# CORONER'S COURT OF THE AUSTRALIAN CAPITAL TERRITORY

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| **Matter Title:** | **Inquest into the death of Sharyn Kaine** |
| **Citation:** | **[2024] ACTCD 6** |
| **Decision Date:** | 16 September 2024 |
| **Before:** | Coroner Archer |
| **Findings:** | See [42], [43]–[48], [52] |
| **Catchwords:** | **CORONIAL LAW** – manner and cause of death – multi organ failure due to adhesions related bowel perforation – liver failure induced by intravenously administered paracetamol – errors in medication transcription – weight-adjusted dosage not applied – testing delay – matters of public safety – Digital Health Records (DHR) |
| **Legislation Cited:** | *Coroners Act 1997* (ACT) ss 3BA, 13, 34A, 52, 55, 64 |
| **Cases Cited:** | *Inquest into the Death of Patricia (Jill) Croxon* [2023] ACTCD 3 |
| **File Number:** | CD 311 of 2021 |

**CORONER ARCHER:**

## BACKGROUND ISSUES

### Introduction

1. Sharyn Kaine died at the Canberra Hospital ("TCH") on 9 October 2021. I shall, with respect, refer to her as Sharyn in these reasons. Sharyn was the mother to two children and a loving grandmother to her grandchildren. She was 73 years old at the time of her death.

2. Sharyn had been admitted to then Calvary Hospital ("Calvary") on 2 October 2021 for treatment of lower abdominal pain. After an assessment at Calvary, Sharyn was transferred to TCH for surgical treatment of what was suspected to be bowel perforation. After what was thought to be a successful surgery on 3 October 2021, Sharyn's condition stabilised.

3. On 7 October 2021, her condition suddenly deteriorated. When assessed in the Intensive Care Unit (ICU), she was found to be seriously unwell with signs of organ failure. Prior to her collapse, she had been given paracetamol intravenously (IV). It was suspected that she had been administered a paracetamol overdose. Attempts to treat that issue were unsuccessful. Sharyn's life support was withdrawn. Her son and a priest were present at the time of her death.

4. Her daughter Danielle has advocated tirelessly for Sharyn throughout the coronial process.

### Jurisdiction

5. Sharyn's death was reported to the Coroner on the day of her passing. Jurisdiction was assumed pursuant to s 13(1)(c) of the *Coroners Act 1997* (ACT) ("the Act"), as it appeared that Sharyn's death was "completely or partly attributable to an operation or procedure". As no Medical Certificate of Cause of Death was issued by treating clinicians, the Court's jurisdiction was also enlivened by s 13(1)(e) of the Act.

### Required Findings

6. Having assumed jurisdiction, the relevant coroner, then Coroner Louise Taylor, was required to hold an inquest[1] into the manner and cause of Sharyn's death and make the findings required by section 52 of the Act. That section of the Act relevantly provides:

[1] Under the Act, an "inquest" is synonymous with an investigation.

**52 Coroner's findings**

(1) A coroner holding an inquest must find, if possible—
  (a) the identity of the deceased; and
  (b) when and where the death happened; and
  (c) the manner and cause of death; and
  (d) in the case of the suspected death of a person—that the person has died.

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(4) The coroner, in the coroner's findings—
  (a) must—
    (i) state whether a matter of public safety is found to arise in connection with the inquest or inquiry; and
    (ii) if a matter of public safety is found to arise—comment on the matter.

7. I assumed carriage of the case when I was appointed as what has been styled as the Territory's "dedicated coroner" in March 2022. Sharyn's case was one of a large number of investigations that were then outstanding.

**Obligations I Have under Section 3BA of the Act**

8. Section 3BA(2) of the Act obliges me, in conducting an inquest, to carry out the objects of the Act in a way that recognises that the family and friends of a deceased person have an interest in having all reasonable questions about the circumstances of the person's death answered. During my investigation, apart from matters concerning the paracetamol overdose, Sharyn's family asked a series of questions about other aspects of Sharyn's care, including:
   (a) the circumstances surrounding the timing of Sharyn's surgery;
   (b) the timing of her surgery;
   (c) why it was necessary to transfer Sharyn to TCH for treatment;
   (d) the timing of the turning off of life support; and
   (e) the circumstances surrounding the involvements of the coroner's office.

