the attendance of Mr Shaun Falls on Ms Collins on that day as set out in paragraphs 7.1 to 7.41 of this Finding and conclude the following, namely:
- i. That a significant error concerning the recording of her heart rate as described in paragraph 7.30 of this Finding led to the failure of Ms Collins being taken to hospital for assessment.
 - ii. Mr Falls was appropriately dealt with by SAAS in the review of his conduct with her on that day. I confirm my belief that Mr Falls was unduly affected by the fact that Ms Collins was a significant user of illicit drugs and that she was trying to withdraw from them, therefore causing her physical condition to suffer.
 - iii. I believe his actions of downgrading the response to Ms Collins and cancelling a SAAS transport ambulance prior to seeing her was a significant error.

¹³³ Exhibit C16, page 10

- iv. Mr Falls should have advocated for her to be taken to hospital by SAAS or independently.

9.30. Professor Kelly

- 9.31. I accept Professor Kelly's opinions as set out in her reports and evidence where she concluded that Ms Collins suffered '*deficits in care provided to her by both Noarlunga Hospital ED and SAAS*'.¹³⁴
- 9.32. I also accept her evidence concerning blood cultures and the inappropriate use of the Duke Criteria in preference to Dr Ng and Dr Allonby-Neve.
- 9.33. I accept her opinion that in the full circumstances of Ms Collins' final weeks of her life, opportunities were missed to prevent her death.
- 9.34. In making the findings concerning Ms Collins' care, I note that she suffered a rare form of IE, that is right-sided tricuspid valve IE. I do not expect the diagnosis of it to immediately become obvious as it was '*an unusual illness*'. However, it is unfortunately less rare for IVDU patients who are shown by research in the USA¹³⁵ to contract this condition at a '*nearly 20-fold higher rate than the general population*'.¹³⁶
- 9.35. In fact, I agree with the submission that '*there is a greater need for awareness of infective endocarditis and the way in which it presents when it is an infection on the right side of the heart ... given the increase in prevalence of intravenous drug use*'.¹³⁷
- 9.36. In light of the findings made above, I find Ms Collins' death was preventable. In making this finding I have accepted Dr Heddle's opinion that Ms Collins was suffering IE for at least a week prior to 20 August 2018, based on his examination of Professor Thomas' report and the post-mortem report.
- 9.37. Bryon's evidence of the decline of his sister's health is generally consistent with Dr Heddle's opinion. I accept Bryon's evidence as being generally reliable and accurate, in particular his description of dealings with SAAS on 20 August 2018 and 4 September 2018.

¹³⁴ Exhibit C16, page 13

¹³⁵ Exhibit C15b

¹³⁶ Exhibit C15b - Infective endocarditis in intravenous drug users, Trends in Cardiovascular Medicine 30 (2020) 491–497

¹³⁷ Submission of counsel assisting Ms Roper, Transcript, page 489

10. Recommendations

10.1. Pursuant to section 25(2) of the Coroners Act 2003 I am empowered to make recommendations that in the opinion of the Court might prevent, or reduce the likelihood of, a recurrence of an event similar to the event that was the subject of the Inquest.

10.2. As is apparent, the attendances of SAAS and the documents associated with them, never came to the attention of Noarlunga Hospital on 20 August 2018. In my view the access to SAAS records, in particular the Patient Clinical Record concerning attendances upon people outside of hospital, are a crucial record to consider by treating medical officers within the hospital system, in particular in the Emergency Department. Although this issue was not explored with depth in this Inquest, I note Professor Kelly identified in her evidence that this was '*not a new issue*'.¹³⁸

10.3. Professor Kelly's evidence about this identified that there was:

'... no reliable process in Victoria that I'm aware of that allows electronic linkage of ambulance Victoria patient care records and hospital records and at the moment hospitals are still having trouble accessing My Health record anyway, some hospitals ... I also should point out that the information given to the call taker may not be the same information that went to the paramedic at the scene. So the call taker's information is not shown usually on that chart. So while Ms Collins told the call taker she had been clammy unless the paramedic listened to the same information it may not have shown on the actual chart.'¹³⁹

10.4. She continued expanding on this problem relating to Ms Collins, stating that:

'Ms Collins thinks she told the call taker there's the assumption that the call taker's told the paramedic and the paramedic already knows. So information gets lost by this process of essentially ... whispers down a line.'¹⁴⁰

10.5. Professor Kelly supported a recommendation from this Court that consideration be:

'... undertaken to develop an efficient means of communication from information provided to the ambulance service for that information to then be provided to the hospital.'¹⁴¹

10.6. Further, I raised the topic of whether SAAS should provide its officers, and in particular paramedics, with body-worn cameras similar to that used by SA Police to allow the best

¹³⁸ Transcript, page 517 – Submission of counsel assisting Ms Roper in summarising Professor Kelly's evidence

¹³⁹ Transcript, page 369

¹⁴⁰ Transcript, page 369

¹⁴¹ Transcript, page 370

record of consultations with patients out of hospital to be obtained. It also has the secondary purpose of providing the most reliable record of an officer's recollection should he or she need to give evidence in Court in any jurisdiction. In raising this proposal I am aware of the many issues involved, including patient confidentiality and dignity being paramount. However, given this topic was not fully developed in the Inquest, I will refrain from making a recommendation.

- 10.7. Finally, given the state of evidence elicited about infective endocarditis and its difficulty to detect, particularly when right-sided, it was urged that education on this topic be disseminated in the health system.
- 10.8. In light of those matters raised, I make the following recommendations directed to the Minister for Health and Wellbeing, the Chief Executive of the Department for Health and Wellbeing, the Chief Executive Officers of the SA Health Local Health Networks and the Chief Executive Officer of SAAS.
 1. That education and information on the diagnosis of infective endocarditis, particularly its prevalence with known illicit intravenous drug users, be disseminated throughout the Local Health Networks of South Australia.
 2. That consideration be given by all parties to an in principle review and/or review of information sharing protocols and systems between hospitals and the SA Ambulance Service in order to provide the most complete history for medical officers dealing with patients who have had involvement with ambulance services out of hospital, relevant to the presentation in hospital.

Key Words: Infective Endocarditis; Hospital Treatment; Misdiagnosis

In witness whereof the said Coroner has hereunto set and subscribed his hand and

Seal the 27th day of March, 2024.

Deputy State Coroner