CORONER'S COURT

OF NEW SOUTH WALES

Inquest:	Inquest into the death of Jacob MacDonald
Hearing dates:	18 August 2025 – 21 August 2025
Date of findings:	19 February 2026
Place of findings:	State Coroners Court, Lidcombe
Findings of:	Magistrate Kasey Pearce, Deputy State Coroner
Catchwords:	CORONIAL LAW – death of patient in forensic psychiatric facility – compliance with policies and procedures – manner of death
File number:	2022/00126786
Representation:	K Beattie, Counsel Assisting the Coroner, instructed by K Hainsworth of the Crown Solicitors Office E Sullivan, instructed by M Turner of Minter Ellison representing the Justice Health and Forensic Mental Health Network and nurses Martina Coyle and Thando Zimucha
Findings:	**Identity** The person who died was Jacob MacDonald. **Date** Jacob died on 1 May 2022 **Place** Jacob died at the Forensic Hospital, Malabar, NSW **Cause of death** Jacob died due to the combined effects of dilated cardiomyopathy with myocardial fibrosis and prescription drug (clozapine and aripiprazole) toxicity **Manner of death** Jacob died while he was an involuntary patient in a forensic psychiatric unit. The evidence does not establish the cause of the elevated levels of his prescription medication.

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1 Introduction

1.1 This is an inquest into the death of Jacob MacDonald (**Jacob**), a 51-year-old man who died at the Forensic Hospital at Malabar on 1 May 2022. Jacob had been diagnosed with treatment resistant schizoaffective disorder, for which he was prescribed daily anti-psychotic medication. He was a long-term forensic patient and had been housed in the Elouera unit (**Elouera**) at the Forensic Hospital since October 2021.

1.2 In the week beginning 25 April 2022 Elouera was a COVID-19 'red zone' due to the presence of COVID-positive patients. On the morning of 30 April 2022 Jacob reported experiencing some flu-like symptoms. Although he tested negative for COVID, as a precaution he spent the remainder of that day largely isolating in his bedroom. That evening Jacob was reported to have had dinner and to have taken his evening medication.

1.3 According to Jacob's observation chart, overnight he was in bed and appeared asleep until 4.00am. However, shortly before 6.00am on Sunday 1 May 2022, Jacob was found deceased in his room. Jacob's death occurred unexpectedly, and the cause and manner of his death were not immediately clear. Because of this, and because Jacob was an involuntary patient in a forensic psychiatric facility, his death was the subject of a lengthy coronial investigation.

1.4 Throughout the many years that Jacob was a forensic patient, Jacob remained a much loved and missed member of his family. The support that he received from his family during his time at the Forensic Hospital is noted throughout his records.

1.5 It was clear that Jacob's death had a profound effect both on his family and on those who knew him at the Forensic Hospital.

1.6 In making these findings I acknowledge the tragic circumstances of Jacob's death and extend my deepest sympathies to his friends, family, and staff and patients at the Forensic Hospital for their loss.

2 Why was an inquest held?

2.1 Under the *Coroners Act 2009* (**the Act**) a coroner is responsible for investigating all reportable deaths. This investigation is conducted primarily so that a coroner can answer questions that are required to be answered by section 81 of the Act, namely, the identity of the person who died, when and where they died, and the cause and manner of that

person's death. A secondary function of a coroner is to make recommendations, if appropriate, that arise from the evidence, in relation to any matter connected with the death.

2.2 At the time of his death Jacob was an involuntary patient in a forensic psychiatric facility, meaning that he did not exercise agency over his health care, which had instead been assumed by the State. An independent examination of the circumstances of Jacob's death and the care that was provided to him by the Justice Health and Forensic Mental Health Network (**Justice Health**), is therefore important to ensure that the State has adequately and appropriately discharged its responsibility to a person in its care. Section 23(1)(a) of the Act provides that a coroner has jurisdiction to hold an inquest if it appears to the coroner that the person has died (or there is reasonable cause to suspect that the person has died) 'while in the custody of a police officer or in other lawful custody.' Section 27(1)(b) of the Act provides that an inquest concerning the death of a person is required to be held if the jurisdiction to hold the inquest arises under section 23.

2.3 After Jacob died, Plain Clothes Senior Constable Marcus Witts of the NSW Police Force undertook an investigation into the circumstances of his death. Further material was gathered by those assisting the court during the coronial investigation. At the commencement of the inquest, relevant material was tendered in the form of a 5-volume brief of evidence. Two further statements of registered nurse (**RN**) Sumit Roy and RN Thomas Agardi, cumulative pathology results for Jacob, and a letter from Justice Health regarding relevant policy changes, were also tendered during the inquest. In addition, oral evidence was given by nursing and medical staff who were involved in Jacob's care while he was in Elouera, and those responsible for policy and practice at the Forensic Hospital. These witnesses were:

- After Hours Nurse Manager, Nicole Theuer;
- Registered Mental Health Nurse Thando Zimucha;
- Registered Mental Health Nurse Martina Coyle;
- Registered Nurse Kumar Prasai;
- Nurse Unit Manager Simangele (Sam) Thebe;
- Dr Sathish Dayalan, consultant psychiatrist;

- Dr Allan Campbell, who at the relevant time worked as a psychiatric registrar with Dr Dayalan; and
- Kevin Baron, Service Director, Forensic Hospital.

2.4 Three experts were also engaged to assist the court in understanding the cause and manner of Jacob's death. These were:

- Professor Alison Jones, clinical toxicologist;
- Associate Professor Mark Adams, cardiologist; and
- Associate Professor Danny Sullivan, forensic psychiatrist.

2.5 A list of issues was developed to guide the coronial investigation and the conduct of the inquest. I have dealt with the issues that were explored during the hearing under the headings below.

