IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2018 004811

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 63(2)
*Section 67 of the **Coroners Act 2008***

Findings of:	Katherine Lorenz, Coroner
Deceased:	CDK[1]
Date of birth:	4 August 1947
Date of death:	23 September 2018
Cause of death:	**1(a) COMPLICATIONS POST AORTIC ENDARTERECTOMY**
Place of death:	Barwon Health, University Hospital, 272-322 Ryrie Street, Geelong, Victoria, 3220

[1] A pseudonym.

HER HONOUR:

THE CORONIAL INVESTIGATION

1. CDK was a 71year-old woman who died after having surgery at Barwon Health for an elective open aortic endarterectomy[2] for significant bilateral leg claudication.[3]

2. CDK had a past medical history of significant vascular disease, with a previous left carotid endarterectomy. Her other comorbidities included, epilepsy, chronic obstructive airways disease, hypothyroidism, dyslipidemia, osteoporosis and gastro-esophageal reflux disease. [4]

3. CDK's death constituted a '*reportable death*' under the *Coroners Act 2008* (Vic) (**the Act**), as the death occurred in Victoria, and appeared to be unnatural and unexpected.[5]

4. The role of a coroner is to independently investigate 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.

5. Under the Act, coroners also have the important functions of helping to prevent deaths and promoting public health and safety and the administration of justice through the making of comments or recommendations in appropriate cases about any matter connected to the death under investigation.

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

7. I have based this finding on these materials. In the coronial jurisdiction facts must be established on the balance of probabilities.[6] 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.

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[2] Surgical procedure to remove atheromatous plaque from the abdominal aorta to improve blood low.
[3] Exertional limb pain caused by inadequate arterial blood flow.
[4] E-Medical Deposition.
[5] *Coroners Act 2008* s 4.
[6] 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.

8. In considering the issues associated with this finding, I have been mindful of CDK's basic human rights to dignity and wellbeing, as espoused in the *Charter of Human Rights and Responsibilities Act 2006*, in particular sections 8, 9 and 10.

MATTERS IN RELATION TO WHICH A FINDING MUST, IF POSSIBLE, BE MADE

Circumstances in which the death occurred

9. On 20 September 2018, CDK was admitted to Barwon Health for the procedure. The more common procedure of stenting was not technically possible due to the location of the stenosis. The surgeon, Mr David North (**Mr North**) had noted in earlier correspondence to CDK's GP that the surgery carried significant risk.

10. The surgery was completed and dressings applied by 5.23 pm and following this, CDK was extubated and transferred to recovery. The operative finding included heavily calcified plaque in the infra renal abdominal aorta extending to the aortic bifurcation.

11. In recovery, CDK was reviewed by Mr North and the vascular registrar, Dr Maneka Britto (**Dr Britto**). Dr Britto recalls that CDK's lower limb circulation appeared adequate. Her limbs were noted to be pale but warm. CDK was agitated and required anaesthetic intervention.

12. At approximately 8.30 pm, CDK was transferred from recovery to the intensive care unit (**ICU**). At the ICU, staff expressed concerns that her legs appeared "dusky and pedal", and posterior tibial and popliteal pulses could not be felt. At approximately 9.00 pm, the ICU resident assessed CDK's lower limbs and noted that they were dusky and mottled in appearance, the capillary refill in the foot was undetectable. The ICU registrar (**Dr Ranjan**) was unable to detect dorsalis pedis, posterior tibial, popliteal, or femoral pulses using Doppler ultrasound.[7] [8]

13. After discussing CDK's condition with the senior ICU registrar, the ICU registrar Dr Ranjan tried to call the on-call vascular registrar, who did not answer the telephone. Dr Ranjan then telephoned the vascular consultant on-call about CDK 's condition. The vascular consultant asked Dr Ranjan to call the operating consultant, Mr North.

14. Following this, Dr Ranjan telephoned Mr North. The medical records state:

> *"-above situation advised*
> *-stated that pulses were never good in the lower limbs and maybe there was posterior tibial on right?*

[7] An ultrasound test used to estimate the blood flow through blood vessels by bouncing high-frequency sound waves.
[8] See retrospective notes in the ICU progress notes and discharge summary at p 98 of the Barwon Health medical record.

-not for surgery at this stage and not for thrombolysis
-for therapeutic clexane and vascular review in AM
-ICU team accepting of this information."[9]

15. Following the telephone call, the ICU registrars continued to monitor CDK and administer therapeutic clexane as recommended by Mr North during the telephone call.

16. The following morning, on 21 September 2018 at approximately 8.00 am, Dr Britto reviewed CDK during the vascular unit ward round. The medical records noted that CDK's legs were "cool to touch" with "blueish discolouration". No lower limb pulses were palpable. Dr Britto immediately informed Mr North who instructed that CDK should be placed on his afternoon elective surgery list for bilateral aortofemoral bypass and femoral endarterectomy surgery.

