CORONERS ACT, 2003

SOUTH  *AUSTRALIA*

FINDING OF INQUEST

An Inquest taken on behalf of our Sovereign Lady the Queen at Adelaide in the State of South Australia, on the 23rd day of April, the 28th day of July, the 11th day of August and the 13th and 15th days of September 2021, the 7th and 8th days of March 2022 and the 13th day of April 2022, by the Coroner's Court of the said State, constituted of Anthony Ernest Schapel, Deputy State Coroner, into the death of Courtney Liza Cook.

The said Court finds that Courtney Liza Cook aged 20 years, late of 33 Woodlands Road, Elizabeth Downs, South Australia died at the Flinders Medical Centre, Flinders Drive, Bedford Park, South Australia on the 23rd day of April 2019 as a result of multi-organ failure due to polypharmacy overdose. The said Court finds that the circumstances of her death were as follows:

1. Introduction and reason for inquest

1.1. On 17 April 2019 Courtney Cook, who was 20 years of age at the time, ingested a large quantity of tablets that included paracetamol, ibuprofen, venlafaxine, fluvoxamine and fluoxetine. She had reportedly consumed alcohol in the form of a vodka mix, although not in a significant quantity. It was also suggested that she may have taken LSD, although this was never verified. It was reported that Ms Cook had consumed 78 tablets in total. The most dangerous substance in this polypharmacy overdose was the paracetamol. She had taken 26 paracetamol tablets which represents 13 grams of that substance. Excessive paracetamol consumption can cause severe liver dysfunction. It did in Ms Cook's case and led to her death. Ms Cook had also lacerated both forearms.

1.2. Ms Cook was conveyed to the Emergency Department (ED) of the Lyell McEwin Hospital (LMH). She was admitted to the hospital. The fact that Ms Cook had

consumed a polypharmacy overdose, including the large number of paracetamol tablets, was established in the ED. The laceration to her arms was also noted. The lacerations to the arms were not life-threatening although they required some treatment which I will describe in the course of these findings.

1.3. Ms Cook had a previous medical history of anxiety/depression and borderline personality disorder. On the day of her admission to the LMH she told clinicians that she was depressed and suicidal. The consumption of the grossly excessive number of tablets and the self-harm to her forearms were naturally consistent with such a frame of mind. On the day of her admission to the LMH, which was 17 April 2019, Ms Cook was placed under a level 1 Inpatient Treatment Order (ITO) pursuant to the Mental Health Act 2009. The order was imposed by Dr Hannah Green who was a medical practitioner in the ED of the LMH. The basis upon which the ITO was imposed was that Ms Cook had a mental illness, and that because of that mental illness, she required treatment for her own protection from mental or physical harm, that she had impaired decision-making capacity relating to the treatment of her mental illness and that there was no less restrictive means than an ITO ensuring appropriate treatment of her illness. It was reasonably clear that Ms Cook had made an attempt on her own life. An ITO involves the mandatory detention of the patient subject to the order. On 19 April 2019, while Ms Cook was still at the LMH, the level 1 ITO was confirmed by a psychiatrist. Ms Cook would remain subject to the level 1 ITO, and therefore be under detention, until her death on 23 April 2019. I find that the ITO was appropriately and lawfully imposed.

1.4. On 19 April 2019, which was two days after Ms Cook's admission, it was established through blood testing that her liver function was grossly deranged, no doubt as a consequence of the paracetamol overdose. On that day, Ms Cook was transferred to the Flinders Medical Centre (FMC) for further specialist care. She arrived at the FMC extremely unwell. Despite optimum treatment at the FMC Intensive Care Unit (ICU), Ms Cook developed severe cerebral oedema resulting in brain death which was confirmed by cerebral angiography. Following a discussion with family members, active treatment was discontinued and organ donation took place.

1.5. Due to the fact that Ms Cook was detained under the level 1 ITO at the time of her death, her death was a death in custody in respect of which a mandatory coronial inquest was necessary. These are the findings of that inquest.

2. Cause of death

2.1. A post-mortem examination of Ms Cook's remains was not necessary. A pathology review was conducted by medical practitioners at Forensic Science South Australia (FSSA). This review was based on case records from the LMH and the FMC. The report of Dr Iain McIntyre briefly describes the clinical course prior to Ms Cook's death and expresses the conclusion that the cause of death can be determined from the hospital case notes with some certainty. The suggested cause of death within the report is '*multi-organ failure due to polypharmacy overdose in a woman with borderline personality disorder and depression*'. It is clear from this report and from other evidence that I will discuss in a moment that the cause of death is the product of the polypharmacy overdose taken by Ms Cook. The paracetamol ingestion in particular had resulted in severe liver dysfunction. I do not believe that Ms Cook's underlying mental illness, be it borderline personality disorder or depression or both, was a contributing factor in the actual pathology that led to Ms Cook's death. It is more appropriate to describe her mental illness as a contributing factor in the behaviour that led to the polypharmacy overdose. The mental illness formed part of the circumstances of Ms Cook's death rather than part of the cause of it. Accordingly, in my view the cause of death as expressed in the pathology review can be truncated to multi-organ failure due to polypharmacy overdose.

2.2. That cause of death is supported by evidence given by an FMC ICU clinician who gave oral evidence in the inquest. I will now discuss that evidence.

2.3. Dr Alexander Rodgers is a staff specialist in the Department of Gastroenterology/Hepatology at the FMC. Dr Rodgers was involved in the treatment of Ms Cook in the FMC ICU. Dr Rodgers explained the connection between paracetamol toxicity and liver failure and death. He told the Court that early blood tests would have established that Ms Cook had suffered a significant paracetamol injury. He explained that 13 grams of paracetamol was a significant intake. He said that anything around 4 grams in a day is potentially toxic and that 13 grams is very likely going to cause a severe liver injury.[1] By the time Ms Cook was admitted to the FMC she had developed a severe liver failure. At first her liver numbers were heading in the right direction and her liver showed signs of improvement.[2] However, one of the main

[1] Transcript, page 141
[2] Transcript, page 131

complications of liver failure is the development of oedema in the brain. This can occur despite an improvement in liver function. Dr Rodgers explained the complicated mechanism involved in the development of cerebral oedema in patients with acute or severe liver failure. Swelling of the brain cells occurs and this increases pressure in the brain which stops blood flowing into the brain. The brain then becomes damaged from lack of blood flow and the swelling compresses the brain stem. Dr Rodgers described this as '*…the dreaded complication of hyper acute liver failure and there's no reliable way of predicting it*'.[3] Once this complication develops it is often too late for the patient. All of this occurred in Ms Cook's case despite optimal treatment at the FMC ICU. Dr Rodgers explained the measures that were adopted in Ms Cook's case in an attempt to prevent the development of cerebral oedema. Dr Rodgers explained that the incidence of cerebral oedema is about 30% with liver failure from paracetamol toxicity despite optimal treatment.