3 Jacob's background

3.1 While any inquest inevitably focuses on the circumstances of the death of a person, it is important to recognise and acknowledge the life of the person the subject of the inquest in a brief and hopefully meaningful way, to better appreciate what their life, and their loss, meant to those who knew and loved them.

3.2 Jacob was the much-loved son of Eleanor and Robert MacDonald. He was born on 20 January 1971 in Dampier, Western Australia. Jacob had two younger sisters, Karmell and Vivienne, and a half-brother, Julian.

3.3 Jacob grew up in Queensland, New Zealand, and in Singleton, New South Wales. As a child he was always looking for adventure. He was popular and very good at any sport he turned his mind to, particularly water sports.

3.4 Jacob began working at age 14. Part way through year 11 he moved to Sydney. He completed a course in makeup for film, stage and entertainment and subsequently completed a hairdressing apprenticeship.

3.5 After he turned 21 Jacob moved to Europe. He formed a serious relationship with Candida (Candy) and ultimately the couple had two daughters, Millie and Eliza, now aged in their late twenties. Unfortunately, the relationship broke down. Jacob eventually returned to Australia where he lived with each of his parents.

3.6 It soon became clear to those who were close to Jacob that he was experiencing issues with his mental health, which over time were compounded by his use of drugs and alcohol.

4 Jacob's mental health

4.1 Jacob was first treated by a psychiatrist in 1994 and had several psychiatric hospital admissions between 2000 and 2004. He had a long history of poor engagement with mental health services and non-adherence to prescribed medications while in the community.

4.2 Jacob entered the forensic system in 2005 following a finding of not guilty by reason of mental illness for a number of offences. In 2010 Jacob was transferred from the Forensic Hospital to Morisset Hospital. Then in 2012 he was transferred to the Metropolitan Remand and Reception Centre to serve a 12-month prison sentence, before he returned to the Forensic Hospital in 2013. Jacob received treatment in various wards of the Forensic Hospital from 2013 through to 2022 and was subject to periodic review by the Mental Health Review Tribunal (**MHRT**), most recently before his death, on 3 March 2022.

4.3 Jacob had an established diagnosis of schizoaffective disorder, which was treatment resistant, meaning he experienced persistent symptoms despite adequate sustained trials of effective doses of multiple antipsychotic medications while abstinent from substance use. He also had a diagnosis of severe substance use disorder, with a history of abuse of alcohol, cannabis, stimulants, hallucinogens and nicotine, although he did not have access to these substances in the Forensic Hospital. Jacob had also been diagnosed with generalised anxiety disorder with panic, although it is not clear that this was sustained. It may have represented an adjustment disorder with anxious mood precipitated by imminent moves to different units within the Forensic Hospital.

4.4 Along with the mental health challenges he experienced, Jacob had physical health co-morbidities, including dyslipidaemia, gastro-oesophageal reflux, obesity, vitamin D deficiency and obstructive sleep apnoea, all of which were treated while he was in the Forensic Hospital.

5 The Forensic Hospital

5.1 The Forensic Hospital is a high security forensic mental health facility with 140 beds. It provides specialist involuntary care for those who have a mental illness and have been

involved with the criminal justice system, as well as patients whose mental health care and risk profile exceed the capacity of public mental health services.

5.2 Over the time he was there, Jacob spent time in different units of the Forensic Hospital. On 27 October 2021, Jacob was transferred from the Dee Why Unit of the Forensic Hospital to Elouera, where he remained until his death. Elouera is a 20-bed adult male rehabilitation unit and is the least restrictive environment within the Forensic Hospital. It is a pre-discharge unit. Patients housed in Elouera are stable on their mental health medication, their symptoms are reasonably well controlled, and their perceived risk to themselves and others is low.

5.3 Elouera offers services and programs which aim to develop patient capacity to self-manage their mental health recovery through increased exposure to independent living. Generally, patients in Elouera are engaged in their mental health recovery and are expected to be referred to a community provider in a reasonable timeframe in the future.

5.4 Care in Elouera is provided by a multidisciplinary team (**MDT**) which includes a consultant psychiatrist, psychiatry registrar, psychologist, social workers, allied health assistants and nursing staff. Jacob's care coordinator in Elouera in the five or six months prior to his death, was RN Kumar Prasai. His role was to act as a formal point of contact in the Nursing Team, and to liaise with the MDT.

6 Events leading up to Jacob's death: 30 April 2022 – 1 May 2022

6.1 In the week beginning 25 April 2022 Elouera was implementing COVID-19 measures and the unit was considered a 'red zone' as there were known COVID positive patients on the unit. This meant that symptomatic patients were required to isolate, and staff were required to wear personal protective equipment when having contact with patients.

6.2 On the morning of 30 April, Jacob reported a headache, runny nose and irritated eyes. He took a rapid antigen test (**RAT**), which was negative, and his vital signs and observations were taken and found to be within normal parameters. However, because of his symptoms, Jacob was required to isolate in his bed space. He spent most of 30 April in his bedroom, watching TV and resting. Jacob was compliant with his medication regime and was observed to have adequate food and fluid at mealtimes. A polymerase chain reaction (**PCR**) test that was taken on 30 April ultimately returned a negative result.

6.3 On 30 April, Jacob's care coordinator, RN Prasai, was rostered to the afternoon shift in Elouera, which ran from 1:30pm until 10:00pm. When RN Prasai spoke to Jacob on this shift, Jacob said his headache was gone. RN Prasai made an entry in Jacob's progress notes at 8:11pm and then another at 8:55pm where he recorded Jacob's monthly mental state examination (**MSE**). He recorded that Jacob said words to the effect that '*too many medications is making me feel dizzy.'* In oral evidence, RN Prasai said that he took this to be a general comment by Jacob in relation to his medication, not necessarily a comment that reflected how he was feeling at that moment. He otherwise had no concerns on that shift in relation to Jacob.