9. Independent of these reasons, those questions were answered by the Court during the investigation.

**Dispensing with a Hearing**

10. In arriving at the findings a Coroner is required to make, I have a discretion as to whether to hold a hearing (s 34 of the Act). I can dispense with a hearing in the circumstances and according to the processes set out in s 34A of the Act:

**34A Decision not to conduct hearing**

(1) A coroner may decide not to conduct a hearing into a death if, after consideration of information given to a coroner relating to the death of a person, the coroner is satisfied that—
  (a) the manner and cause of death are sufficiently disclosed; and
  (b) a hearing is unnecessary.

(2) A coroner must not dispense with a hearing into a death of a person, if the coroner has reasonable grounds for believing the death is a death in care or death in custody.

(3) A coroner who decides not to conduct a hearing into a death must give the Chief Coroner and a member of the deceased's immediate family written notice of the decision, including the grounds for the decision.

11. If a decision is made by a Coroner not to conduct a hearing, application can be made to the Chief Coroner for a review of that decision: s 64 of the Act.

12. I formed the view that a hearing in this matter was not necessary:
    (a) given the extent of the evidence before me, there is sufficient evidence available to me that allows me to make the findings required by s 52;
    (b) most of that evidence that is relevant is not subject to contest; and
    (c) the only real issues in this case were:
        (i) whether an overdose of paracetamol was indeed administered to Sharyn; and
        (ii) whether that overdose caused or hastened her death.

13. Those matters could be addressed without the need to call witnesses in-person.

14. So far as public safety issues that arose from the inquest were concerned, they too were capable of being addressed by the information received in documentary form during my investigation.

15. I communicated my view to the family and to the legal representatives of TCH (the ACT Government Solicitor) ("ACTGS") when the provisional findings were sent to them [17].

**Evidence**

16. The findings that follow are made based on the following material received:
    (a) Police coronial report, dated 10 October 2021;
    (b) Autopsy Report of Professor Johan Duflou, dated 15 November 2021;
    (c) Medical records received from TCH and Calvary;
    (d) Statements from clinicians provided by the Territory:
        (i) Dr BC, General Surgeon;
        (ii) Dr HE, General Surgeon;
        (iii) Dr TN; and
        (iv) Dr BI;
    (e) Information provided by TCH Pharmacy, per Ms EC;
    (f) Information provided by the ACTGS about the operation of the Digital Health Record;
    (g) Canberra Health Services ("CHS") Procedure Documentation;

(h) NSW Health, South Eastern Sydney, Local Health District, Paracetamol Use Protocol (publicly available); and

(i) Representations and information received from Danielle Kaine on behalf of the family of Sharyn.

## COURSE OF THE INQUEST

17. The process of evidence gathering concluded on 10 May 2024, when Dr BI's statement was received. Provisional findings were sent to the family and the Territory through the ACTGS on 26 July 2024. As those provisional findings contained comments that were adverse to the Territory or its employees, pursuant to s 55 of the Act, notices accompanying the provisional findings were issued to the Territory, inviting the Territory to make a submission to me in relation to the proposed comment or to give me a statement in relation to it.

## AN OUTLINE OF THE CIRCUMSTANCES SURROUNDING SHARYN'S DEATH

### Prior Health History

18. Sharyn was generally healthy until she was diagnosed with pancreatic cancer in 2011. Sharyn underwent a pancreaticoduodenectomy (Whipple procedure). That was an operation to remove the head of the pancreas. The operation also involved removing the first part of the small intestine, called the duodenum, the gallbladder, and the bile duct. In Sharyn's case, some lymph nodes were also removed, and she underwent chemotherapy for a period of time.

### Admission – 2 October 2021 – Surgery and its Aftermath

19. On 2 October 2021, Sharyn was brought to Calvary Hospital by ambulance, arriving at 0813 hours. Her symptoms were lower abdominal pain, a distended and painful abdomen, and an inability to urinate properly. A CT scan was undertaken at 1025 hours, which showed a significant problem with Sharyn's bowel – the large bowel was dilated, and the colon and rectum were seen to be collapsed. The radiologist concluded that there were indicia of a perforation, and obstruction of both the large and possibly also small bowel.

