IN THE CORONERS COURT

OF VICTORIA

AT MELBOURNE

Court Reference: COR 2016 4782

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 60(2)

*Section 67 of the **Coroners Act 2008***

I, AUDREY JAMIESON, Coroner having investigated the death of GIUSEPPE COSTA

without holding an inquest:

find that the identity of the deceased was GIUSEPPE COSTA

born 12 April 1941

and the death occurred on 8 October 2016

at Western Hospital Footscray 160 Gordon Street, Footscray, Victoria 3011

from:

1 (a) RIGHT HAEMOTHORAX COMPLICATING INTERCOSTAL CATHETER INSERTION FOR THE TREATMENT OF RIGHT PLEURAL EFFUSION

Pursuant to section 67(1) of the **Coroners Act 2008**, I make findings with respect to **the following circumstances**:

1. Giuseppe Costa was 75 years of age and resided in Sunshine West with his wife Francesca Costa at the time of his death.

2. Mr Costa had an extensive medical history of heart disease which included: ischaemic heart disease; coronary artery bypass graft surgery; severe heart failure (biventricular systolic dysfunction, mitral regurgitation and pulmonary hypertension).

3. Mr Costa's medical history also included: type 2 diabetes; stroke which resulted in ongoing left sided weakness and focal seizures; high blood pressure; cirrhosis; chronic obstructive airways disease; and gastro-oesophageal reflux.

4. On 6 October 2016, Mrs Costa contacted emergency services and requested an ambulance for her husband. Mr Costa had seemed unwell during the previous few days and did not seem to be recovering.

5. Ambulance paramedics attended and Mr Costa was admitted to Western Hospital Footscray ('**the Hospital**') for investigation of lethargy. Three potential causes for the lethargy were identified and management commenced:

    a. Sinus bradycardia

        i. Mr Costa had recently started the beta-blocker nebivolol[1] for his heart failure so this medication was ceased;

    b. Hypothyroidism

        i. Thyroid function tests were requested; and

    c. A large right pleural effusion

        i. Mr Costa had had an exudate effusion drained in December 2015 for which no underlying cause was found, although a chest X-ray was conducted.

6. At approximately 4.45pm, Radiologist Dr Wei Lim noted that Mr Costa's chest X-ray revealed '*A large right pleural effusion with compressive atelectasis of the right middle and lower lobes.*' There is no indication of when the X-ray results were reported nor whether the results were conveyed to the appropriate clinicians.

---

[1] Nebivolol is a β_1 receptor blocker with nitric oxide-potentiating vasodilatory effect used in treatment of hypertension.

7. At approximately 6.00pm, Medical Registrar Dr De Silva wrote an Acute Resuscitation Plan (**ARP**) '*For Ward Management.*' The ARP specified that cardiopulmonary resuscitation (**CPR**) was not appropriate, due to '*Multiple comorbidities, incl. severe biventricular failure.*' There was no indication as to whether the Medical Emergency Team (**MET**) call criteria were altered. However, Dr De Silva recorded a modification to the heart rate parameter on Mr Costa's observation chart.

8. On 7 October 2016, Mr Costa was due to start taking the anticoagulant medication enoxaparin 1.[2] However, this was withheld and 75mg of the antiplatelet medication clopidogrel 2 was administered to him instead.[3]

9. At approximately 11.20am, Respiratory Registrar Dr Way reviewed Mr Costa and proceeded to drain the effusion with an intercostal catheter (**ICC**). Dr Way sent 40ml of the fluid drained from the effusion for testing. Microbiology and cytology results confirmed that the fluid was yellow, of low viscosity, with few red blood cells and no evidence of infection or malignancy.

10. Dr Way created a treatment plan to continue draining Mr Costa's right pleural effusion until the flow of fluid ceased. Hospital staff were to inform Dr Way when drainage did cease so he could remove the ICC after a further three hour period.

11. At approximately 5.30pm, Dr Way documented in Mr Costa's medical record that the ICC was still in place as Mr Costa was scheduled for a computed tomography (**CT**) scan. Dr Way noted that he would remove the ICC after the CT scan, provided that drainage had ceased.

12. At approximately 5.50pm, Dr P Lau reported that Mr Costa's CT scan revealed a large right pleural effusion with no evidence of pulmonary mass. Dr Lau noted that the right pleural catheter was in situ and suggested a repeat CT scan subsequent to drainage of the effusion. There is no documentation or indication that these results were conferred to clinicians.