2.4. Dr Rodgers left me in no doubt that what happened in Ms Cook's case was that she developed brain oedema as a complication of her severe liver injury which had in turn been caused by the significant paracetamol ingestion.

2.5. Accordingly, I find that the cause of Ms Cook's death is multi-organ failure due to polypharmacy overdose.

3. Issues in the inquest

3.1. The inquest did not investigate the broader question concerning Ms Cook's treatment in the community for her mental illness prior to the fatal overdose that she took on 17 April 2019. The inquest was solely concerned with the question as to whether or not, once Ms Cook had been admitted to the LMH, her death could have been prevented by optimal medical treatment. The associated question of course is whether or not Ms Cook received such treatment.

3.2. The question examined at the inquest was whether or not Ms Cook's severe liver failure could have been arrested and, if so, whether her prognosis would have been a positive one and whether her death need not have occurred. The answers to those questions are that Ms Cook's medical management at the LMH was sub-optimal. If her treatment had been optimal, the evidence suggests that she would have survived. On the other

[3] Transcript, page 133

hand, once Ms Cook was in the hands of the ICU at the FMC, her death could not have been prevented despite the excellent care that was delivered to her at that hospital.

3.3. I now set out my reasons for those conclusions.

4. The treatment for paracetamol overdose

4.1. At the time with which this inquest is concerned, the treatment for excessive paracetamol consumption was governed by a protocol entitled '*Management of Paracetamol Poisoning (For Adult Only)*'. This document was tendered to the inquest.[4] This protocol has been amended since these events. I will mention something of the relevant amendments in due course.

4.2. The treatment for paracetamol toxicity consists of the administration of what is sometimes referred to as the antidote to paracetamol toxicity, namely a N-acetylcysteine infusion (NAC).[5] The overall goal of the NAC infusion is to reduce paracetamol toxicity and thereby limit or prevent liver damage occasioned by the toxicity. According to the protocol, whether or not this modality of treatment would be administered depended on essentially three key factors. They were, firstly, the amount of paracetamol that was said to have been taken by the individual, secondly the time over which the paracetamol was ingested and thirdly the time since the paracetamol was ingested. It was believed in Ms Cook's case that she had taken 26 tablets at the one time. That number of tablets equates to 13 grams of paracetamol. The protocol was enlivened by an acute single ingestion of 10 grams or more over a period of less than eight hours. As to the relevance of the figure of eight hours, the evidence is that treatment within eight hours of ingestion will prevent serious liver injury in almost all patients. It was said that death following paracetamol ingestion is '*extremely rare*' if NAC is commenced within eight hours of ingestion.[6] Although in the case of Ms Cook there was said to have been a lack of clarity about the time at which she had ingested the paracetamol, it was clear that when she presented at the LMH she had ingested the paracetamol less than eight hours previously. Consideration then needed to be given to whether or not the patient required treatment by way of a NAC infusion.

[4] Exhibit C32, PMM 2
[5] Described in the protocol at page 5 as an '*effective anecdote*' (sic)
[6] Exhibit C25, report of Dr Anne-Marie Kelly. Page 20

4.3. Whether a NAC infusion would have been administered or not depended upon the application of the Paracetamol Treatment Nomogram which was a graph depicted in the protocol. The application of the nomogram hinged on the paracetamol concentration in the patient's blood stream taken four hours after ingestion. If the blood sample taken four hours after the ingestion revealed a paracetamol concentration of more than 1000umol/L, a NAC infusion would immediately be commenced.

4.4. The scientific basis of the various time and quantity parameters associated with this protocol were not fully explained in the evidence that was presented to this Court. However, one thing seemed reasonably clear and that is that whether or not a patient was administered a NAC infusion could depend upon the accuracy of the time at which the acute paracetamol ingestion was said to have occurred. This is so because the blood test upon which a NAC infusion would depend was taken four hours post-acute ingestion of paracetamol. If the blood test was taken at a point in time earlier than four hours, the protocol's operative parameters would not have been established in the case of the patient. Thus, if a blood test taken after only three hours revealed a figure less than 1000umol/L its significance would not be as meaningful as if the blood test was taken after four hours, and perhaps not meaningful at all. A NAC infusion would not normally be given in those circumstances, or so the evidence before me suggested.

4.5. The protocol and other evidence also suggested that anorexia nervosa and bulimia are risk factors in the development of liver damage from paracetamol ingestion. Ms Cook had a history of anorexia.

4.6. Having regard to the fact that a NAC infusion in the case of many patients is a life saving measure, the patient's ability to survive a large paracetamol overdose could depend on the accuracy of the time at which the ingestion was said to have occurred. In the nature of things the time at which the ingestion occurred could be something of a moveable feast and not necessarily be based on reliable information. One would think that the time of ingestion would need to be established with some certainty. However, it was stipulated in the protocol that the nomogram would not apply if there was an '*Unknown time of paracetamol ingestion*'. Naturally, what was '*known*' or '*unknown*' could in any event also be a matter of debate in and of itself. As far as I can see from the protocol as it existed at the time with which this inquest is concerned, there was nothing in it to suggest that an err on the side of caution approach should be adopted by clinicians when deciding whether or not to administer NAC.

4.7. A NAC infusion was not administered to Ms Cook. This was because the blood test, believed to have been taken four hours post ingestion, revealed a blood paracetamol concentration that was less than 1000umol/L. The belief that the blood test was undertaken four hours post ingestion was naturally based on a belief as to the time of ingestion. As will be seen, in my opinion, the evidence is overwhelming that had Ms Cook been administered a NAC infusion, she would not have died.

4.8. As part of a patient's management for a paracetamol overdose it was also necessary for further timely blood tests to be taken including for liver function. This was so regardless of whether a NAC infusion was administered. The purpose of such a blood test would be to determine and monitor whether or not liver damage was occurring or had occurred. For reasons that I will discuss, a blood test for these purposes was not taken in relation to Ms Cook until the afternoon of 19 April 2019, more than 48 hours since the original blood testing that had taken place on the afternoon of her admission to the LMH. This omission was highly irregular. The evidence is again overwhelming that if timely blood tests had been taken in order to establish whether or not Ms Cook had sustained liver damage, which in fact she had, her death could have been prevented by the immediate commencement of a NAC infusion and other support.

