IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2018 6153

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 60(2)
Section 67 of the Coroners Act 2008

Findings of:	Sarah Gebert, Coroner
Deceased:	Nicola Deleo
Date of birth:	6 December 1927
Date of death:	9 December 2018
Cause of death:	*Complications following cardiac arrest in the setting of anaesthetic induction during surgery for the treatment of small bowel obstruction due to a right inguinal hernia*
Place of death:	Austin Hospital, 145 Studley Road, Heidelberg, Victoria

Introduction

1. Nicola Deleo, born 6 December 1927, was 91 years of age at the time of his death. He was a widower who lived in Reservoir.

2. Mr Deleo had a medical history that included chronic obstructive pulmonary disease (**COPD**), asthma, prostate cancer surgery (2017) with possible lung metastases, inguinal hernia repair, arthritis and a small bowel obstruction (2011).

3. On 9 December 2018, Mr Deleo died at the Austin Hospital, approximately two weeks after undergoing emergency surgery which was complicated by anaphylaxis[1] to rocuronium, a neuromuscular blocker medication used for anaesthetic induction.

The Coronial Investigation

4. Mr Deleo's death was reported to the coroner as it appeared to fall within the definition of a reportable death in the *Coroners Act 2008* (Vic) (**the Act**). A reportable death includes a death that appears to be unnatural or violent, or to have resulted, directly or indirectly, from an accident or injury.

5. A coroner independently investigates reportable deaths to establish, if possible, identity, medical cause of death and surrounding circumstances. Surrounding circumstances are limited to events which are sufficiently proximate and causally related to the death. The purpose of a coronial investigation is to establish the facts, not to cast blame or determine criminal or civil liability. Coroners make findings on the balance of probabilities, not proof beyond reasonable doubt.[2]

6. As part of the coronial investigation, the Coroners Prevention Unit (**CPU**) was asked to review the anaesthetic assessment prior to induction for surgery at the Austin Hospital on 24 November 2018. The CPU is staffed by healthcare professionals, including practising physicians and nurses, who are not associated with the health professionals and institutions under consideration and are therefore able to give independent advice to coroners.

---

[1] A severe, generalised acute allergic reaction, resulting in the rapid onset of a variety of symptoms including pulmonary bronchoconstriction (airway tightening), urticaria (hives), laryngeal oedema (upper airway swelling), and systemic vasodilation with hypotension (low blood pressure), progressing to circulatory collapse and death.

[2] This is subject to the principles enunciated in *Briginshaw v Briginshaw* (1938) 60 CLR 336. The effect of this and similar authorities is that coroners should not make adverse findings against, or comments about, individuals unless the evidence provides a comfortable level of satisfaction as to those matters taking into account the consequences of such findings or comments.

7. I have based this finding on the advice provided by the CPU, further statements received and information contained in the medical records provided by the Austin Hospital and the Oakhill Clinic, where Mr Deleo had been a patient.

8. After considering all the material obtained during the coronial investigation I determined that I had sufficient information to complete my tasks as coroner and that further investigation was not required.

9. Whilst I have reviewed all the material, I will only refer to that which is directly relevant to my findings or necessary for narrative clarity.

Background

10. On 30 April 2018, Mr Deleo was admitted to the Austin Hospital for a nocardia[3] thigh abscess and osteomyelitis.[4] The abscess was drained and cleaned in theatre under local anaesthetic and sedation only. A general anaesthetic was not used due to Mr Deleo being assessed as a high anaesthetic risk, as he had an infective exacerbation of his COPD at the time.

11. Following his discharge home after an 18 day admission, the abscess continued to be managed over the subsequent months with *Hospital in the Home* and multiple outpatient appointments.

CIRCUMSTANCES IN WHICH THE DEATH OCCURRED

12. On the morning of Saturday 24 November 2018, Mr Deleo presented to the Austin Hospital complaining of abdominal pain and vomiting since the previous day. A Computed Tomography (**CT**) scan revealed a strangulated right inguinal hernia[5] containing a loop of small bowel with associated small bowel obstruction, and so Mr Deleo was prepared for emergency surgery.

13. Following anaesthetic induction for the surgery, Mr Deleo suffered a pulseless electrical activity (**PEA**) cardiac arrest[6] with a systolic blood pressure of 50mmHg despite

[3] A bacterial infection more typical in patients with immunosuppression or chronic pulmonary disease. The most common symptoms of a nocardia infection involve the pulmonary system, but skin or subcutaneous abscesses can occur frequently.
[4] Infection of the bone.
[5] Hernia of the groin involving circulatory compromise of the trapped tissue. This is a surgical emergency.
[6] An organised heart rhythm without sufficient mechanical contraction to produce a palpable pulse or measurable blood pressure. This is a medical emergency, requiring initiation or continuation of cardiopulmonary resuscitation.

administration of metaraminol and ephedrine boluses[7], and required approximately ten minutes of cardiopulmonary resuscitation (**CPR**) and two milligrams of adrenaline for suspected anaphylaxis.