20. By 1225 hours, it had been determined that surgery was required to repair the perforation. At 1430 hours, Sharyn was reviewed by the general surgical registrar, who took a detailed history and observations, and discussed the matter with Dr BC, a general surgeon. It was agreed at that point that Sharyn would require transfer to the Canberra Hospital, and it was noted that she would likely require a stoma and intensive care post-

surgery. The record indicates that the surgeon "may not be able to resect obstructing mass".

21. Late in the evening of 2 October 2021, at 2325 hours, Sharyn was admitted to TCH. Surgery commenced just after 0830 hours on 3 October 2021, and was completed just after 1230 hours. That surgery was conducted by Dr BC, assisted by his registrar Dr HE. Dr TN was the anaesthetist for the operation. A hole in the intestine was found and repaired. One of the joins to the stomach created in the Whipple procedure had eroded and was repaired.

22. The operation appeared to have gone well, although Sharyn was in some pain the following day, and her urine was in an unusual colour. Over the course of the next couple of days, those issues were investigated and apparently settled. Sharyn was mobilising and undergoing physiotherapy reviews.

**Pain Relief – Prescription of Paracetamol**

23. On 2 October 2021, the day prior to surgery, Sharyn was prescribed a dose of "1 g QID"[2] by Dr HE, to be delivered intravenously. Sharyn weighed 39 kgs. This dosage was written on the handwritten medication chart .

24. Dr TN saw this prescription on the handwritten medication chart when he "attended for surgery", and he cancelled it. In his statement given to the Coroner, he indicated that although 1 g of paracetamol QID is a standard adult dose, given Sharyn's size, he considered that to be a "large" dose.

25. He cancelled the 1 g dose and substituted in handwriting a dosage of 600 mg QID, which, in his view, was a more appropriately weight-adjusted dose. The dosage was charted as oral or intravenous, depending on her oral intake.

26. Only one dose of paracetamol at 600 mg was given to Sharyn. It is recorded as having been administered at 1600 hours on the handwritten medication chart (although noted against the 1200 hours column) and recorded by RN QT in a progress note at 1624 hours.

27. At some point in the late afternoon or early evening of 3 October 2024, Sharyn was transferred from the Post Anaesthetic Care Unit to the ward. According to Dr TN, at that time, charted medications were transferred from the handwritten medication sheet into a digital medication record, called the "EMM".

[2] QID means four times per day.

28. By email from ACTGS dated 13 December 2022 the Court was advised that Dr BI, a junior medical officer with ACT Health, was responsible for the transcribing of medications onto the EMM system on 3 October 2021. By statement dated 1 May 2024, Dr BI confirmed that was so. The time at which she completed this task is not clear from her statement. Dr BI noted that she had not seen Dr TN's handwritten change and indicated that she does not "know whether the updated prescription for paracetamol was recorded before or after I transcribed Ms Kaine's medications into EMM". Dr BI also noted that 1 g of paracetamol QID is a standard dose, and there was nothing in the records to indicate that there was any abnormality in her liver function results to indicate that a prescription at that level was causing adverse outcomes. It was her understanding that once the medications were charted, the "General Surgical home team and Acute Pain Service would review the patient's charted medications". Her reading of the medical records suggested that that was done on "at least" 4 and 5 October 2021. Further, she noted that Sharyn's care team had responsibility for reviewing her medications, and it appeared that that was done, given evidence of her other medication being withdrawn.

29. It may be inferred that as Dr BI was working "the afterhours shift" at TCH, and as Dr TN entered the medication onto the chart at the time of surgery, that the change in prescription had in fact been charted before Dr BI was entering the data. However, I do not believe it is necessary to make such a finding, or to resolve what the tension between the accounts given by Dr BI and Dr TN may be as to the timing of his alteration of the charted dose. The apparent uncertainty highlights the shortcomings of the medication charting process generally.

30. As a result of:

    (a) the transcription error; or

    (b) the failure to incorporate Dr TN's changes into the medication chart (if his correction had been made after Dr BI's transcription); and

    (c) the failure to review Sharyn's paracetamol dosing levels;

    1 g paracetamol QID was then administered on 13 occasions over five days. As Sharyn never returned to consuming oral fluids or food, the paracetamol was administered intravenously for the entirety of her treatment.