5. Courtney Cook presents at the LMH ED

5.1. According to the LMH ED triage document[7], Ms Cook was assigned triage category 1 at 2:18pm on 17 April 2019. It was recorded that she collapsed in the waiting room and that she had taken 78 tablets in a suicide attempt that had also included slitting both wrists. The amount of paracetamol was recorded as having been 26 tablets of 500 mg each giving a total of 13 grams. The patient was recorded as being still '*actively suicidal*'.[8] She had experienced persistent nausea since the ingestion of the tablets. It was recorded that she had stated that she had tried to kill herself and that the tablets had been taken at 11:30am. She was recorded as saying that she was upset that she was not successful in the suicide attempt.[9]

5.2. The forearm lacerations were examined and were assessed as requiring washout in a surgical environment.

[7] Exhibit C26, page 77
[8] Exhibit C26, page 89
[9] Exhibit C26, page 89

5.3. An admission blood sample was taken, it appears around 2:20pm or possibly at 2:30pm.

5.4. Ms Cook was seen by an ED consultant, Dr Hannah Green. Dr Green provided a statement to the inquest and gave oral evidence. Dr Green saw Ms Cook at about 2:30pm or shortly thereafter. The admission bloods taken revealed a paracetamol concentration level of 313umol/L. Dr Green formed a belief that Ms Cook had ingested the paracetamol tablets at 11:30am. Thus the bloods were taken at a time believed to have been three hours since ingestion. This level, although less than the triggering level of 1000umol/L, would not have been of conclusive significance because the bloods were not taken at the four hour mark. However, it naturally confirmed that Ms Cook had ingested paracetamol.

5.5. However, complicating this matter is the fact that one of the first things that Dr Green recorded in the progress notes was as follows:

> 'Initially ? took OD ~1300 - further questioning
> thinks 11:30'

This entry on the document suggests that originally there was some reason to believe that the ingestion of paracetamol had taken place at 1pm. This appears to have been recorded as the first piece of information about time of ingestion that had been imparted, albeit it seems to have been attended with some uncertainty as evidenced by the question mark. The basis of this information was not established during the course of this inquest. On questioning of the patient herself, and also having regard to Dr Green's conversation with Ms Cook's male companion who had allegedly somehow reconstructed 11:30am as the time of ingestion, 11:30am was the ingestion time that was settled on. The discrepancy in timing is of some significance due to the fact that, firstly, if the paracetamol had been ingested at 1pm, the appropriate time to consider key blood paracetamol concentrations would have been in respect of a blood sample taken at 5pm by which time conceivably the blood paracetamol concentration may have been higher than it was when taken at 3:30pm which was four hours post 11:30am. No blood sample was taken at 5pm. This was due to the fact that the ingestion time was settled at 11:30am.

5.6. My examination of the clinical record does not reveal any repetition of the time of 1pm as being the time of ingestion. All other notations record the time of ingestion as approximately 11:30am. It was on the basis of the time of 11:30am that Dr Green acted.

5.7. The blood sample taken at 3:30pm, which was four hours post an ingestion time of 11:30am, revealed a blood paracetamol concentration of 757umol/L which, again, was less than the triggering 1000umol/L mark. It was on the basis of this result that Dr Green made a decision not to administer or treat the paracetamol overdose with NAC.

5.8. Dr Green finished her shift at about 4:30pm and had no further involvement with the care and treatment of Ms Cook.

5.9. Ms Cook was taken by a medical team to a ward in the Acute Medical Unit (AMU) just before 5pm.

5.10. A Medical Assessment and Treatment – Management Plan was compiled by Dr Lucy McKinnon who was a resident medical officer.[10] Among other things this document recorded that there was no need for a NAC infusion and that bloods would be taken in the morning. Part of the plan was that Ms Cook should fast from 2am for '*…? washout ℄ lacerated wrist in theatre*'. This was a reference to the possibility that Ms Cook would undergo surgery on her forearms the following morning under a general anaesthetic. The fasting at 2am would be in anticipation of that surgery.

5.11. The decision not to administer NAC has been the subject of criticism. Dr Anne-Maree Kelly is an emergency physician. She currently holds the posts of Professor and Academic Head of Emergency Medicine and Senior Emergency Physician at Western Health in Footscray, Victoria. She is an adjunct Professor in the Australian School of Health Law Research at the Queensland University of Technology. She has more than 30 years of experience in emergency medicine. In her capacity as an independent expert witness Dr Kelly provided two written reports to the inquest. In her first report[11] Dr Kelly explains the operation of the guidelines and protocol regarding the assessment and management of paracetamol overdose. In that report Dr Kelly expresses the following opinion:

> 'In my opinion, Courtney should have been treated with NAC based on the dose consumed and the lack of clarity about ingestion time. In my opinion, the decision to assume the earlier time of ingestion (11:30) rather than the initially reported time (13:00), or alternatively to assume that the time of ingestion could not be reliably determined,

[10] Exhibit C26, page 94
[11] Exhibit C25, dated 6 September 2020

> contributed to Courtney's death. If the treating doctor had proceeded on the basis of an undetermined time, Courtney (consistent with guidelines) should have been treated with NAC which would almost certainly have prevented her death. Alternatively, if the 'worst case' time of ingestion of 13:00 was used, in my opinion, a paracetamol level at 17:00 would probably have been above the threshold for treatment. Given that Courtney changed her mind about ingestion time, in my opinion it would have been safer to assume that time was undetermined.' [12]

5.12. I have referred to Dr Rodgers. In his oral evidence he told the Court that 13 grams of paracetamol is very likely going to cause a severe liver injury. He cautioned against over reliance on the nomogram in those circumstances and suggested that if there was any concern that there might be some inaccuracy in the exact timing of the ingestion of the paracetamol, the nomogram should no longer be viewed as reliable and that NAC should be given with that level of ingestion.[13]

5.13. In her second report[14] Dr Kelly enlarged upon some of the opinions as expressed in her first report. In her second report she suggests that if the time of ingestion of paracetamol is unknown, or the treating clinician in not confident of the history of ingestion, it is safest to treat the patient as a delayed presentation and commence NAC immediately. Dr Kelly was also asked to comment on the fact that the blood paracetamol concentration had more than doubled in the hour or so between the two afternoon blood tests, timed at about 2:30pm and at 3:30pm respectively. It will be remembered that the first reading was 313umol/L and the second reading was 757umol/L. In respect of this circumstance, Dr Kelly reported as follows:

> 'That Ms Cook's blood paracetamol level had more than doubled in about an hour is, in my opinion, very concerning. It, at least, raises the possibility that the level was still rising and could possibly have reached toxicity thresholds. In my opinion, it should have led the treating doctors to reconsider their assumptions about ingested dose and ingestion time. In my opinion, they should have erred on the side of caution and initiated NAC treatment without further tests, especially given Courtney's history of anorexia which is a risk factor for increased paracetamol toxicity.
>
> If this had occurred Ms Cook's death would, in my opinion, more likely than not have been prevented.' [15]

[12] Exhibit C25, page 19-20
[13] Transcript, page 141
[14] Exhibit C25a, dated 8 August 2021
[15] Exhibit C25a, page 6

5.14. Dr Green was the ED consultant who decided not to administer NAC. She gave oral evidence in the inquest and defended her decision. Firstly, it must be observed that her decision was based on a belief that the time of ingestion of 11:30am was accurate. On that basis looked at in isolation, her decision not to administer NAC because the blood test at four hours showed a blood paracetamol concentration of less than 1000umol/L would be regarded as sound. However, the question was whether 11:30am was a time that could confidently be relied upon, bearing in mind that the time was determinative in the decision that she made in not administering NAC to Ms Cook. Dr Green appears to have entertained in her own mind the thought that the time of 11:30am was established with almost complete certainty. I say this because in my view any other degree of satisfaction of that time should have invited a cautionary approach. If there was uncertainty about the time of ingestion, one could have regarded the time of ingestion as '*unknown*' in terms of the requirements in the protocol. It has not been possible for this Court to establish on what basis the other time mentioned, namely 1pm, was arrived at. If Dr Green's clinical note can be regarded as a proper representation of what was said during her consultation with Ms Cook, the time of 1pm appears to have emanated from Ms Cook herself. On the other hand, according to Dr Green the time of 11:30am was corroborated by her male companion who was able to make reference to data on his phone. There was no suggestion that the male companion had actually been present at the time Ms Cook ingested the polypharmacy overdose including the paracetamol tablets, and the same reconstructive exercise relating to time of ingestion was not able to be achieved to my satisfaction during the course of this inquest. Be all that as it may, 11:30am was taken as the time of ingestion. In my view it is not possible to gauge to what extent the mention of the later time of 1pm should have cast doubt on the time of 11:30am.

5.15. Ms Giles of counsel assisting suggested to Dr Green in cross-examination that she had not properly taken into consideration a number of relevant factors other than the timing of ingestion. This included the fact that she was dealing with a suicidal patient who may have been an unreliable historian for any number of reasons, the fact that Ms Cook may have been affected by other substances that she had consumed, the fact that Ms Cook had collapsed in the waiting room and Ms Cook's anorexia nervosa. In relation to the last of these considerations, Dr Green stated that she had no recollection

of being aware of whether anorexia had been an acute concern at the time of Ms Cook's presentation. The following cross-examination occurred:

> 'Q. Can you see item C refers to some particular conditions, in particular anorexia nervosa and bulimia.
>
> A. Yep.
>
> Q. Did you ascertain from Courtney whether she had any history of either of those.
>
> A. I don't remember, at the time.
>
> Q. If you had known that Courtney had a history of either anorexia nervosa or bulimia, would that have changed how you proceeded.
>
> A. No, still do the level at four hours.
>
> Q. It's the case, isn't it, that somebody with anorexia or bulimia might be at an even increased risk of liver injury from a paracetamol overdose.
>
> A. I think it says it's theoretical.
>
> Q. What do you mean by that.
>
> A. Well the protocol says theoretical patient factors that might increase, so it's theoretical as opposed to evidence-based.
>
> Q. Is your interpretation of these theoretical risk factors in this policy that perhaps you should ask questions to ascertain this information or it's not your practice to ask questions about these theoretical risk factors.
>
> A. My understanding is that they don't affect how you then proceed, you would still take the four hour level if that was the timing you had, and it doesn't change what you'd do.' [16]

5.16. A psychiatric examination conducted with respect to Ms Cook during her admission at the LMH appears to have elicited from her that she had an appetite that was '*non-existent*', that she only drank sugar free soft drinks and that she regarded herself as '*completely anorexic*'. Ms Cook is also recorded as having said that she had descended from a weight of 66 kilograms in October 2018 to a current weight of 53 kilograms.[17] A nursing chart apparently from a previous admission to the LMH listed her weight on 24 December 2018 as 64.5 kilograms.[18] I note that an ECG report of 19 April 2019 records Ms Cook's weight as 45 kilograms and her height as 160 centimetres. Ms Cook had experienced a significant weight loss in a relatively

[16] Transcript, page 64
[17] Exhibit C26, page 125
[18] Exhibit C26, page 27. The document states the date as 24/12/08 (when Ms Cook would have been only nine years of age). In the circumstances I infer that the date is a misprint.

short period of time which would be in keeping with a history of, and an acute, eating disorder.[19]

5.17. It is true that the protocol at page 2 described anorexia nervosa and bulimia as a '*theoretical patient factor*' that might increase the risk of liver injury. Dr Rodgers said in his evidence that the relevance of anorexia nervosa or bulimia is that either condition is likely to cause a depletion of glutathione, an important natural antioxidant in respect of liver health.[20] NAC is designed to replenish glutathione. In the light of that evidence, the two eating disorders could be characterised as more than mere '*theoretical*' factors. The protocol did not describe the course of action that might be taken where a clinician was considering what to do in the case of an anorexic or bulimic patient. For instance, although the protocol suggested that the nomogram did not apply in certain circumstances, for example an unknown time of paracetamol ingestion, it did not suggest that the nomogram did not apply in the case of an anorexic or bulimic patient and that for that reason NAC should be given regardless of the nomogram result at four hours. I am not certain, therefore, how exactly a patient's anorexia or bulimia needed to be taken into account or, to use Dr Green's expression, how it would '*change what you'd do*'.

5.18. To my mind, Dr Green could only be the subject of criticism if what she did or did not do in the case of Ms Cook was wholly unreasonable. I have taken into account Dr Kelly's opinions as well as Dr Green's evidence, and I am left with some disquiet about a number of matters associated with Dr Green's management of Ms Cook. There was the fact that the blood paracetamol concentration had more than doubled in the space of about an hour. The acuity of any eating disorder that Ms Cook may have currently been experiencing does not appear to have been explored when she had at least a history of the same, as well as significant recent weight loss. The protocol, at least by implication, suggested that anorexia and bulimia were relevant considerations in the management of a patient who had taken an excessive amount of paracetamol. These matters separately or together could have led Dr Green to reasonably administer NAC notwithstanding the nomogram result. After careful reflection, in my view all that can be said in respect of Dr Green's management is that it would have been better

[19] Exhibit C26, page 151
[20] Transcript, page 141.

if Dr Green had erred on the side of caution and had administered NAC on the basis of the factors that I have just identified.