17. The surgery commenced at approximately 2:00 pm on 21 September 2018. CDK's post-operative course was complicated by reperfusion syndrome, rhabdomyolysis, acute renal failure despite haemofiltration and bilateral lower limb compartment syndrome. Her condition was deemed not salvageable, and she was palliated.

18. CDK died on 23 September 2018.

Identity of the deceased

19. On 23 September 2018, KD[10] visually identified CDK, born 4 August 1947.

20. Identity was not in dispute and required no further investigation.

Medical cause of death

21. Forensic Pathologist Dr Paul Bedford from the Victorian Institute of Forensic Medicine **(VIFM)**, conducted an examination of CDK and provided a written report of his findings.

22. Dr Bedford commented that the cause of death related to her widespread vascular disease and complications including rhabdomyolysis and acute kidney injury after her endarterectomy procedures. Dr Bedford concluded that that a reasonable cause of death was:

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[9] Barwon Health Medical Records page 98
[10] A pseudonym.

23. I accept Dr Bedford's conclusions as to cause of death.

INVESTIGATION

24. Barwon Health reported CDK's death to the Coroner and the accompanying E-Medical Deposition submitted by Barwon Health to the Coroner's Court referred to a "significant delay between original surgery and return to theatre for aorto-femoral bypass resulting in a prolonged period of ischaemia."

25. Subsequently, the Coroners Court requested a statement from Mr North, who provided a statement dated 22 July 2019, in which he stated that his registrar contacted him by phone after seeing CDK in the ICU after receiving a call from the ICU registrar and that she told him that CDK's lower limb circulation was adequate.

26. Following receipt of Mr North's statement, the Coroner's Court sought a statement from Barwon Health, which responded with a copy of an 'in-depth case review' commenced in mid January 2019, conducted by the Head of Patient Safety and the General Counsel.

27. The Coroners Court also sought a statement from Chief Medical Officer, Dr John Reeves who confirmed that he had undertaken enquiries and confirmed that there was no indication that the vascular registrar, Dr Britto attended the ICU that evening or made any phone call to Mr North and that and he had spoken to the relevant ICU staff who confirmed that no-one from the vascular unit attended the ICU that evening or overnight.

28. In her statement to the court dated 18 June 2020, Dr Britto confirmed that she:

    a. reviewed the patient with Mr North soon after the procedure in the recovery ward but did not review the patient in ICU;

    b. was not on call that night and was not contacted by ICU regarding CDK 's deterioration;

    c. arrived at hospital at the following morning unaware of the events that had taken place overnight and was "shocked" to find CDK had developed bilateral acute lower limb ischaemia;

    d. recalls being told by the ICU team that multiple attempts had been made to contact the vascular registrar on call, to no avail; and

    e. contacted Mr North immediately after reviewing the patient after 0800 hours and was advised to book the patient for a second procedure that afternoon on his elective list.

29. Dr Britto's account was consistent with the medical record, Dr Reeves' statement and the Barwon Health in-depth case review.

30. Following receipt of Dr Britto's statement, the Coroners Court sought a further statement from Mr North.

31. In a supplementary statement to the Coroners Court dated 12 January 2021, Mr North acknowledged that:

    a. Dr Britto did not contact him by phone after seeing CDK in the ICU but maintained that "one of my vascular surgery junior doctors, clearly not Dr Britto" called him at or about the same time as he received the call from the ICR registrar.

    b. It was his decision to perform further surgery on the morning of 21 September 2018 and he determined the timing of the surgery in the theatre list that afternoon.

32. Following a review of the evidence, including the statements and the medical records provided by Barwon Health, I formed a tentative view that there had been no in-person review of CDK by the vascular surgery team on the evening of 20 September 2018, and that the only call made to Mr North that evening was the call made by the ICU registrar notifying him of CDK 's deterioration.

33. I then directed that an independent expert opinion about CDK 's management be sought from Mr Mark Westcott, a vascular surgeon about whether an urgent overnight physical review of CDK should have been undertaken by the vascular team following the call by the ICU registrar and whether the timing of CDK 's surgery on the afternoon list was appropriate.