14. After return of spontaneous adequate blood pressure at 12.16pm and when clinically stable once more, the inguinal hernia repair and small bowel resection surgery was undertaken given Mr Deleo's life-threatening pathology. A 10 centimetre segment of necrotic[8] and perforated small bowel had been caught in the hernia. Mr Deleo remained intubated[9] following the surgery and was transferred to the Intensive Care Unit.

15. Mr Deleo was extubated[10] on 25 November 2018, and was initially alert, oriented and obeying commands. His recovery was complicated by rib pain due to fractures sustained from the CPR, ongoing hypotension (low blood pressure) requiring low-dose noradrenaline a moderate pleural effusion, mild renal impairment, mild to moderate delirium, dysphagia, parenteral nutrition feeding and physical deconditioning.

16. Mr Deleo as discharged to the ward on 4 December 2018, and the following day the general surgical team in consultation with the family of Mr Deleo decided that due to his multiple comorbidities and worsening condition, palliative care would be commenced. Mr Deleo subsequently died on 9 December 2018.

IDENTITY

17. On 9 December 2018, Rosa Di Natale identified the body of the Deceased as that of her father, Nicola Deleo, born 6 December 1927.

18. Identity is not in dispute and required no further investigation.

CAUSE OF DEATH

19. On 10 December 2018, Dr Gregory Young, a forensic pathologist practising at the Victorian Institute of Forensic Medicine (**VIFM**), conducted an external examination and provided a written report, dated 2 January 2019. In that report, Dr Young concluded that a reasonable cause of Mr Deleo's death was *'Complications following cardiac arrest in the setting of*

[7] Potent intravenous medication for urgent treatment of low blood pressure.
[8] Death of tissue due to injury and/or impaired blood supply.
[9] Endotracheal intubation is a procedure by which a tube is inserted through the mouth down into the trachea (the large airway from the mouth to the lungs) to enable ventilation.
[10] Removal of the endotracheal (breathing) tube.

anaesthetic induction during surgery for the treatment of small bowel obstruction due to a right inguinal hernia'.

20. No suitable ante mortem specimens were able to be obtained from the admitting hospital, which meant that toxicological analysis was not possible.

21. I accept and adopt Dr Young's opinion as to Mr Deleo's medical cause of death.

CPU REVIEW OF CARE

22. The CPU reviewed Mr Deleo's medical records and obtained statements from Associate Professor Laurence Weinberg, Director of Anaesthesia, Austin Hospital and Dr Kathryn Fitzsimons, Provisional Anaesthetic Fellow regarding the anaesthetic assessment prior to induction for surgery at the Austin Hospital.

23. Dr Fitzsimons completed a pre-surgical anaesthetic assessment, documenting that Mr Deleo's known allergies were suxamethonium (which caused a cardiac arrest 30 years ago) and dexamethasone (which caused confusion). On Mr Deleo's previous Austin Hospital admission earlier that year, the same allergy information had been recorded in a pre-anaesthetic assessment.

24. Dr Fitzsimons subsequently performed Mr Deleo's anaesthetic for the surgery on 24 November 2018, commencing a routine metaraminol[11] infusion while administering boluses of propofol and fentanyl, followed by the rocuronium. Mr Deleo's blood pressure suddenly declined following the administration of the rocuronium. Dr Fitzsimons documented that Mr Deleo received good quality CPR with ventilation maintained throughout. A rash developed on Mr Deleo's chest and an echocardiogram was performed to assess heart function, which did not identify any acute concerns. A series of tryptase level blood tests were sent following the PEA cardiac arrest, which confirmed that Mr Deleo had suffered an anaphylactic reaction.

25. In a meeting with the family of Mr Deleo on the afternoon of 24 November 2018 following the surgery, Dr Fitzsimons explained that due to Mr Deleo's life threatening pathology and in consultation with the surgeons, she had determined that a general anaesthetic was required for the surgery, and so an alternative method such as a spinal anaesthetic/spinal block was not appropriate. Dr Fitzsimons also explained that rocuronium was a different

[11] An intravenous medication used for the treatment and prevention of low blood pressure.

class of muscle relaxant to suxamethonium (a depolarising neuromuscular blocker) to which Mr Deleo was known to be allergic.

Mr Deleo's GP records

26. The CPU noted that in Mr Deleo's general practitioner (**GP**) records from Oakhill Clinic, Reservoir, Mr Deleo was recorded as being allergic to two neuromuscular blocker medications, suxamethonium and vecuronium, both of which had caused arrythmia and cardiac arrest. Vecuronium is in the same class of muscle relaxant as rocuronium, the medication used on 24 November 2018. They are both non-depolarising neuromuscular blockers.