---

[2] Enoxaparin is a type of low molecular weight heparin commonly used for prophylaxis of deep venous thrombosis which may increase the risk of bleeding.

[3] Clopidogrel is an anti-platelet agent used for a number of reasons, in this case probably as stroke prevention. The medication increases the risk of bleeding.

13. At approximately 7.30pm, Registered Nurse Kaur documented assisting the General Medicine Covering Hospital Medical Officer to remove Mr Costa's ICC. At approximately 7.45pm, the associate nurse unit manager of Ward 2D also noted that Mr Costa's ICC had been removed.

14. At approximately 11.35pm, Mr Costa had another chest X-ray which revealed that the large right pleural effusion remained unchanged.[4] Dr Lim reported that the results also identified that there was no pneumothorax[5] or free subphrenic gas. There was no documentation in Mr Costa's medical record which established that these results were provided to clinicians.

15. At around midnight, General Medicine Night Intern Dr Kew reviewed a chest X-ray and reported finding no evidence of a pneumothorax. Dr Kew did not document anything in relation to a pleural effusion in Mr Costa's medical record.

16. Between 12.00am and 3.55am on 8 October 2018, Mr Costa's medical observations were unremarkable. At 4.00am, his record notes a drop in oxygen saturation. At 4.30am, Mr Costa's oxygen saturations were documented as normal, however his heart rate had risen substantially from 60 to 70 beats per minute (**bpm**) to over 100 bpm[6] and his blood pressure was recorded at 75/50.[7]

17. During the morning of 8 October 2016, Mr Costa was found unresponsive in his bed and a code blue was activated. The Respond Blue Record documents the call time for the Code Blue as 6.45am. However, elsewhere in Mr Costa's medical record indicates a number of different call times for the Code Blue, including 7.00am, 7.50am and 7.55am.

18. At approximately 7.55am, Medical Registrar Dr Pillai documented his discussion with consultants Dr Nand and Dr Marasovic. Dr Pillai noted that they decided it was appropriate to provide Mr Costa with palliative care.

---

[4] As Dr Lim also reported on the results of Mr Costa's first chest X-ray during this admission, I believe '*unchanged*' refers to a comparison to the results of the X-ray on 6 October and the X-ray on 7 October 2018.

[5] A pneumothorax is a 'collapsed lung' where air enters the chest cavity which places external pressure on the lung, causing it to collapse.

[6] The urgent clinical review minima for heart rate is 110bpm.

[7] This level of blood pressure was within MET call criteria for Mr Costa.

19. Dr Pillai recorded that the chest X-ray conducted at 11.35pm had revealed fluid levels of the right pleural effusion were unchanged from first examination and that the X-ray imaging depicted a '*complete white out*' of the right lung.

20. At approximately 7.45am, hospital staff conducted a blood test which revealed evidence of internal bleeding[8] and the development of a mild coagulopathy[9] which is indicative of an increased risk of bleeding.

21. At approximately 8.00am, Mr Costa had a portable chest X-ray and Dr Lim reported an *'(i)nterval increase in the size of the large right pleural effusion and compression of the right lung.'* Once again, there was no indication as to when the X-ray was reported nor whether the result was conveyed to the clinicians.

22. Hospital staff discussed Mr Costa's condition with his family a number of times throughout the day.

23. At 6.40pm on 8 October 2016, Mr Costa was declared deceased.

REPORTABLE DEATHS

24. A person's death is reportable to the Coroner if it is, or may be, causally related to a medical procedure and a registered medical practitioner would not reasonably expect the death prior to the procedure.[10]

25. On 8 October 2018, Western Hospital Footscray reported Mr Costa's death to the Coroners Court of Victoria by an *E-Medical Deposition Form*. Treating staff believed the cause of Mr Costa's death was unexpected and may have been related to the insertion of his intercostal catheter. A possible cause of death was listed as '*complication of ICC insertion, severe biventricular failure, malignancy, infection*'.

26. The Hospital also notified Victoria Police of Mr Costa's death. Police officers attended and completed a *Victoria Police Report of Death for the Coroner* (**Form 83**).

---

[8] Mr Costa's haemoglobin levels fell from 12.4g/dL at the time of his admission to 9.5 g/dL during his cardiac arrest on 8 October 2016.