34. In his report to the Court, Mr Westcott made the following comments, including, relevantly:

    a. In-person review by a member of the vascular surgical team (registrar or consultant) was warranted to confirm a probable diagnosis and determine the acuity of any surgical complication.

    b. Vascular surgical assessment would likely have raised significant concern about the perfusion and subsequent viability of the lower limbs. It is likely this would have resulted in either an expeditious return to the operating room or an urgent CT angiogram followed by return to the operating room, to minimise the risk of the development of irreversible lower limb ischaemia.

c. On the assumption that the described clinical observations were communicated by the ICU registrar to Mr North, routine practice would hold that in-person review of CDK was warranted (by Mr North or the vascular registrar).

d. Failure to perform timely in-person review of a patient with possible lower limb ischaemia could lead to a delay to definitive treatment and the subsequent development of irreversible ischaemia.

e. A period of greater than 4 - 6 hours of severe lower limb ischaemia is likely to lead to irreversible muscle and nerve damage.

f. The medical record indicates that Mr North was informed that CDK had no palpable pulses in the lower limbs, the limbs were pale/mottled, capillary refill time was >6 seconds and there was no Doppler signal. The combination of these findings – as against any single abnormal finding – pointed strongly to a diagnosis of lower limb ischaemia.

g. Commencement of anticoagulation therapy was appropriate, but not sufficient to address the clinical situation.

h. Early reoperation on the night of 20 September 2018 or early hours of 21 September 2018 would have reduced the likelihood of developing significant reperfusion injury and compartment syndrome. The avoidance of substantial ischaemic damage to the muscles of the lower limbs would have reduced the metabolic disturbance associated with reperfusion.

i. The delay in assessment and reoperation reduced CDK ‘s chances for survival.

35. Mr Westcott’s report was provided to Barwon Health and Mr North inviting them to comment on the comments made by Mr Westcott in his report and my tentative view of the facts upon which his opinion was sought, prior to making any findings in this matter.

36. In a letter to the Coroner’s Court dated 16 November 2021, Mr North provided a further supplementary statement. In it, he acknowledged that he “may have been mistaken” about receiving a call from a vascular registrar during the evening of 20 September 2018. Mr North further acknowledged that it “would have been preferable” to have taken CDK to surgery earlier than he did. Mr North maintained that he “formed the view that given her longstanding issues with chronic and severe lower limb arterial insufficiency, she would have developed collateral

arteries enabling her to tolerate her post-operative lower limb arterial ischaemia for a longer period of time than otherwise have been the case."

37. In its response to the court, dated 29 November 2021, Barwon Health:

    a. Accepted that the evidence supported a finding that there was no in-person review of CDK by the vascular surgery team on the evening of 20 September 2018 and that it would have been appropriate for such a review to have taken place;

    b. Accepted that it would have been appropriate for CDK to have been placed on the emergency surgical list on the morning of 21 September 2018

    c. Noted the opinion of Mr Westcott that the delay in assessment and re-operation reduced CDK's chances of survival. Whilst Barwon Health concurred that CDK's chances of survival may have been reduced, it submitted that the evidence does not support a finding that an in-person review by the vascular surgery team on the evening of 20 September 2018 followed by re-operation would have prevented her death.

FINDINGS AND CONCLUSION

38. The standard of proof for coronial findings of fact is the civil standard of proof on the balance of probabilities, with the Briginshaw gloss or explications. Adverse findings or comments against individuals in their professional capacity, or against institutions, are not to be made with the benefit of hindsight but only on the basis of what was known or should reasonably have been known or done at the time, and only where the evidence supports a finding that they departed materially from the standards of their profession and, in so doing, caused or contributed to the death under investigation.

39. Pursuant to section 67(1) of the *Coroners Act 2008*, I make the following findings;

    (a) the identity of the deceased was CDK, born 4 August 1947;

    (b) the death occurred on 23 September 2018 at Barwon University Hospital, 272-322 Ryrie Street, Geelong, Victoria, from complications post aortic endarterectomy; and

    (c) the death occurred in the circumstances described above.

40. CDK should have been reviewed by the vascular surgery team on the evening of 20 September 2018 after the ICU registrar notified Mr North of her deterioration and symptoms.

41. Mr North should have placed CDK on the emergency surgical list on the morning of 21 September 2018 after the surgical ward round at 8 am.

42. The delay in reassessment and re-operation reduced CDK's chances of survival but I am unable to say whether an in-person review during the evening of the 20 September 2018 and a re-operation the following morning would have prevented her death.

43. I convey my sincere condolences to CDK's family for their loss.

Pursuant to s 73 of the Act, I direct that a copy of this finding be published on the Coroners Court of Victoria website.

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

KD, Senior Next of Kin

Senior Constable Joshua West, Coroner's Investigator

Barwon Health, c/- K&L Gates

Mr David North, Vascular Surgeon

Signature:

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KATHERINE LORENZ

CORONER

Date: 7 January 2022

NOTE: Under section 83 of the ***Coroners Act 2008*** ('the Act'), a person with sufficient interest in an investigation may appeal to the Trial Division of the Supreme Court against the findings of a coroner in respect of a death after an investigation. An appeal must be made within 6 months after the day on which the determination is made, unless the Supreme Court grants leave to appeal out of time under section 86 of the