5.19. However, without knowing anything about the origin of the competing time of ingestion of 1pm, there is no evidence to suggest that the time of ingestion of 11:30am was anything other than reliable. The other time of 1pm and its origin appears to be a mystery and perhaps if anything was only fleetingly suggested as a time of ingestion before the time of 11:30am was arrived at and then documented in a number of places. It is difficult to be critical of a medical practitioner who in an undoubtedly very busy ED, follows guidelines such as this protocol which in many senses was less than helpful in cases such as Ms Cook's. After careful reflection, in my view it cannot be said that Dr Green's decision to withhold NAC was wholly unreasonable. I say this also because as will be seen in the next section, any adverse consequences of Dr Green's decision not to administer a NAC infusion in the first instance could have been salvaged by further optimal care at the LMH which unfortunately was not delivered.

5.20. Ms Cook could still have been saved if greater attention had been paid to the need for further blood testing. There were other opportunities for a NAC infusion to have been administered and for other intensive medical support to have been instituted.

6. Further crucial blood testing that should have taken place and did not

6.1. As already alluded to, no further blood test would be taken until Monday 19 April 2019 by which time Ms Cook had sustained a severe liver injury to which she ultimately succumbed. In the meantime, there had been plans to take blood on the morning of 18 April 2019 and also later that day and night. But they never occurred owing to a lamentable series of errors and omissions that I will now discuss.

6.2. The question therefore becomes why it was that no bloods were taken on 18 April 2019. I have referred to the medical practitioner, Dr Lucy McKinnon. On Ms Cook's admission to the AMU, Dr McKinnon developed a plan in conjunction with a Dr Staffurth that bloods would be taken from Ms Cook in the morning. Dr McKinnon gave oral evidence in the inquest and told the Court that due to the fact that Ms Cook had ingested more than 10 grams of paracetamol, blood tests would be repeated the following day regardless of the fact that NAC would not be administered.[21] This was

[21] Transcript, page 341

clearly a correct decision. Dr McKinnon said that it was important that Ms Cook have her blood reviewed before she went into the surgery in respect of her arm injuries because second day blood tests were important in order to review Ms Cook's liver function. Although Dr McKinnon had stated in the Medical Assessment that Ms Cook might fast from 2am in anticipation of surgery in relation to her wrist lacerations, she did not believe that the surgery would take place before blood tests were taken. If she had anticipated this interruption to the plan she would have ordered bloods to be taken at an earlier point in time.

6.3. In the event, Ms Cook was taken to surgery on the morning of 18 April 2019 at a time before blood tests were taken from her. Two witnesses were called in relation to this surgery. They were Dr Jack Richards who was the orthopaedic registrar who performed the surgery and Dr Mathonsi Jila who was the anaesthetist. There was some evidence to suggest that the surgery and washout was not to occur for two days, that is to say until 19 April 2019. However, for reasons that were not clear, it was felt that there was no impediment against Ms Cook having the surgery on the morning of 18 April 2019. Quite apart from the fact that this surgery for whatever reason delayed or prevented the blood sample being taken, it was suggested in evidence that the surgery, involving as it did a general anaesthetic, was unwise at this point. It was suggested that a general anaesthetic can put stress on a liver during the duration of the anaesthetic. Dr Rodgers explained[22] that during a general anaesthetic, patients are ventilated and their blood pressure can fluctuate with the result that there is often a reduction in blood circulation to the liver. If the liver is already under stress or has an underlying liver injury, the situation can be made worse by the anaesthetic. Dr Rodgers went on to say that a patient with a severe liver injury should be kept as stable as possible with their blood pressure maintained as stable as possible. He said that a '…*general anaesthetic is not that situation*'.[23] However, the anaesthetist, Dr Jila, gave evidence that during the course of Ms Cook's surgery there was no difficulty about blood pressure in her case. Dr Jila was monitoring Ms Cook's blood pressure during the course of the procedure and noticed no irregularity. Asked about Dr Rodgers' opinion in relation to

[22] Transcript, page 146
[23] Transcript, page 146

the undesirability of a general anaesthetic in a case such as Ms Cook's, and whether it might cause an adverse consequence, Dr Jila said as follows:

> 'My opinion is different: it may, it may not. The anaesthetic per se does not worsen the injury, provided the medications are appropriately chosen - that is one. The other thing is, every organ in the body has got a blood supply. The vital organs tend to get blood at the expense of, say, the skin and so and so forth. But as anaesthetist, we keep those blood levels - so, the blood pressure within levels appropriate for position of the vital organs. So I have not, in my practice, noted that liver function deteriorates any further unless if there's an intraoperative insult or an ongoing insult. The anaesthesia per se should not - sorry, the fluctuation of blood pressure happens with everyone, anyone, at any time. And it's not just the liver that is affected, the hearts, the brain and so on. So in her situation, in the information by Dr Rodgers, I am not aware that blood pressure - if it has been maintained - the anaesthetic would be cause further damage.' [24]

Dr Jila went on to identify from monitoring documentation maintained during the course of the surgery that there had been nothing remarkable about Ms Cook's blood pressure during that surgery. She was asked by me:

> 'Q. Is there anything about the blood pressure results that appear on that page that would have given you any concern of reduction in blood flow to organs.
>
> A. No.
>
> Q. And in particular the liver.
>
> A. No.' [25]

6.4. After considering the matter carefully, I do not believe that there was anything unreasonable in the actions of Dr Richards or Dr Jila. The fact of the matter is that blood tests should have been conducted prior to this surgery. It is likely that the surgery would have been postponed in the light of their results. Dr Richards gave evidence that if he had known that Ms Cook had an evolving liver injury he would not have proceeded with the surgery. He did not know about the liver damage. In any event, I do not believe that there is sufficient evidence to suggest that the surgery caused any adverse effect in respect of Ms Cook's wellbeing. What it did do was to delay the taking of the planned blood test.