[9] This is a disorder which effects the way blood is able to clot in an individual.

[10] *Coroners Act 2008* (Vic) s 4(2)(b)(ii).

27. Mr Costa's body was transported to the Victorian Institute of Forensic Medicine (**VIFM**) after the Coroners Court received the notifications of his death.

INVESTIGATIONS

Forensic pathology investigation

28. Dr Gregory Young, Forensic Pathologist at the Victorian Institute of Forensic Medicine (**VFIM**) performed an autopsy upon the body of Giuseppe Costa, reviewed a CT scan, reviewed the Medical E-Deposition as well as Western Health medical records, and referred to the Form 83.

29. Toxicological analysis of Mr Costa's post mortem blood identified the presence of drugs associated with therapeutic measures in a hospital setting.

30. In his report, Dr Young commented that the ICC insertion site passed in the vicinity of the intercostal artery under the right ninth rib, and was associated with a soft tissue haemorrhage in that area of Mr Costa's body.

31. Dr Young formulated the medical cause of Mr Costa's death as right haemothorax complicating intercostal catheter insertion for the treatment of right pleural effusion.

Coroners Prevention Unit Investigation

32. Upon reviewing Mr Costa's medical records, I held a meeting with the Health and Medical Investigations Team (**HMIT**) of the Coroners Prevention Unit (**CPU**) and requested that the HMIT review the circumstances of his death.

33. I specifically requested that the CPU consider the Hospital's use of Mr Costa's Observation and Response Chart (**the Chart**) and their management of his right pleural effusion drainage.

Observation and Response Chart

34. The Chart template used by the Hospital appears to be compliant with the National Standards on Safety and Quality in Health Service (**the Standards**) of the Australian Commission on Safety and Quality in Health Care (**the Commission**).

35. The Commission's Standards include a recommendation that all six vital signs are recorded on the Chart. The Commission also recommends that a '*Between the Flags*' system is used when recording vital signs on the Chart. This system uses colour-coded bars to indicate that a particular response is required. For example, an urgent clinical review may be required for lesser vital sign abnormalities or a MET Call may be required for more significant abnormalities.

36. At 4.00 am on 8 October 2016, one vital sign was recorded and four vital signs were recorded at 4.30am. Additionally, Mr Costa's recorded vital signs required a MET Call according to the Standards; a MET call was not activated at any point during Mr Costa's treatment at the Hospital. '*Not for MET Calls*' was written twice on the explanatory page of his Chart however there is no indication of who wrote this nor when it was written.

37. At the CPU's request, Dr Marasovic of Western Hospital Footscray provided a statement to the Court regarding Mr Costa's medical management. In his statement, Dr Marasovic considered the Hospital's *Recognition and Management of Deteriorating Adult Patient Policy*. He wrote that he was unable to locate policy regarding the frequency with which observations ought to be documented after a '*transient deterioration*'.

38. Dr Marasovic spoke to the nurse who documented Mr Costa's vital signs at 4.30am. He said that the nurse indicated that these Chart observations were actually documented at 6.42am and led to the Code Blue called at 6.45am.

39. Mr Costa's ARP specified that CPR was an inappropriate course of treatment, given his pre-existing heart conditions. There is no indication that this management plan was altered after admission and therefore it is unclear why the Code Blue, which prompts CPR, was activated.

Pleural Drainage Management

40. On 7 October 2016, Dr Way sent 40ml of fluid drained from Mr Costa's pleural effusion for testing. There is no documented information about the quantity of fluid drained subsequently. The daily balance fluid chart documents Mr Costa's urinary output, however there is no information recorded in the drainage columns. In the Medical E-Deposition, Dr Annie Hung reported approximately two litres of fluid was drained from

Mr Costa's effusion. It is not apparent where there information may be found in Mr Costa's medical records.

41. The ARP indicated that Mr Costa's ICC was to be removed once the flow of fluid from the effusion had ceased. At approximately 5.50pm on 7 October 2016, CT scan imaging identified the presence of Mr Costa's ICC and the persistence of a large pleural effusion. Nonetheless, Mr Costa's ICC was removed at 7.30pm that evening. It is unclear whether the staff removing the ICC were aware of the persistence of the effusion.

42. Late in the evening of 7 October 2018, an intern and Medical Registrar reviewed Mr Costa's chest X-ray image from 11.35pm. They did not document any comments regarding the Radiologist's report of a large right pleural effusion.