6.4 RN Thando Zimucha, RN Martina Coyle and RN Ephraim Bautista were rostered to the night shift in Elouera which commenced at 9:30pm on 30 April.

6.5 On the evening of 30 April entries were made in Jacob's Mental Health Observation and Engagement Level Chart where he was recorded as in his '*Bedspace resting*' at 20.00 and 21.00, '*Bed resting*' at 22.00, followed by '*Bed appear asleep*' at 23.00. The same entry '*Bed appear asleep'* was made at 00.00, 01.00, 02.00, 03.00 and 04.00 hours on 1 May 2022. The entry at 05.00 recorded the time but nothing further. The evidence established that the '*Bed appear asleep*' entries were made by RN Zimucha.

6.6 RN Zimucha gave evidence that she and her colleague, RN Coyle, conducted a round of observations of patients in Elouera commencing at 4:20 am on 1 May 2022. They commenced a further round of observations at approximately 5:40am. During this round, RN Zimucha observed Jacob to be lying in the same position in his bed that he had been in during the previous round. She asked RN Coyle to return to Jacob's room with her to check on his welfare. RN Coyle knocked on Jacob's door but there was no response. Both RN Zimucha and RN Coyle entered the room and found Jacob unresponsive. Just before 6:00am both nurses activated their duress alarms. Psychiatric Registrar, Dr Monika Ridley, and the After Hours Nurse Manager, RN Nicole Theuer, attended, amongst other nursing staff, and observed Jacob lying on his back with his CPAP mask on his face, although the evidence was unclear as to whether air was actively being delivered through the tube. Dr Ridley assessed Jacob. It was apparent to her that Jacob was already deceased, and because of this, no cardiopulmonary resuscitation (**CPR**) was attempted. Dr Ridley pronounced Jacob life extinct at 6.04am.

7 Postmortem findings

7.1 On 5 May 2022, forensic pathologist, Dr Elsie Burger, conducted a postmortem examination.

7.2 Dr Burger found that Jacob's heart was large with dilated ventricles and interstitial fibrosis and weighed more than expected for males of a similar body height and weight. It showed features of dilated cardiomyopathy. Postmortem toxicological analysis showed the antipsychotic drug aripiprazole at the upper limit of the toxic range and the drug clozapine within the toxic and lethal ranges. The antidepressant desvenlafaxine was found in the supra-therapeutic range but in an apparently non-toxic concentration, and therapeutic levels of metformin and lithium were present.

7.3 An extended viral screen and immunology was taken and no infectious diseases which were tested for were identified.

7.4 Dr Burger recommended that Jacob's cause of death be recorded as the 'combined effects of dilated cardiomyopathy and prescription drug toxicity.'

8 Sleep hours observations

8.1 At the time of his death, Jacob was on general level observations, which meant that observations had to be done at a minimum of every sixty minutes. This is the baseline level of observations within the Forensic Hospital and is considered to meet the needs of most patients most of the time.

8.2 The version of Policy 1.319 *Patient Engagement and Observation – Forensic Hospital and Long Bay Hospital Mental Health Unit* dated 7 May 2018 was in place at the time of Jacob's death. This policy provides health staff in the Forensic Hospital with direction in relation to the allocation, review and undertaking of patient observations and their responsibilities when carrying out these roles. Paragraph 3.1.4 provides:

> *The staff members observing the patient are required to confirm that the patient is in their room and that they are breathing. The staff member must be able to view the patient's respiratory rate and activity. This check should be conducted in line with the prescribed observation level.*

Paragraph 3.2.1 of the same policy requires that the observing clinician 'must be able to view the patient's respiratory rate and activity and this must be documented in the health record.'

8.3 In relation to general level observations, the policy requires the handwritten recording of observations on the *Mental Health Observation and Engagement Chart*, as well as an entry into the patient's health record once per shift. Justice Health's *Clinical Documentation Guidelines* (DG 159/21) dated January 2021 require that all entries made in paper health care records must be made at the time of an event or as soon as possible afterwards and 'the time of writing must be distinguished from the time of an incident, event, or observation being reported.'

8.4 It was apparent from the evidence that in several respects RN Zimucha's recording of the overnight observations of Jacob on the evening of 30 April 2022 and morning of 1 May 2022 did not comply with Forensic Hospital policy. For example, the recording of '*bed appear asleep*' on Jacob's *Mental Health Observation and Engagement Chart* did not record Jacob's 'respiratory rate and activity' as required. Similarly, although the last round of observations done by RN Zimucha and RN Coyle before the check where Jacob was found deceased took place at 4:20 am, it was recorded as having taken place at 4:00 am, and although nothing was recorded next to the entry '5:00' in Jacob's observations, this round of observations did not commence until 5:40.

8.5 RN Zimucha's evidence was that although on the overnight shift of 30 April/1 May 2022 she and RN Coyle left at the same time to do their observation rounds, they did not stay together but instead checked patients in different corridors, in such a way as to be able to keep each other within sight. The evidence of Kevin Baron, the Service Director at the Forensic Hospital, was that although each nurse would be allocated individual patients whose sleep hours observations they would be responsible for, it was expected that nurses would conduct their rounds in pairs, both for safety reasons, but also to ensure the accuracy of patient observations. However, he acknowledged that there was no policy requirement that nurses remain together while conducting their rounds, and that some changes to practice may have been occasioned by the need for nursing staff to maintain patient care, while accommodating the additional administrative work that fell to them during COVID-19, particularly as Elouera had been declared a 'red zone.'