6.5. The fact that Ms Cook had missed her blood test during the morning of 18 April 2019 was recognised that day. In April 2019 Dr Christopher Hrycek was a registrar in the AMU at the LMH. Dr Hrycek's affidavit was tendered to the Court.[26] His role and

[24] Transcript, page 407
[25] Transcript, page 410
[26] Exhibit C54

duties included receiving referrals from the ED and coordinating junior medical officers in the timely review of referred patients. It also included review and management of patients admitted to the AMU following consultant review beyond the first day of admission. Dr Hrycek was on duty on 18 April 2019. Ms Cook had been admitted to the AMU. In his affidavit Dr Hrycek states that Ms Cook was not reviewed by the AMU consultant on the ward round that morning because the orthopaedic team had taken her to theatre for surgery in relation to her wrist wounds. Dr Hrycek suggested nothing had been communicated to the AMU team to say that she was being taken for surgery. Dr Hrycek says that on the afternoon of 18 April 2019 he telephoned Dr Richards and informed him that Ms Cook had missed the phlebotomy (blood taking) service and had not been reviewed by the consultant. The purpose of his call was to find out why Ms Cook had been taken to theatre and whether blood tests had been taken from her while she had been in theatre. Dr Richards informed Dr Hrycek that he was unaware whether blood tests had been conducted in or prior to theatre that morning. For Dr Richards' part he said that he discussed with Dr Hrycek the fact that his decision to proceed to theatre had been based on a plan from the admitting AMU doctor to fast for orthopaedic theatre and that no concerns had been raised from any party. Soon after this call Dr Hrycek spoke to the AMU team and highlighted that it was a priority that Ms Cook's bloods be taken as soon as possible. That task would have been assigned to the junior doctors on that shift to complete.

6.6. Thereafter, what transpired in relation to the taking of bloods from Ms Cook can only be described as unedifying. At approximately 3pm or 3:30pm there was an afternoon clinical staff '*huddle*' in which the task of taking bloods from Ms Cook was discussed. A number of statements of interns who were working on various shifts in the AMU that day were tendered to the inquest. The flavour of those statements is that there was no particular urgency assigned to that task with the result that the task was not added to the Taskboard until 8:48pm that evening. This is so notwithstanding the fact that the task of taking blood from a patient could be undertaken in a matter of minutes and could be done anywhere at any time. Adding to the unsatisfactory nature of all of this was the fact that at some point the paperwork that had been raised for the taking of bloods was unable to be located.

6.7. This then led to another spectacularly bad sequence of events that were described in the evidence of a registered nurse by the name of Jodie Harvey. Ms Harvey gave oral

evidence in the inquest at some length. A statement dated 28 July 2021 taken from Ms Harvey was also tendered to the inquest. Ms Harvey is a very experienced registered nurse. At the time with which this inquest is concerned she was employed in the role of nurse consultant at the LMH. The role of a nurse consultant is to provide clinical support to nurses and junior medical officers as required over the entire hospital including performing procedures such as the taking of blood. Over the course of her career she has often been required to perform venepunctures involving the taking of blood and was obviously well qualified and experienced to have done that in Ms Cook's case.

6.8. On 18 April 2019 Ms Harvey was working the evening shift which started at 4pm and finished at approximately 12:30am the following morning. At 11:30pm there would be an approximate one hour handover period with the next on duty nurse consultant.

6.9. Ms Harvey, who was the most senior member of nursing staff during her shift, recited a convoluted story that commenced at approximately 8:48pm on the evening of 18 April 2019 when she was tasked to perform the taking of blood in respect of Ms Cook. This task had been placed on the clinical activity Taskboard which is a communication tool designed by SA Health clinicians to support the management of patients overnight. Ms Harvey said that the Taskboard indicated that the task was for bloods to be taken from Ms Cook in respect of a paracetamol overdose that involved no NAC infusion. The task was entered onto the Taskboard at 8:48pm and Ms Harvey could see that the task was specifically assigned to the '*After Hours Clinical Nursing Lead*' which she was at that time. Ms Harvey recalled that the task was assigned a green light on the board which signified that it was non urgent with the aim being for completion to occur within four hours. Ms Harvey still had not performed this task when she began handing over to the nurse consultant for the next shift at approximately 11:30pm. Ms Harvey was then called away to a code black in a different ward. Following this, Ms Harvey noticed on the Taskboard that Ms Cook's blood still needed to be taken. Ms Harvey then informed the incoming nurse consultant that she would attend to the task. At that point Ms Harvey marked the task on the Taskboard as '*completed*', presumably in anticipation that she would have no difficulty taking the bloods.

6.10. However, when Ms Harvey went to Ms Cook's ward to take the bloods she could not locate the blood request form which was necessary for the task to be carried out and for the bloods to be analysed. Ms Harvey made certain investigations but could still not

locate the form. Ms Harvey asserts in her statement and in her oral evidence that she returned to Ms Cook's ward and informed the shift coordinator, Ms Leanne Menzel, and the night duty nurse consultant that she could not locate Ms Cook's blood request form. Ms Harvey then asked Ms Menzel to obtain new paperwork from a medical practitioner so that Ms Cook's blood could be taken and tested as required. She expected that Ms Menzel would follow up on her verbal request to arrange a new blood request form at which time the task of collecting Ms Cook's blood could be re-entered onto the Taskboard in accordance with the usual practice. Ms Harvey then completed the handover and finished her shift at approximately 12:30am. Ms Harvey's next shift commenced at approximately 11:30pm on the night of 19 April 2019. She was informed that Ms Cook had deteriorated and had been, or was to be, transferred to the FMC. Having been informed of that Ms Harvey decided that she needed to make a retrospective note about the events of the previous shift. That note was tendered to the inquest. In fact, it formed part of the clinical record even though it was a retrospective note made at a time after the events which it records. The note broadly describes in brief terms what Ms Harvey would ultimately say in her statement and in her evidence including the following:

> 'I returned to ward 1E and spoke with team leader (shift coordinator) and bedside nurse 'specialling' patient. They had not seen pathology form when patient transferred to ward 1E. Asked team leader (shift coordinator) of 1E to follow up with medical staff re pathology form printing another collection form.' [27]

6.11. In the event, no follow up occurred and no blood collection forms were sought or produced. The Taskboard was not reinstated with the task and the blood test did not occur.