31. In the afternoon of 7 October 2021, Sharyn suffered a collapse, warranting a Medical Emergency Team (MET) call and an ICU admission.

32. On admission to the ICU, liver failure due to potential paracetamol toxicity was identified. Medications were provided to improve liver function, including an intravenous N-acetyl cysteine (NAC) infusion. Her blood pressure had dropped dramatically. Septic shock was identified as the most likely cause.

33. In the evening of 7 October 2021, Sharyn began dialysis. However, her condition continued to deteriorate, and, in the early hours of 8 October 2021, the treating team concluded that her organ failure was not survivable. The family met with the treating clinicians in the afternoon of 8 October 2021. They were told that Sharyn would die within 24 hours. They left the hospital. Sharyn's condition deteriorated quickly, which, unfortunately, restricted the opportunity for all of the family members to be present when Sharyn passed away. She was declared deceased at 0027 hours on 9 October 2021.

**The Dosage of Paracetamol**

*What dose should have been administered?*

34. As noted, the view of Dr TN was that 1 g paracetamol QID was not an appropriate dose for a woman of Sharyn's weight. Subsequently, Ms EC from the Medication Safety and Quality Team at the TCH pharmacy expressed the same view in correspondence sent to the Court. In her opinion, having regards to various drug consumption guides employed at TCH (MIMS, AHM, and UpToDate), given Sharyn only weighed 39 kgs, the dose of paracetamol should have been:
    (a) according to MIMS and AHM, no more than 585 mg every four hours, with a maximum dose not exceeding 2340 mg; and
    (b) according to UpToDate, no more than 487.5 mg every four hours, or 585mg every six hours.

    According to Ms EC, Sharyn's dose of 1 g four times a day "exceeded both the maximum amount per dose and the maximum per day".

*Why was the high dose given?*

35. Dr HE says in his statement that he references guidance tools such as MIMS, AHM, and UpToDate when prescribing medications, but cannot now recall whether he did so in Sharyn's case. He does not reflect upon whether the dosage was appropriate in hindsight, but he does note that Dr TN altered the prescription on 3 October 2021.

36. Dr BI, similarly, did not consider the appropriateness of the dosage in relation to Sharyn's weight when transcribing the cancelled 1 g QID prescription into the EMM system. It is unclear what Dr BI could see when she was entering information into EMM, but the EMM record, as is produced in hard copy, shows the patient's details at the top of the page, including their weight. One assumes that EMM did not have the capacity to identify the inappropriateness of the dosage and alert the prescriber/data entry officer that further consideration might be required.

37. It does not appear that any medical review of the paracetamol being administered took place between 3 and 7 October 2021.

*The method of administration*

38. Administering a medication via an intravenous route introduces that medication directly and immediately into the bloodstream, and it can take effect more quickly than other methods of administration. It is known that patients on intravenous medications are to be closely monitored, so that complications can quickly be identified.[3] In the case of paracetamol, good practice would dictate a review of that method of administration every 24 hours,[4] with a transfer to oral analgesics as soon as practicable. Sharyn was administered medications via intravenous delivery for the period 3 to 7 October 2021. That was, understandably, because she was nil-by-mouth following significant bowel surgery. However, that did not appear to have prompted a medical review of the medications being provided over that period of time.

39. It appeared that the first liver function testing post-surgery was carried out on 6 October, and further testing, as well as an international normalised ratio (INR) test[5] was done on 7 October (post-MET call and admission to the ICU) – by that stage, the liver had shown significant dysfunction.