8.6 Correspondence from Justice Health tendered during the inquest frankly acknowledged that the evidence regarding what occurred on the night of 30 April/1 May 2022 allowed Justice Health to identify opportunities for improvement regarding the policy requirements for carrying out and documentation of Jacob's sleep hours observations, and outlined changes that had been made since Jacob's death to clarify sleep hours observation requirements.

8.7 The court was advised that following Jacob's death, Policy 1.319 was updated to clarify requirements in relation to the recording of observations during sleep hours.

> *When observing a patient who is sleeping, the staff member must assess for respirations and signs of life; including but not limited to observation of body movement, snoring and/or a regular and continuous rise and fall of the chest. These observations and signs of life must be documented on the observation form upon each check.*

8.8 At the time of the inquest, Justice Health further undertook to issue an *Important Notice to Forensic Hospital staff* reminding them of the best practice and policy expectations in relation to the conduct, and documentation of, sleep hours observations. This included the expectation that night observations are carried out by pairs of nursing staff and that observations in relation to patient's breathing (including respiration and signs of life) are clearly recorded. Justice Health also undertook to review its processes in the Forensic Hospital for daily spot checks of observation documentation.

8.9 Periodically, NSW Health issues a Policy Directive *Engagement and Observation in Mental Health Inpatient Units* which articulates a standardised approach to the allocation and review of observation levels within mental health inpatient units. At the time of the inquest, NSW Health was in the process of reviewing and updating this Policy Directive (effective 26 July 2017), which included consideration of best practice methods for conducting sleep time observations. The updated Policy Directive was expected to be published in December 2025, following which Justice Health advised it intended to review its internal policies and procedures to ensure that they aligned with the updated NSW Health Policy Directive.

9 Jacob's obstructive sleep apnoea

9.1 Along with the challenges Jacob faced in relation to his mental health, Jacob experienced several physical health issues, the most significant of which was his obstructive sleep apnoea (**OSA**).

9.2 In 2017, following an elective admission to the Respiratory and Sleep Clinic at Prince of Wales Hospital (**POWH**) for assessment of possible OSA, Jacob was prescribed a continuous positive airway pressure (**CPAP**) machine. He was subsequently noted to have experienced improvement in sleep and decreased fatigue, although Jacob's notes also record intermittent compliance and some problems with the mask slipping off at night.

9.3 It appears that after his transfer to Elouera in October 2021, Jacob was supported by staff in obtaining a new CPAP mask as he was experiencing problems with the mask he had. In addition, on 9 November 2021, Dr Campbell made a further referral to the Respiratory Department of POWH in relation to Jacob's OSA. Dr Campbell did not believe that Jacob had attended that appointment prior to his death.

9.4 In the opinion of Associate Professor Danny Sullivan, who reviewed Jacob's medical records, Jacob's sleep apnoea was appropriately diagnosed using ambulatory sleep monitoring, the prescription of CPAP, and staff efforts to improve compliance by Jacob with the CPAP machine and mask. While there was episodic poor adherence to CPAP, in 2022 the documentation suggested that Jacob was used to the CPAP mask.

9.5 I accept the evidence of Associate Professor Sullivan that Jacob's OSA was appropriately diagnosed and treated during his time in the Forensic Hospital.

10 Jacob's psychiatric care

10.1 While at Elouera Jacob was under the care of consultant psychiatrist, Dr Sathish Dayalan, and was also seen by then psychiatry registrar Dr Allan Campbell.

10.2 Dr Dayalan's evidence was that as a consultant psychiatrist on the ward, he regularly reviewed Jacob and assessed his progress and treatment, often with the assistance of registrars such as Dr Campbell. In the months before his death, Dr Dayalan was reviewing Jacob about once a month, usually in anticipation of the MDT meetings that took place once every four weeks. The last time Dr Dayalan reviewed Jacob before his death was on 21 March 2022. Jacob was further discussed at a MDT meeting on 24 March 2022. At that

time the discussion centred around possible pathways for Jacob's discharge from the Forensic Hospital, including therapeutic leave to ascertain Jacob's functioning in the community. It appears that Dr Dayalan was on leave for two weeks from 18 April and that there was some disruption to the frequency of the MDT meetings due to COVID-19, so that after the consultation on 21 March, Dr Dayalan did not see Jacob again before his death.

10.3 Dr Campbell's evidence was that he had had some limited interactions with Jacob before he came to Elouera and that he had participated in an assessment of Jacob for the suitability of his transfer to Elouera. Dr Campbell reviewed Jacob with Dr Dayalan once he was at Elouera, from November 2021 onwards.

10.4 Associate Professor Sullivan was engaged to review Jacob's records from the Forensic Hospital and assess the appropriateness of Jacob's psychiatric care, including the frequency with which Jacob was seen by a psychiatrist and consideration given to any changes in his medication.

10.5 Associate Professor Sullivan felt that Jacob's transfer to Elouera in October 2021 was appropriate at that stage of his illness and was based on clinical need. He also felt that the frequency of psychiatric review of Jacob at the time of his death was adequate, as Jacob's mental state was relatively settled, he was engaging in activities, and there was less need for him to have frequent interactions with the consultant or registrar psychiatrist. He did not consider that Jacob's nursing notes in 2022 reflected any specific concerns which warranted registrar or consultant review and which did not occur.

10.6 In the opinion of Associate Professor Sullivan, the documentation in relation to Jacob reflected good quality multidisciplinary care, with evidence of occupational therapy, social work, and psychological input. He felt that the transfer between units in the Forensic Hospital was based upon clinical need, decisions about medication were sensible and involved documented discussion and the agreement of Jacob, and there was evidence of communication with his parents.

10.7 Associate Professor Sullivan's view was that the level of care Jacob received was very good, particularly considering the difficulties associated with providing adequate care for patients during the COVID-19 pandemic. I accept that opinion.