27. This allergy information was updated in the GP medical record by GP registrar Dr Jason Wu on 16 February 2018 after reviewing a 2012 hospital discharge summary that had noted the historical clinical information. On 19 February 2018 (9 months before Mr Deleo's final admission), Dr Wu made a referral for Mr Deleo to the Austin Hospital Oncology Clinic. The referral lists Mr Deleo's medical history and current medications, but does not appear to include the recently updated allergy information. During 2018, Mr Deleo continued to be investigated and medically managed by multiple outpatient services at the Austin and Northern hospitals, in addition to the April-May 2018 inpatient admission. A Northern Health discharge summary from April 2017 (included in the GP records) indicated that there were no recorded allergies for Mr Deleo at that health service.

Reviews

28. Associate Professor Weinberg advised that the decision to proceed with surgery and anaesthetic technique was carefully considered and that Mr Deleo was made aware of the risks and consented to surgery under general anaesthesia. He indicated that the management of the anaphylaxis was in accordance with all the hospital and international guidelines for management of anaphylaxis and there were no management issues relating to delivery of anaesthesia care that he could identify. He noted that the case was reviewed at the Austin Health Divisional Anaesthetic and Surgery Morbidity and Mortality meeting as well as the Surgical Audit Review Committee and no anaesthetic management issues were identified or actions required subsequent to those reviews.

29. The CPU also concluded that the medical, surgical and anaesthetic management provided to Mr Deleo on 24 November 2018 was reasonable.

30. In addition, the CPU noted that it is not possible to determine the significance of Mr Deleo's anaphylaxis-induced cardiac arrest and resuscitation relating to his death approximately two weeks later following palliative care, in the setting of recovery from emergency abdominal surgery, post-surgical complications, advanced age and multiple comorbidities.

31. Nonetheless, the CPU considered that it would have been optimal for Mr Deleo's treating team to have readily available an up to date record of his known allergies at the time of the surgery, in particular the information known by his GP.

32. This issue was identified as a potential prevention opportunity which may prevent future episodes of iatrogenic[12] harm.

33. I accept the advice provided by CPU on these matters and in particular that there were no areas of concern arising from the treatment provided by clinicians.

Dr Jason Wu

34. As Dr Wu had been involved in Mr Deleo's referral to the Austin Hospital, I asked his view on this aspect of the case. He considered that a template referral form which captured information such as a patient's allergy detail was appropriate and relevant to a patient's treatment and care, and there would be no reason to exclude such information. In terms of general practice, Dr Wu advised[13],

...such template referral forms are provided by hospitals or other major providers, and are usually designed and coded to capture all the information that the recipient requires. The templates are stored within the medical practice software, so that when making a referral, a doctor can simply select the referring destination, and the appropriate institution's form is brought up and automatically populated with the required information. The doctor will then usually be presented with the option of selecting additional information or records to attach with the referral. Some information will be automatically pre-selected to be enclosed (for example medical history and medication), and the doctor then has the option to unselect any irrelevant information, or select additional information that is needed.

In the present instance, I have little doubt that this is what has happened. The first page of the referral was clearly Austin Health's preferred referral form at the time, which is why this has been used. The following pages contain a range of health information for

[12] Relating to illness or injury caused by medical examination or treatment.
[13] Statement dated 3 September 2020

Mr Deleo; some of which I suspect was automatically included, the remainder (his recent investigation results), I likely selected, given its relevance to his referral.

My expectation, and what almost always occurs (or should occur) is that the template referral form will capture a patient's allergy information, given its importance to a patient's medical care in any setting.

....

Prior to this incident, my assumption was that allergy information was routinely included in referral templates . Obviously, this case has altered that belief, leading me to check much more closely that such information is contained, rather than relying heavily on Provider's template forms.

RECOMMENDATIONS PURSUANT TO SECTION 72(2) OF THE ACT

35. Accordingly, and as a result of this investigation, I recommend that:

Austin Health consider amending their 'Austin Health Outpatient Referral Form' template to include a specific field for allergies (or an alternate measure) to increase the likelihood of the template capturing all essential information when GP clinic patient summaries are imported.

FINDINGS

36. Having investigated the death, without holding an inquest, I find pursuant to section 67(1) of the Act that Nicola Deleo, born 6 December 1927, died on 9 December 2018 at the Austin Hospital, 145 Studley Road, Heidelberg, Victoria, from *Complications following cardiac arrest in the setting of anaesthetic induction during surgery for the treatment of small bowel obstruction due to a right inguinal hernia'*, in the circumstances described above.

37. I convey my sincere condolences to Mr Deleo's family for their loss.

38. Pursuant to section 73(1A) of the *Coroners Act 2008,* I order that this Finding be published on the internet.

39. I direct that a copy of this finding be provided to the following:

Mrs Rosa Di Natale, senior next of kin

Austin Health

Dr Jason Wu

Safer Care Victoria

Signature:

SARAH GEBERT

CORONER

Date: 29 September 2020