43. In relation to the management of Mr Costa's Pleural effusion, the HMIT have informed me that the medical record indicates the following possible scenarios:[11]

    a. Subsequent to 11.20am on 7 October 2017, no fluid drained from the ICC which satisfied the "no further drainage" criteria;

    b. Medical staff were unaware of or unable to interpret the CT scan image depicting persistent effusion; or

    c. Medical staff did not appreciate the persistence of a large effusion which needed to be drained as depicted by Mr Costa's chest X-ray image.[12]

44. In the Medical Examiners Report, Dr Young commented that Mr Costa's ICC may have damaged an intercostal artery. The HMIT inform me that this represents a known but uncommon complication of ICC insertion.

45. The CPU informed me that the deterioration of Mr Costa's haemoglobin levels after 2.29am on 7 October 2016 suggested clinically detectable bleeding.

---

[11] These are likely scenarios based on the HMIT's extensive medical knowledge but do not represent an exhaustive list of scenarios.

[12] The chest X-ray conducted at 11.35pm on 7 October 2016.

PURPOSE OF THE CORONIAL INVESTIGATION

46. The Coroners Court of Victoria is an inquisitorial jurisdiction. The purpose of a Coronial investigation is to independently investigate a reportable death to ascertain, if possible, the identity of the deceased person, the cause of death and the circumstances in which death occurred. The cause of death refers to the medical cause of death, incorporating where possible the mode or mechanism of death. For coronial purposes, the circumstances in which death occurred refers to the context or background and surrounding circumstances, but is confined to those circumstances sufficiently proximate and causally relevant to the death and not merely all circumstances which might form part of a narrative culminating in death.

47. The broader purpose of Coronial investigations is to contribute to the reduction of the number of preventable deaths through the findings of the investigation and the making of recommendations by Coroners, generally referred to as the 'prevention' role.

48. Coroners are empowered to report to the Attorney-General on a death; to comment on any matter connected with the death they have investigated, including matters of public health or safety and the administration of justice; and to make recommendations to any Minister or public statutory authority on any matter connected with the death, including public health or safety or the administration of justice. These are effectively the vehicles by which the prevention role may be advanced.

49. It is not the Coroner's role to determine criminal or civil liability arising from the death under investigation. Nor is it the Coroner's role to determine disciplinary matters.

50. This Finding draws on the totality of the material; the product of the Coronial investigation of Mr Costa's death. That is, the Court records maintained during the Coronial investigation, the Coronial brief including medical records and statements sought by the CPU.

COMMENTS

Pursuant to section 67(3) of the **Coroners Act 2008**, I make the following comments connected with the death:

1. The HMIT hypothesised that Mr Costa's ICC may have tamponaded[13] bleeding from the intercostal artery whilst it was in situ. Once it was removed, bleeding from the artery would not have been controlled and this may have led to Mr Costa's subsequent health deterioration.[14]

2. At 4.00am and 4.30am on 8 October 2016, Mr Costa's deteriorating vital signs would usually require a MET Call according to the Standards. The phrase '*Not for MET Calls*' was written twice on the facing, explanatory page of Mr Costa's Observation and Response Chart. However, there is no indication as to who wrote this nor when it was written. It is unclear whether the Hospital staff failed to conduct a MET Call or if it was merely the inadequate documentation that makes it appear that way.

3. The HMIT informed me that the Hospital's *Recognition and Management of Deteriorating Adult Patient Policy* seems to rely on a trigger by maxima or minima vital sign parameters regardless of duration.

4. The review indicated that Mr Costa's medical management at Western Hospital Footscray fell short of a reasonable standard in two principle areas: firstly, in relation to management of the drainage of his pleural effusion; and secondly, in relation to documentation by Hospital staff on his Observation and Response Chart.

5. The CPU have informed me that, according to the Standards, all six vital signs ought to be recorded and abnormal vital signs must prompt the response indicated on the Chart. Such a response must also adhere to hospital policy.

6. If any modifications are made to a patient's normal vital sign parameters and criteria this must be clearly documented. One must document their identity, the date and the time of the modification.

---

[13] Closed or blocked.

[14] Mr Costa's deterioration in health on 8 October 2018 would include his vital sign deterioration, increase in the size of his Pleural effusion, drop in haemoglobin and cardiac arrest.