11 Jacob's cardiac care

11.1 At the time of his death Jacob did not have any known cardiac disease, although he required cardiac monitoring due to the antipsychotic medications he was prescribed, and cardiovascular disease prevention given he had raised lipids.

11.2 Clozapine is associated with various cardiac disorders including prolongation of the QTc interval, myocarditis and cardiomyopathy. Myocarditis is an inflammation of the cardiac muscle which can then lead to the condition of dilated cardiomyopathy. In patients who are taking clozapine, the development of myocarditis is most observed early in the period after a person has commenced taking clozapine, although it can also develop later.

11.3 Because of the known association between clozapine and cardiac disorders, Justice Health developed *Guidelines for the Management of Patients on Clozapine* (**the Clozapine Guidelines**). The version of the Clozapine Guidelines that were in place at the time of Jacob's death was dated 8 October 2021 and recommended that a baseline echocardiogram (**echo**) and electrocardiogram (**ECG**) be conducted prior to the initiation of therapy, that a weekly ECG be conducted for the first month of treatment, and that an echo and ECG be conducted at six months. After six months an ECG was to be conducted yearly unless clinically indicated and an echo only if clinically indicated.

11.4 Jacob had multiple ECGs between 2014 and 2021, which is the period during which he was taking clozapine. In the view of cardiologist, Associate Professor Mark Adams, who was engaged to assess the appropriateness of Jacob's cardiac care, all the ECG results showed a normal QTc interval and a normal sinus rhythm. Although some of the ECG results showed an increased heart rate, according to Associate Professor Adams, this was not at a level that would trigger a cardiac review. Jacob underwent an ECG in July 2021 seemingly in response to him reporting shortness of breath. A further ECG was taken on 27 August 2021. Neither of these was alarming in terms of QTc prolongation of Jacob's heart rate, meaning that there was no clinical indication that a further ECG should have been conducted within a year. Ideally, according to Associate Professor Adams, Jacob, should have had a further ECG a year later, that is, in August 2022, although there was no clinical indication that this should take place.

11.5 Jacob had a cardiology review in February 2017 that recommended that he continue clozapine and have an annual echo. The most recent echo that Jacob had before his death

was in August 2020. This echo showed normal left ventricular size and function. That Jacob was experiencing tiredness and shortness of breath was noted in the cardiology outpatient clinic notes when he was seen on 9 April 2021, where the echo that was done in August 2020 was considered. It was recommended by the cardiology clinic in April 2021 that Jacob continue annual surveillance echos, which would have seen him undergoing a further echo in August 2021 or thereabouts, which appears not to have taken place. In his evidence, however, Associate Professor Adams averted to the barriers that were in place in relation to non-urgent medical procedures at the time due to COVID-19. While Dr Dayalan was unable to say with certainty why Jacob did not receive a further echo in August 2021, he recalled that at the time there was a 'suggestion' that hospital escorts be minimised if possible, and that urgent hospital visits be prioritised over routine ones.

11.6 According to Associate Professor Adams, the recommendation that a further echo be conducted in 12 months, was earlier than would currently be recommended, which is that if there is no serial change in left ventricular function then an echo can be done every two to five years, or as clinically indicated. He felt, however, that there was nothing in Jacob's records that suggested that he should have an echo sooner on clinical grounds. According to Associate Professor Adams the level of cardiac surveillance that Jacob received was over and above what was required under the Clozapine Guidelines in place at the time, or currently.

11.7 The opinion of Associate Professor Adams was that overall Jacob's cardiac status was adequately monitored and that this exceeded what would have been recommended, with a cardiology review sought in 2017, despite there being no cardiac symptoms or signs apart from concerns over the possible effects of clozapine. I accept this opinion. His only comment was in relation to the lack of an echo in 2021, although he acknowledged the significant logistical problems in achieving this during the COVID-19 pandemic. Based on the findings at autopsy, however, Associate Professor Adams felt that had an echo been conducted in late 2021 it may have been abnormal.

12 Jacob's medication

Jacob's medication regime

12.1 At the time of his death Jacob was prescribed the antipsychotics clozapine (150 mg in the morning and 600 mg at night) and aripiprazole (30 mg in the morning), lithium (a mood

stabiliser), and desvenlafaxine (an antidepressant, also prescribed for anxiety), in addition to other medication to address increased lipids, medication to address gastro-oesophageal reflux disease, dietary supplements, anticholinergics to reduce excess salivation and medication to treat metabolic syndrome.

12.2 Associate Professor Sullivan's view was that Jacob was prescribed appropriate medications to manage his mental health condition, and that the medications were prescribed in appropriate doses. He explained that the combination of clozapine and aripiprazole is the accepted intervention for people who have had a suboptimal response to clozapine alone after some years of adequate dosage. Lithium, he felt, is a very appropriate medication for when there is a mood or an affective component to an illness, as is desvenlafaxine. He thought that they were sensible medications, and in line with clinical practice guidelines.

12.3 Associate Professor Sullivan felt that the recorded serum levels of clozapine and lithium appeared to be what would be expected for a person who was achieving the best possible chance of a therapeutic response. Aripiprazole and desvenlafaxine are not medications that are routinely monitored with blood tests.

12.4 Associate Professor Sullivan explained that although clozapine is the only medication effective for treatment resistant schizophrenia, it has an extensive list of very significant adverse effects, for example, weight gain and metabolic syndrome. Jacob was prescribed other medications to deal with physical health conditions, such as metformin to aid in glucose metabolism. Associate Professor Sullivan was satisfied that each of the medications Jacob was prescribed had an appropriate indication and was prescribed in the correct dose. In each case, he felt that the drug prescribed was the one that was most effective, or least likely to cause interactions.