## THE AUTOPSY

40. In light of the circumstances of Sharyn's death, Coroner Taylor directed that an internal examination be conducted, with a view to determining the cause of Sharyn's death. Professor Duflou's findings were somewhat equivocal as to the cause of death:

> At autopsy, the deceased showed evidence of extensive surgical and medical treatment. The deceased's body appeared swollen and there was evidence of coagulopathy with multiple areas of excessive bleeding and bruising associated with therapeutic procedures such as insertion of drips and sampling of blood.
>
> On internal examination of the body, surgical repair of the perforated bowel appeared to have been successful, with no indication of continued leakage. No residual or recurrent cancer of the pancreas was identified. The deceased's liver appeared markedly soft and was generally of small size. No specific cause for the liver failure was identified on naked eye examination, but on microscopy the features were those of hepatic necrosis without significant inflammation – a cause for this histologic pattern is paracetamol toxicity.
>
> Other changes in the body were largely considered the result of sepsis, multiple organ failure and markedly deranged metabolic processes. Whether these were the result of the initial bowel perforation, or a consequence of paracetamol toxicity, or both processes, is not able to be determined.

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[3] Jean Kim and Orlando de Jesus, *Medication Routes of Administration* (Stat Pearls Publishing, Webpage, August 2023) < https://www.ncbi.nlm.nih.gov/books/NBK568677/>.
[4] See [45] below regarding NSW Health guidance, and also the Queensland Department of Health Guideline on Safe Paracetamol Use, effective 1 March 2014.
[5] Probably as a marker for sepsis.

41. Professor Duflou formally framed the cause of death as “adhesions-related bowel perforation (surgically treated) and possible paracetamol-induced liver failure”.

## MANNER AND CAUSE OF DEATH

42. Given Professor Duflou’s opinion, it is not open for me to find that the paracetamol overdose was the only operative cause of death. For the purposes of s 52(1) of the Act, I find that:

> Sharyn Kaine died on 9 October 2021 at about 0227 hours at the Canberra Hospital, Garran in the ACT. She died of multi organ failure due to adhesions related bowel perforation (surgically treated) and paracetamol-induced liver failure.

## PUBLIC SAFETY

43. For the purposes of s 52(4) of the Act, I find that a matter of public safety does arise in connection with the inquest conducted into Sharyn’s death.

44. At the time of Sharyn’s death, TCH did not have any specific organisational procedures or guidelines in respect of paracetamol administration. The resources referred to above – MIMS, AHM, and UpToDate – were available to all clinicians involved in the administration of medications, including paracetamol. Their use should have indicated the limits referred to above. In his statement, Dr HE said that he usually uses those online resources, but cannot say that he did so in Sharyn’s case. Dr BI did not independently review the suitability of the dose she charted. Clinical teams subsequently responsible for Sharyn’s care did not detect the error in the dosage. Processes, including warning functionality within EMM, were not sufficiently robust so as to compel a review of the doses being administered.

45. By the time of Sharyn’s death, NSW Health had adopted systems that supplemented the dosing guidance provided by standard resources over and above the standard guides, such as MIMS. NSW have included paracetamol on its list of high-risk medications, due to the demonstrated and on-going risks of paracetamol overdose, particularly in the setting of IV administration. Guidance is given as to dosing levels, with reminders given to adjust dosage where patients are underweight. In respect of IV paracetamol, guidance is given that where paracetamol is administered by IV means, review of the appropriateness of dosage should occur every 24 hours, and it should be replaced by

oral dosage "at the earliest opportunity". If the dosing occurs for longer than 48 hours, liver function tests should be carried out.[6]

46. The question of whether such guidance should be adopted in the ACT was put to CHS by the Court. Whilst no dispute was raised with the content of the guidance available in NSW, the view taken in the response provided by ACTGS[7] was that the introduction of the Digital Health Record (DHR)[8] had rendered that form of written guidance redundant:

> Adding paracetamol to CHS High-Risk Medicine register will have limited effectiveness at reducing the reoccurrence of such incidences. Since this incident MedChart and the National Inpatient Medication Chart have been replaced by DHR. The DHR electronic prescribing system EPIC has dose range checking that includes single dose, daily dose, weight-based dose, and cumulative dose checking. If the dose Sharyn was prescribed on EMM was prescribed on EPIC a user would be advised, they have breached a dose range based on her weight and provided with an easy pathway to correcting their error. There is a graded assertiveness in the presentation of the alerts depending on the severity of the dose. Nurses will similarly be advised if the dose they intend to administer breaches the normal dose range. As an additional safety check errors are visible to pharmacists and overridden dose warnings are presented to pharmacists as part of the verification process. Therefore, EPIC drastically reduces the likelihood of this type of error and presents multiple opportunities for the error to be detected and corrected to avoid harm to the patient.