7. All clinical staff should have a high degree of familiarity with and compliance to hospital "deteriorating patient" policies. Hospital clinical staff should also be familiar with the proper use of Observation and Response Charts.

8. Clarity and accuracy of documentation is paramount in the Hospital setting. It is clear that documentation could be substantially improved when reviewing Mr Costa's medical records from his admission to Western Hospital Footscray.

9. In relation to the management of Mr Costa's pleural drainage, the Hospital evidently did not clearly document his fluid output on an appropriate chart. Additionally, significant radiological findings appear not to have been reported to the appropriate clinicians. Alternatively, timely communication of the radiological findings occurred without appropriate documentation and a documented response.

10. The HMIT informed me that there might be educational opportunities to improve medical staff interpretation of chest X-ray imaging.

11. On 27 September 2017, my Legal Officer sent a letter to Legal Counsel for Western Health indicating the general issues outlined above:

    a. *Her Honour has formed the view that the removal of Mr Costa's intercostal catheter was flawed and not based on contemporaneous information; a pleural effusion was still present albeit unexplained.*

    b. *Her Honour has formed the view that Mr Costa's Observation and Response Chart was not managed in line with the Australian Commission on Safety and Quality in Health Care's National Standards.*

12. I informed Western Health that I intended to finalise the Finding into the death of Giuseppe Costa in Chambers. However, I advised that if they wished to make any submissions regarding Western Health Footscray's care and treatment of Mr Costa, leave may be granted for Western Health to appear at a Mention Hearing. I requested that Legal Counsel advise me of the decision by no later than Wednesday 11 October 2017.

13. On 4 October 2017, Western Health requested and were granted leave to make succinct written submissions. I informed Western Health that any restorative or preventative

measures undertaken would be appropriate to include in their submissions. I directed that either written submissions or a request for a Mention Hearing must be made by 19 October 2017.

14. On 17 October 2017, Western Health legal representatives requested further clarification of when written submissions would be due. I provided a formal direction that Western Health indicate their intention to provide written submissions or attend a Mention Hearing by close of business 19 October 2017. The due date for written submissions or the Mention Hearing listing would be scheduled for 23 October 2017.

15. At approximately midday on 25 October 2017, Western Health Legal Counsel contacted the Court by telephone to confirm that they would not be forwarding submissions of any kind.

16. I proceeded to finalise the Finding as Western Health had ample opportunity to provide submissions and to raise any restorative or preventative measures taken in response to Mr Costa's death.

RECOMMENDATIONS

Pursuant to section 72(2) of the **Coroners Act 2008**, I make the following recommendations:

1. With a view to promoting public health and safety and preventing like deaths, **I recommend** that the Western Hospital Footscray ensure their use of Observation and Response Charts is compliant with the Australian Commission on Safety and Quality in Health Care's National Standards.

2. With a view to promoting public health and safety and preventing like deaths, **I recommend** that Western Hospital Footscray peruse this Finding in order to improve their overall management of drainage of pleural effusions including, but not limited to, ensuring adequate documentation of the management of drainage of pleural effusions.

3. With a view to promoting public health and safety and preventing like deaths, **I recommend** that Western Hospital Footscray explore opportunities to educate all clinical staff to improve their interpretation of chest X-ray results.

FINDINGS

The investigation into Mr Costa's death has identified a number of opportunities for prevention. Specifically, Western Hospital Footscray did not provide a reasonable level of care in relation to management of Mr Costa's pleural drainage. Additionally, documentation on Mr Costa's medical record, especially his Observation and Response Chart, was substandard.

Western Health were provided ample opportunity to respond to the issues identified by the Health and Medical Investigations Team of the Coroners Prevention Unit and elected not to make submissions. Western Health did not raise any restorative or preventative measures undertaken in the wake of Mr Costa's death.

I accept and adopt the medical cause of death formulated by Dr Young and **I find** that Giuseppe Costa died of right haemothorax complicating intercostal catheter insertion for the treatment of right pleural effusion.

Although I cannot make any definitive findings that Mr Costa's death was preventable, **I find** that there were a number of opportunities lost to alter his clinical course.

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

I direct that a copy of this finding be provided to the following:
Francesca Costa
Angela Isaac
Western Health

Signature:

AUDREY JAMIESON
CORONER
Date: **18 June 2018**