12.5 Associate Professor Sullivan considered that all medication prescribed to Jacob for treatment of both his mental and physical health were appropriate and prescribed in appropriate dosages. I accept this opinion.

Storage of medication

12.6 In Elouera, all medication is stored in accordance with the *Medication Guidelines*. Elouera has a locked designed medication room which is only accessible via the nurses' station by staff issued with a security access device. Designated 'drugs of addiction' and drugs liable

to abuse or misuse are stored in locked safes within the medication room. Current medication charts for all patients are filed alphabetically and kept in the medication room.

Administration of medication

12.7 Because patients in Elouera are expected to be engaged in their recovery, they are encouraged to self-present for their medication, to know what drugs they are prescribed, what they look like, and how many tablets they should take. Although patients are encouraged to present to the nurses' station/dining area to receive their medication, ultimately responsibility for administration of medication falls to the nursing staff, who will seek patients out if they have not presented for their medication.

12.8 In general, morning medication is administered at 8:00am, midday medication at 12:00 and nighttime medication at 8:00 pm, although some patients, like Jacob took their nighttime medication at 6:00pm. The evidence was that oral medication is placed in a cup in the medication room and taken out to patients at the nurses station/dining area. It appears that there was some change to this practice during the COVID-19 pandemic, where staff administered medication in their rooms to patients who had tested positive to COVID. In Jacob's case, because on 30 April he was isolating in his room, while staff awaited the outcome of a PCR test, it is likely that his medication was administered in his room.

12.9 At the Forensic Hospital the administration of all patient medication is supervised, and all patients are monitored for medication diversion. In the case of oral medication, nursing staff must observe patients throughout the administration process to ensure that the medication is swallowed. If patients are observed to carry out unusual behaviours suggestive of diversion, such as swishing water around their mouth, nursing staff will ask the patients to open their mouth and check the medication has been swallowed. Patients are also not permitted to go to the bathroom immediately after taking their medication.

Medication monitoring

12.10 The Clozapine Guidelines, both at the time of Jacob's death and now, provide that for patients prescribed clozapine, blood screening is mandatory, to ensure medication efficacy, to monitor for medication toxicity, and to inform dosage adjustments when prescribing.

12.11 The Forensic Hospital requires a full blood count and assessment of results every week for the first 18 weeks after commencement of clozapine and thereafter bloods every 28 days. In addition, the prescription and supply of clozapine is strictly monitored by external protocols and must involve participation in the Clozapine Patient Monitoring System (**CPMS**), which requires the reporting of blood results to an external monitoring agency. Depending on the blood results, patients may be subject to increased monitoring or treatment may be ceased.

12.12 Because Jacob's medication regime included clozapine and lithium, in the period before his death, Jacob's clozapine and lithium levels were regularly measured to ensure his dosage was at therapeutic levels. In his evidence, Dr Campbell gave an account of Jacob's clozapine and lithium levels including low recorded clozapine levels in November and December 2021 and on 8 February 2022, the latter of which he had noted may be artificially low given the timing of blood taken. Dr Campbell reviewed Jacob with Dr Dayalan on 14 February 2022. Given Jacob's low clozapine level the plan was to monitor Jacob post medication administration for signs of diversion. However, further testing on 13 February (the result of which was reported on 17 February), 7 March, 18 March and 4 April again recorded Jacob's clozapine levels within the therapeutic range.

12.13 The evidence was that aripiprazole is not routinely checked for serum levels.

12.14 In her evidence, expert clinical toxicologist, Professor Alison Jones, explained that depending on the timing of the kinetics of a drug, it will achieve a peak and then will lose its peak as that drug is eliminated from the body. She said that best practice in terms of monitoring therapeutic drugs, is to measure serum levels at the point where the drug reaches its half-life, the trough level, to make sure that the levels are not dropping too low. In Professor Jones' experience sometimes if the timing of the testing is incorrect, the blood levels can seem a bit higher, or lower than expected, but repeat testing at the correct trough will show that there is no cause for concern. She commented, 'that happens more frequently than perhaps you might imagine.'

12.15 Dr Campbell explained that the half-life of clozapine is 12 hours and that ideally Jacob's serum levels would be measured in the trough, that is, 12 hours after he had taken the medication. If a patient demonstrates lower than expected levels of medication in their blood, Dr Campbell's evidence was that it was standard practice to consider and investigate potential medication diversion. However, Dr Dayalan also acknowledged that

some patients will simply break down the medication within their system much faster than others.

12.16 Dr Campbell had written on several occasions in Jacob's progress notes that Jacob should be monitored for signs of diversion including 'palming meds.' This was in the context of a decline in Jacob's presentation after moving to Elouera, comments by Jacob himself that he wanted to come off medication, and low clozapine levels.

12.17 There is, however, no evidence that Jacob did in fact divert his medication and indeed the notes record and Dr Campbell said that Jacob was 'passively compliant' with his medication.

13 The postmortem toxicological findings

13.1 Professor Jones was asked to provide an opinion in relation to the postmortem toxicological findings in Jacob's blood of the antipsychotic drug aripiprazole at the upper limit of the toxic range and the drug clozapine within the toxic and lethal ranges.

13.2 According to Professor Jones, although there is clear evidence in the literature that clozapine undergoes postmortem redistribution, meaning that the level of clozapine found in Jacob's blood at postmortem is likely higher than it would have been when Jacob died, to her knowledge aripiprazole does not appear to exhibit postmortem redistribution. She accepted, however, that there is a modest research platform and low amount of medical literature underpinning knowledge of postmortem distribution of aripiprazole, and that caution should be exercised when interpreting range.

13.3 Professor Jones acknowledged that there are a range of factors that change the concentration of clozapine and aripiprazole in postmortem blood, including body mass, blood volume, and temperature at time of death. However, ultimately Professor Jones was comfortable that even allowing for these factors, Jacob's levels of both aripiprazole and clozapine sat within the toxic to fatal range, well above the therapeutic levels that Jacob had returned while alive, and beyond what would be expected given his medication dosage.