6.12. Ms Menzel gave oral evidence in the inquest as did an enrolled nurse by the name of Ms Paula Hicks. Ms Menzel gave evidence that she was aware of Ms Cook's admission on Ward 1E. In her witness statement, Ms Menzel records that she had a memory of a conversation with someone during her shift in which that person said to her that they were looking for a blood test request form for Ms Cook and suggesting to that person that they should check the AMU for the request form because that is where Ms Cook had come from to Ward 1E. She accepts that this person must have been Ms Harvey. She asserts that she does not recall having any further discussion either

[27] Exhibit C26, page 146

with Ms Harvey or any other person about any blood test request forms during the balance of her shift. She states as follows:

> 'In the 4 years that I have worked on Ward 1E at LMH, I have never personally had a situation where a blood test request form could not be located for a patient on the Ward, requiring another blood test request form to be requested and generated by the medical staff. I am confident that on this particular occasion I assumed that the blood test request form was subsequently found, because I have no recollection of being asked to follow up a further blood test request form. If I had been requested to do so, I believe I would remember this (because it has never happened before) and I believe that I would have immediately created a task on the Taskboard for this purpose.' [28]

6.13. Ms Menzel and Ms Hicks gave evidence about a later accusatory conversation that had taken place with Ms Harvey in which Ms Harvey had suggested in effect that Ms Menzel had been derelict in her duty in not seeing that the bloods were taken from Ms Cook during the ensuing shift when she had been asked to do so by Ms Harvey. Ms Menzel claims to have been perplexed by this accusation and even emailed one of her superiors about it.

6.14. In all of the circumstances, I was not convinced that Ms Harvey had asked Ms Menzel to re-initiate the task of taking bloods from Ms Cook.

6.15. Ms Harvey rightly acknowledged in her oral evidence that she should not have marked the task as completed on the Taskboard without actually having performed the task. Indeed, in my view she should in any event have performed that task herself before the end of her shift or alternatively have satisfied herself that the bloods were otherwise taken at a time before the end of her shift.

6.16. As indicated elsewhere in these findings, bloods would not be taken from Ms Cook until 1pm the following day by which time Ms Cook was becoming clinically ill due to liver dysfunction.

7. Ms Cook's survivability had bloods been taken from Ms Cook

7.1. I return to the evidence of Dr Rodgers of the FMC ICU. In his oral evidence Dr Rodgers was asked to provide various opinions in relation to Ms Cook's survivability had a NAC infusion been instituted at different times between her admission to the LMH and her ultimate transfer to the FMC. Dr Rodgers told the Court

[28] Exhibit C46, paragraph 40

that if bloods had been taken on the morning of 18 April 2019, as had been planned, they would have shown the severe liver injury. He stated that parameters such as the patient's ALT/AST, the two liver enzyme markers that indicate liver inflammation, typically rise very precipitously after about 12 hours of paracetamol ingestion and that those factors would have been elevated on the morning of 18 April 2019 in Ms Cook's case. Whereas, these markers had not been elevated on 17 April 2019 when checked, they would have been elevated on 18 April 2019. Dr Rodgers said that the detection of this by blood testing that morning would have altered events significantly as it would have dictated the commencement of NAC. And he said, '*I would like to have been given a call on that day and would have transferred her to Flinders on that day*'.[29]

7.2. Dr Rodgers also gave evidence about other supportive intensive care measures besides a NAC infusion that would have been delivered to Ms Cook if her liver damage had been identified earlier and she had been transferred earlier to the FMC. Those measures, designed to prevent the cerebral oedema that would eventually afflict Ms Cook, would have been more effective if delivered earlier.

7.3. Dr Rodgers stated, as is also indicated in the report of Dr Kelly, and indeed as suggested in the protocol, that NAC given within eight hours of ingestion will prevent liver failure from occurring. However, he told the Court that there is evidence that if one administers NAC after 24 hours there will still be a good outcome. Dr Rodgers suggested that there is evidence that NAC, given up to 36 hours, can still provide some benefit and, it is said, perhaps even up to 48 hours. However, if it was administered within 24 hours, it likely would have protected Ms Cook's liver.[30] Dr Rodgers went on to say as follows:

> 'Yes, the - as I say, if the liver function tests had been taken on the morning of the 18th as planned, the liver injury would have been apparent, NAC would have been commenced, which would have been within 24 hours of ingestion, and the outcome would have been good, very likely. Treatment would have - the general anaesthetic presumably wouldn't have gone ahead if those results had been available, the NAC would have been commenced and the treatment would have been appropriate from that time on for management of acute liver injury from paracetamol, and I would expect a good prognosis in that situation.' [31]

[29] Transcript, page 135
[30] Transcript, pages 135-136
[31] Transcript, pages 138-139

7.4. I accepted that evidence.

7.5. Dr Rodgers also dealt with the question of the outcome if NAC had been administered at later times. When bloods were ultimately taken at the LMH at about 1pm on 19 April 2019 the ALT and AST were significantly elevated. Further blood tests taken at the LMH at 5pm on 19 April 2019 showed more or less the same picture as those at 1pm on 19 April 2019. Dr Rodgers suggested that if a blood test had been undertaken earlier, say at around midnight between 18 April and 19 April 2019 when Ms Harvey had unsuccessfully set about trying to take Ms Cook's bloods, the ALT and AST would also have been in the thousands at that point and would have been regarded as '*very abnormal*'[32], and NAC would have been commenced. In the normal course of events, Dr Rodgers at the FMC ICU would have been called and depending on Ms Cook's results and specifically her INR, which is a measure of how the liver is performing, it is very likely that Ms Cook would have been transferred to the FMC ICU at that point. In the state of South Australia the FMC is where all severe liver injuries from paracetamol are sent to for treatment.

7.6. So, in his oral evidence Dr Rodgers was asked to comment on Ms Cook's prognosis if bloods had been taken on the evening of 18 April 2019. To this he said as follows:

> 'So the evening of the 18th, well, that's 30 hours after ingestion, the ALT AST would have been dramatically elevated. That would have led to the institution of NAC beyond the ideal time frame but still, as I say, there is benefit in NAC out to 36, possibly even 48 hours after ingestion, and so that, commencing NAC, would have potentially changed the outcome but also would have been the early transfer to the Flinders Intensive Care, where all those measures that I mentioned would have started 24 hours earlier with the specific goal really of stabilising the liver and preventing cerebral oedema, and we can't say, obviously, but her prognosis would have been a lot better than, you know, presenting 24 hours later.' [33]

7.7. Dr Rodgers was also asked about the fact that on 19 April 2019 at the LMH there had been a delay of several hours between the first blood test that day conducted at 1pm which had indicated severe liver injury and the commencement of intensive treatment at about 5:30pm at the LMH. To this he said:

> 'Potentially every hour can count in this situation; where you are dealing with someone with a hyperacute liver failure, every hour can count. So potentially may have been a different outcome if we had got her there five hours earlier, but I can't quantify that.' [34]

[32] Transcript, page 138
[33] Transcript, page 139
[34] Transcript, page 149

7.8. I accepted all of Dr Rodgers' evidence in this regard.

7.9. Mr Warwick Ambrose, counsel for the Northern Adelaide Local Health Network (NALHN), the arm of SA Health that operates the LMH, very properly acknowledges on behalf of his client that Ms Cook's death had been preventable on a number of levels. The Court is grateful for those acknowledgments.