47. A comparative analysis was undertaken by CHS of the NSW guidance and the functionality of the DHR, which highlighted, amongst other things, the capacity of the DHR to identify potential overdoses before they occurred. For example, weight-based dosing is an in-built feature of DHR for adults and paediatric patients. For an adult patient of 39 kgs to be prescribed a dose that deviates from the programmed rules, an alert with the correct dosing would be displayed. Similarly, if the dosing exceeds a maximum single or daily dose, the prescriber will be alerted. The DHR also provides guidance to those administering paracetamol by IV means.

48. The potential of the DHR to address the incidence of overdosing in a hospital setting is acknowledged. However, its practical efficacy in addressing (specifically) the incidence of paracetamol overdoses in Canberra hospitals was not the subject of evidence. One assumes that the potential for human error remains. For example, if an incorrect patient weight is input into the DHR, then the potential for paracetamol overdosing may remain.

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[6] An example of this guidance was found in the NSW Health Protocol: "*Prescribing Protocol SESLHDPR/717. Protocol for the safe use of Paracetamo*l".
[7] By letter dated 15 April 2024.
[8] The DHR commenced in November 2022. "The Digital Health Record is a record of all interactions between a person and the public health system in the ACT. As such, it is much more detailed. It will contain records of observations, medications, data fed from devices such as infusion pumps and patient monitors, information on who is in which care facility bed, or which operating theatre and much more. It is a complete view of health care activities in the ACT public health system": Online sources ACT Government Digital Strategy.

Sharyn's case also involved an input error, but in a (largely) pre-digital prescription and dosage monitoring environment.

**SECTION 55 NOTICE**

49. As noted in [17], as my findings contain a comment adverse to a person, namely, the Territory and the various clinicians responsible for the paracetamol overdose that occurred in this case, I provided the Territory with a copy of the proposed comment and my provisional findings, with advice consistent with s 55 of the Act as to how they might respond. A response was received through the ACTGS by letter dated 19 August 2024, which relevantly stated:

> CHS would like to take this opportunity to clarify that the previous response provided to the Coroner via the ACT Government Solicitor on 15 April 2024 demonstrated how the Digital Health Record (OHR) would have made a difference in relation to the intravenous (IV) paracetamol administered to Ms Kaine only and does not apply to the oral administration of paracetamol.
>
> CHS acknowledges that there remains a risk that adult patients that weigh less than 50kg may be administered an inappropriate dose of oral paracetamol, as OHR does not currently have the functionality that provides alerts and associated weight adjusted dosage recommendations for oral paracetamol. CHS is currently working with Digital Solutions Division within ACT Health Directorate to provide this functionality for oral paracetamol. The design will look the same as that used for intravenous paracetamol. The timing for the additional functionality to be implemented is currently under review. It is a high priority, and the timing will reflect this.

**RECOMMENDATIONS**

50. In *Inquest into the Death of Patricia (Jill) Croxon* [2023] ACTCD 3, an investigation with a hearing was undertaken by me into another drug overdose death at TCH. The death of Mrs Croxon also pre-dated the introduction of the DHR. In that inquest, evidence that pointed to the potential for the DHR to reduce the incidences of adverse (including non-fatal) medication outcomes was also given. Evidence was also given of the capacity of the TCH pharmacy to monitor trends in that regard.

51. Given the reliance placed on the DHR to improve patient outcomes in this important area, and the remaining shortfall in its functionality outlined by the Territory in its response of 19 August 2024, it would inform public consideration of the efficacy of the DHR process for CHS to produce its data on trends to determine the efficacy of the DHR in this regard.

52. I recommend that CHS publishes statistical material that identifies trends in adverse medication outcomes (including non-fatal outcomes) at TCH since the introduction of the DHR, including adverse outcomes involving paracetamol.

## POSTSCRIPT

53. I acknowledge that Sharyn's passing has caused great distress to her extended family. I offer my sincere condolences. I am grateful for the role that Danielle has played in my investigation.

I certify that the preceding fifty-three [53] numbered paragraphs are a true copy of the reasons for findings of his Honour Coroner Archer.

Associate: Markus Ching

Date: 16 September 2024