13.4 Similarly, Professor Jones did not consider that postmortem redistribution could account for the postmortem levels of either aripiprazole or clozapine. According to Professor Jones, the findings of a postmortem blood concentration of both aripiprazole and clozapine in the toxic to fatal ranges was not in keeping with the prescribed therapeutic

dose Jacob received and indicates excessive dose(s) were likely taken. In Professor Jones' view given a toxic/fatal concentration of clozapine found in Jacob's blood at postmortem and given the half-life of clozapine in blood is approximately 14 hours, it is likely that Jacob took an overdose in the night preceding him being found deceased on the morning of 1 May 2022.

13.5 As a toxicology expert, Professor Jones was careful in her evidence not to speculate on *how* the elevated levels may have come about. However, Professor Sullivan posited a number of potential explanations for how those levels may have become elevated. He posited that a person's levels of clozapine and aripiprazole could have been elevated by: a person deliberately taking excessive medication, by inadvertently taking the medication because they are given too much of it by staff, or by taking the usual amount of medication, but for some metabolic reason such as an infections, a drug interaction or other cause, the medication levels become elevated.

13.6 Mr Baron reviewed evidence relating to Jacob's medications, particularly the evidence relating to the administration of Jacob's medication on 30 April 2022. He felt the practitioners who administered Jacob's medication that day were very experienced practitioners who were familiar with Jacob's medication regime and that it was unlikely that they had provided him with the incorrect dose. He also commented that although Jacob was 'passively compliant' with his medication, he was known to count his tablets one by one. Combined with the fact that dosages were administered in tablets of 100 mg, he was of the view that Jacob would have noticed if he was accidentally provided with additional tablets.

13.7 Associate Professor Sullivan carefully considered the contents of the statements made by the nursing staff involved in Jacob's care and the drug administration charts. He was unable to discern any explanation for the elevated levels detected in the postmortem blood tests.

14 The cause of Jacob's death

14.1 The forensic pathologist who performed Jacob's postmortem, Dr Burger, recommended that Jacob's cause of death be recorded as the 'combined effects of dilated cardiomyopathy and prescription drug toxicity.'

14.2 Associate Professor Adams agreed with Dr Burger's findings of a diagnosis of dilated cardiomyopathy. He explained that cardiomyopathy occurs where there is a disorder of the heart muscle, particularly the left ventricle, which is the chamber that pumps blood around the body and is most important in cardiac function. According to Associate Professor Adams, dilated cardiomyopathies can be due to a wide range of factors, some of which are inherited, and some of which are due to toxins, such as illicit drugs, some prescription drugs, and alcohol. Viral infections can also cause dilated cardiomyopathy, through myocarditis which causes an inflammation of the heart muscle and leads to it developing fibrosis and weakening. The effect of the development of fibrosis, which was evident in Jacob's heart, is that the heart muscle can become stiff and dysfunctional, and it can also break up the normal electrical function of the heart leading to the development of arrhythmias. Associate Professor Adams explained that the most common cause of death with cardiomyopathy is arrhythmias, which can occur just because of the fibrosis, even before there is a big drop in the pumping function of the heart.

14.3 In the opinion of Associate Professor Adams, the toxic levels of prescription medication found in Jacob's blood at postmortem would be concerning for causing heart arrhythmias which might lead to death, although in his opinion, Jacob was at risk of arrhythmias even absent toxic levels of his medications. He explained that every time you add something that might increase the QTc interval like the dilated cardiomyopathy, hypoxia, obesity and certain medications, these things increase the risk of a person then developing an abnormal heart rhythm. His view was that Jacob probably experienced a fatal arrhythmia while he was asleep and possibly whilst experiencing OSA.

14.4 Associate Professor Adams concluded that the cause of Jacob's death was 'multifactorial, with the most important factors being the risk of sudden death posed by toxic levels of clozapine and aripiprazole, on a background of a dilated cardiomyopathy with myocardial fibrosis, obesity and obstructive sleep apnoea.'

14.5 According to Professor Jones, acute overdose with clozapine can cause systemic hypotension, cardiac arrhythmias, respiratory depression, coma and death. Antipsychotics, such as clozapine, even in therapeutic doses, are a potential cause of sudden death because they can induce dilated cardiomyopathy and fatal arrhythmias. According to Professor Jones, there are two putative mechanisms of death due to the toxic/fatal drugs (clozapine and aripiprazole) found in Jacob's case:

1) respiratory and central nervous system (**CNS**) depression; and

2) sudden cardiac death.

14.6 In Professor Jones' view the finding of prescription medications in Jacob's postmortem blood in the toxic to fatal range indicates that likely somnolence leading to CNS and respiratory depression occurred (toxic effects) possibly occasioning death (fatal effects). Professor Jones considered that due to obstructive sleep apnoea, Jacob 'was at higher risk of respiratory depression from clozapine, aripiprazole and desvenlafaxine.' However, in her view, 'toxic/fatal blood concentrations would also have caused drowsiness and respiratory depression in an individual with no obstructive sleep apnoea.' She considered that CPAP may not be effective in treating central drug-induced sleep-disordered breathing (as opposed to OSA, which is not central in cause).

14.7 She felt that on probability grounds alone, respiratory and CNS depression causing death is more common than sudden cardiac death due to arrhythmias, although on balance the circumstances of Jacob's death did not assist her in distinguishing between these two possibilities.

14.8 Professor Jones accepted that patients who have comorbidities such as OSA or metabolic syndrome are predisposed to developing sedative-related respiratory adverse events. Her view was that the fatal/toxic blood concentration of clozapine and aripiprazole found in Jacob at postmortem likely together caused respiratory and CNS depression causing death. She felt that Jacob was likely more susceptible to these effects due to his underlying OSA.