7.10. In my opinion, if Ms Cook had been administered a NAC infusion when she was assessed in the ED of the LMH during the afternoon of her presentation she would have not sustained the severe liver injury and she would have survived. I am confident that a NAC infusion commenced at that time would have prevented her death.

7.11. Notwithstanding the lack of the NAC infusion, if Ms Cook had been administered a blood test on the morning of 18 April 2019, as had been planned, the results would have revealed that she had sustained a severe liver injury. The appropriate course of action would have been to immediately administer a NAC infusion and to transfer her to the FMC ICU. If this had occurred, it is highly likely that Ms Cook would have survived.

7.12. The matter of Ms Cook's survivability thereafter becomes uncertain. Even after Ms Cook's surgery, there was an unacceptable and largely unexplained delay in carrying out the task of taking bloods from Ms Cook. In the event the task would not be assigned to any person in particular until 8:48pm when on the Taskboard it was assigned to Ms Harvey. Ms Harvey did not proceed to perform the task until almost to the end of her shift at 11:30pm. By then approximately 36 hours had passed since Ms Cook's ingestion of the paracetamol overdose. Clearly, at that time blood tests would have revealed severe liver injury. If a NAC infusion had been commenced at that time, and she had been transferred to the FMC ICU there is a possibility that Ms Cook may have survived, but a favourable outcome is not certain.

8. Recommendations

8.1. 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.

8.2. Received into evidence were a number of documentary exhibits that include a revised Management of Paracetamol Poisoning protocol and other documentation that relates to the tracking of blood test results.[35] In addition, the statement dated 26 July 2021 of Dr Peak Mann Mah who is an endocrinologist and general physician at the NALHN, sets out certain changes and measures that have been implemented in relation to the handover of patients between shifts, the recognition of deteriorating patients, the review of patients with significant ingestion of medications and the education of staff. A joint education session between the LMH ED and Medicine Toxicology had been scheduled to occur in 2020 to discuss matters that became evident from Ms Cook's death. However, this session had been cancelled due to Covid restrictions and demands on medical staff. If this education session has yet to occur, I would urge that it takes place at the earliest opportunity following the delivery of these findings.

8.3. The revised protocol relevantly now states:

> '**Management of paracetamol exposure with unknown time of ingestion or if uncertain or unreliable history**
>
> 1. Treat the patient as a delayed presentation, i.e. follow the >8 hours scenario in Figure 2 and commence NAC immediately.
> 2. If serum paracetamol concentration is >10mg/L (66micromol/L) or ALT >50units/L, NAC should be continued.
> 3. If uncertain or no history available initially, NAC may be ceased later when further history is available or further blood results are available or if hepatic transaminases are found to be normal at the end of the 20 hour NAC infusion or ALT<50units/L.
> 4. There should be a low threshold for commencing NAC in patients with ingestion of 10 grams of paracetamol or more, regardless of whether they are symptomatic.' [36]

This management protocol alters the protocol as it existed at the time of Ms Cook's presentation to the LMH in that it expands the concept of '*unknown*' time of ingestion to encompass an '*uncertain or unreliable history*' in respect of time of ingestion. Secondly, it speaks of a low threshold for commencing NAC in patients with ingestion of 10 grams of paracetamol or more. However, from what can be seen of the revised protocol, it does not provide any further guidance as to what should take place in the case of an anorexic or bulimic patient who has ingested that quantity. In my view the

[35] Exhibit C32, PMM 4
[36] Exhibit C32, PMM 4

relevance of anorexia or bulimia and their possible effect on glutathione depletion should be spelt out in the protocol. Further guidance should be included to explain the necessary course of action when such a patient is encountered. I so recommend. I direct this recommendation to the attention of the Chief Executive of SA Health.

8.4. The revised protocol does not appear to emphasise the importance of blood testing for evidence of liver damage in cases where NAC is not administered. Clearly, such blood testing is necessary in all cases, but it is particularly important in cases where NAC is not given for whatever reason. Illustrating this of course is the fact that in Ms Cook's case, timely blood testing would have dictated the administration of a NAC infusion notwithstanding that it was not ordered in the first instance. I so recommend. I direct this recommendation to the Chief Executive of SA Health.

8.5. In her final submission, Ms Giles of counsel assisting suggested that all local health networks in South Australia should implement a policy whereby any patient with a known or suspected paracetamol overdose must have a blood test to measure blood paracetamol concentration at four hours post admission to a hospital. She suggested that this should take place in addition to blood taken at what is reported to be four hours post ingestion, regardless of the reported ingestion time and the apparent reliability of that information. Ms Giles submits that a mandated blood test at four hours post admission in addition to the bloods taken four hours post believed time of ingestion, would allow for a comparison to be made between the levels and should leave no room for error. It would serve as something of a failsafe measure that might capture cases of paracetamol toxicity in which NAC has not been administered due to an incorrect ingestion time. Mr Ambrose on behalf of the NALHN submitted to the Court that he and his client had no difficulty with this sensible recommendation. I agree with those submissions and recommend accordingly. In my view the implementation of that recommendation should be undertaken more broadly than just within NALHN. It seems to me that it ought to have universal application across all public health networks. I therefore direct this recommendation to the attention of the Chief Executive of SA Health.

8.6. Ms Giles also submitted that an appropriate recommendation would be that blood tests for liver function should be mandated at 24 hours post admission in all cases of reported

or suspected paracetamol overdose in excess of 10 grams regardless of the reported ingestion time and regardless of whether there has been a need to administer a NAC infusion. On behalf of NALHN, Mr Ambrose also agreed with this submission. I agree with those submissions and recommend accordingly. In my view the implementation of that recommendation should be undertaken more broadly than just within NALHN. It seems to me that it ought to have universal application across all public health networks. I therefore direct this recommendation to the attention of the Chief Executive of SA Health.

Key Words: Death in Custody; Paracetamol Overdose; NAC; Hospital

In witness whereof the said Coroner has hereunto set and subscribed his hand and Seal the 13th day of April, 2022.

Deputy State Coroner