14.9 Her view was that Jacob's underlying dilated cardiomyopathy would have made him more susceptible to the arrhythmogenic effects of QTc prolonging drugs. Professor Jones agreed with Dr Burger that mixed drug toxicity was the most likely cause of death in Jacob's case.

14.10 Counsel Assisting suggested that the court express Jacob's cause of death in the way expressed by Dr Burger in her postmortem report. Counsel for Justice Health suggested that Jacob's cause of death would better be expressed in the way Associate Professor Adams expressed it in his report.

14.11 In determining a cause of death, a coroner must determine what is the 'real cause of death' not the 'mode of dying' or 'terminal event', such as heart failure or asphyxia.

Difficult legal and medical questions may be raised in deciding how close to the terminal event, or how far back in the chain of causation a coroner should go in considering what was the 'real cause of death.' The standard of proof in determining cause of death is the balance of probabilities.

14.12 While Jacob's OSA and high body mass index may have made him more susceptible to the sedative effects of the high levels of his prescription medication, the influence of these factors on his death is difficult to ascertain. In Professor Jones' opinion, for example, the toxic/fatal levels of prescription medication found in Jacob's blood could have caused CNS depression in the absence of OSA. All experts appear to agree on the role played in causing Jacob's death by toxic levels of clozapine and aripiprazole and a heart that showed features both of fibrosis and dilated cardiomyopathy.

14.13 I am satisfied on balance that a cause of death that is expressed in terms of a combination of the cardiac issues and toxic levels of prescription drugs that were identified at postmortem is both accurate and appropriate in Jacob's case. I intend to express the cause of Jacob's death as 'the combined effects of dilated cardiomyopathy with myocardial fibrosis and prescription drug (clozapine and aripiprazole) toxicity.'

15 Conclusion

15.1 The length of time that Jacob spent in the forensic system was understandably of concern to his family. However, it was apparent that, albeit with some setbacks, Jacob was moving closer to release and that his transfer to Elouera reflected his positive response to treatment and the proximity of his discharge into the community.

15.2 A number of issues related to the care Jacob received while at the Forensic Hospital were explored at the inquest into his death. Ultimately, the evidence established that Jacob was well-cared for during his time at the Forensic Hospital, both in terms of his mental health and his physical health issues. In some respects, the care he received, particularly in relation to clozapine-related cardiac monitoring, exceeded the recommended level of care.

15.3 To the extent that there could be said to be any shortcomings in Jacob's care, these were isolated. There was, for example, some limited criticism from Associate Professor Adams of the failure of Justice Health to arrange for a further echo of Jacob's heart in or about August 2021, although as Associate Professor Adams made clear, there was no clinical

indication that an echo was required within 12 months of Jacob's previous echo, and further, there was some delay in the conduct of non-urgent procedures occasioned by the COVID-19 pandemic. Additional issues arose on the evidence as to some non-compliance with policies and procedures relating to overnight observations. Ultimately the issues in relation to overnight observations could not be said to have had any impact on Jacob's death and, it seems, had largely been addressed by amendments to the relevant policies and other actions by the time of the inquest or were intended to be addressed shortly afterwards.

15.4 The key issue explored in the inquest was the cause and manner of Jacob's death. While there was agreement between the experts that the primary cause of Jacob's death was toxic levels of aripiprazole and clozapine in his system combined with the dilated cardiomyopathy evident in his heart at postmortem, the cause of the toxic levels of prescription drugs in Jacob's system and the precise mechanism by which the prescription drugs caused Jacob's death were unable to be determined. Although the evidence adduced during the inquest was able to answer many questions about Jacob's time in the Forensic Hospital, I acknowledge that the absence of any answer to the question as to how the elevated levels of aripiprazole and clozapine came to be in Jacob's body must be difficult for Jacob's family.

15.5 Nothing arose on the evidence in relation to Jacob's death that gave rise to a need for recommendations.

15.6 At the close of the inquest, Jacob's family shared a montage of photographs of his life. These photographs showed Jacob's lively personality, his skill in a variety of sports, and his love of life. Jacob was clearly a memorable character. This inquest was unusual for the frequency with which the nursing and medical staff who gave evidence at the inquest expressed their great fondness for Jacob. They described his outstanding sense of humour, and how popular and well liked he was by both staff and patients. Particularly memorable was the evidence that another Forensic Hospital patient had made a sticker for the door to Elouera which showed an outline of a hat like the one that Jacob was known to wear so that all would remember him.

16 Findings required by s81(1)

16.1 I make the following findings in relation to Jacob's death.

Identity

The person who died was Jacob MacDonald.

Date

Jacob died on 1 May 2022.

Place

Jacob died at the Forensic Hospital, Malabar, NSW

Cause of death

Jacob died due to the combined effects of dilated cardiomyopathy with myocardial fibrosis and prescription drug (clozapine and aripiprazole) toxicity.

Manner of death

Jacob died while an involuntary forensic patient in a psychiatric unit. The evidence does not establish the cause of the elevated levels of his prescribed medication.

17 Close of Inquest

17.1 I thank counsel assisting, Kate Beattie, and her instructing solicitor, Kathleen Hainsworth, of the Crown Solicitor's Office, for all the assistance they have provided to me in the preparation and conduct of this inquest. I also thank Senior Constable Marcus Witts for the very comprehensive investigation he conducted into the circumstances of Jacob's death.

17.2 Once again on behalf of the Coroners Court, I offer my sincere and respectful condolences to Jacob's friends and family.

17.3 I close this inquest.

Kasey Pearce

Deputy State Coroner

19 February 2026