IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

COR 2023 004765

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 63(2)

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

Findings of:	AUDREY JAMIESON, Coroner
Deceased:	Michael Robert Burns
Date of birth:	1 February 1965
Date of death:	26 August 2023
Cause of death:	1a: Pulmonary thromboembolism complicating right calf deep venous thrombosis
Place of death:	Monash Medical Centre 246 Clayton Road Clayton Victoria 3168

INTRODUCTION

1. On 26 August 2023, Michael Robert Burns was 58 years old when he died at Monash Medical Centre, following two presentations to the Victorian Heart Hospital in the preceding two days. At the time of his death, Michael lived in Ferntree Gully with his partner, Robyn.

THE CORONIAL INVESTIGATION

2. Michael's death was reported to the coroner as it fell within the definition of a reportable death in the *Coroners Act 2008* (**the Act**). Reportable deaths include deaths that are unexpected, unnatural or violent or result from accident or injury.

3. 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.

4. 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.

5. This finding draws on the totality of the coronial investigation into the death of Michael Robert Burns. 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. In the coronial jurisdiction, facts must be established on the balance of probabilities.[1]

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

Circumstances in which the death occurred

6. On 25 August 2023, Michael presented to his general practitioner (**GP**) with a 1-week history of shortness of breath and chest pain on exertion. The GP called an ambulance, and Michael was conveyed to the Victorian Heart Hospital (**VHH**), arriving at 5:01pm. The GP's referral

[1] 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.

letter requested a *"review of dyspnoea on exertion and intermittent chest pain – unstable angina".* The GP provided two electrocardiograms (**ECG**) performed at the clinic, and they had queried a new left bundle branch block on ECG.

7. The medical history obtained at VHH indicated that Michael was normally able to walk several kilometres with ease, but this had reduced to 40 metres. He had left sided chest pain which he described as tight in nature and radiating into his back and left shoulder, and symptoms of dizziness and palpitations on exertion. All symptoms resolved with rest. He had no history of similar symptoms.

8. Michael's observations were normal. His examination was recorded as normal, except for soft and non-tender right calf swelling which he reported had been present since he was a teenager.

9. Michael underwent an ECG, chest x-ray and blood tests. Troponin[2] was 34 at 5:18pm and 41 at 7:08pm.[3] The chest x-ray and ECG were unremarkable, and in particularly the ECG was not diagnostic of coronary artery disease or pulmonary embolism.

10. Michael was referred to Cardiology. The Cardiology assessment included a bedside cardiac ultrasound undertaken by the Cardiology Registrar which reportedly showed some 'inferior wall hypokinesis'[4]. According to Monash Health, Michael was offered and recommended admission but he opted for outpatient management.

11. The Cardiology Registrar made a diagnosis of 'stable angina' and Michael was commenced on aspirin, bisoprolol[5], atorvastatin[6] and GTN[7]. He was discharged home at 8:30pm for outpatient Cardiology follow-up.

12. At 12:48pm on 26 August 2023, the following day, Michael returned to VHH Emergency Department (**ED**). He reported feeling dizzy after taking his newly prescribed medications and subsequently losing consciousness and falling to the ground. He said his shortness of breath and chest tightness had been worse the night before.

[2] Troponin is a protein found in heart muscle that is released into the circulation at times of cardiac muscle damage or significant strain.
[3] These values of troponin are slightly elevated and are non-specific. They could be associated with angina or pulmonary embolism and other conditions affecting the heart.
[4] Hypokinesis is the reduced movement/contraction of the heart in this area, potentially in keeping with a diagnosis of ischaemic heart disease. These images were not saved for review.
[5] Bisoprolol is a beta-blocking medication used in the treatment of ischaemic heart disease and heart failure.
[6] Atorvastatin is a cholesterol and lipid lowering medication.
[7] Glyceryl trinitrate is a medication taken sub-lingually to relieve the symptoms of angina.

13. Michael was reviewed by an ED Registrar. Observations, examination, ECG and blood tests were reported as normal, and it was thought that these new symptoms were a side-effect of bisoprolol and dehydration. Michael reportedly appeared eager for discharge. The diagnosis was of 'postural (orthostatic) hypotension'. The dose of bisoprolol was reduced and Michael was discharged home at 4:52pm.

14. Michael and his daughter Monique went to the pharmacy to fill his new script. She noted that he was barely able to walk 10 metres without needing to sit down due to shortness of breath and chest tightness, and he told her *"I don't feel right, something just doesn't feel right".*

15. At around 8:30pm, Michael began to feel dizzy and diaphoretic, and briefly lost consciousness. His family called Triple Zero and requested an ambulance.

16. At 9:31pm, while *en route* to the hospital, Michael went into cardiac arrest. Paramedics pulled over to perform CPR while awaiting the arrival of a second Mobile Intensive Care Ambulance (**MICA**) team. A rhythm check showed asystole and a non-shockable rhythm. 1mg adrenaline IV was administered with no effect and CPR continued

17. Michael arrived at the Monash Medical Centre at 9:40pm where resuscitation efforts continued. Sadly, Michael was unable to be resuscitated and was declared deceased at 10:19pm.

Identity of the deceased

18. On 27 August 2023, Michael Robert Burns, born 1 February 1965, was visually identified by his daughter, Monique Burns, who completed a Statement of Identification.

19. Identity is not in dispute and requires no further investigation.

Medical cause of death

20. Senior Forensic Pathologist Dr Matthew Lynch from the Victorian Institute of Forensic Medicine (**VIFM**) conducted an autopsy on the body of Michael Burns on 31 August 2023. Dr Lynch considered the Victoria Police Report of Death (Form 83), post mortem computed tomography (**CT**) scan, VIFM contact log and medical records and E-Medical Deposition Form from Monash Health and provided a written report of his findings dated 2 October 2023.

21. The findings at autopsy included the following:

a) Right calf deep venous thrombosis

b) Pulmonary thromboembolus of saddle type with no infarction

c) Coronary artery atherosclerosis

d) Probe patent foramen ovale

e) Pulmonary oedema

22. Dr Lynch commented that there was no evidence to suggest the death was due to anything other than natural causes.

23. Toxicological analysis of post mortem blood samples identified the presence of bisoprolol and atropine.

24. Dr Lynch provided an opinion that the medical cause of death was 1(a) PULMONARY THROMBOEMBOLISM COMPLICATING RIGHT CALF DEEP VENOUS THROMBOSIS.

FAMILY CONCERNS

25. Michael's family raised concerns about the medical management provided to him at VHH in the context of him having two admissions in the 24 hours preceding his death.

26. His partner Robyn noted his discharge on 25 August 2023, after his first admission, and stated that Michael told her *"the Doctors had ummed and arrrd about sending him home ... decided it was ok for him to come home with the high dose of medication they gave him".*

27. His daughter Monique noted that Michael had told her that the doctor examining his leg on 25 August 2023 had said words to the effect of *"something is not right there".*

REVIEW OF CARE

Initial CPU review

28. Having considered the circumstances surrounding Michael's death and the concerns raised by his family, I determined to refer the matter to the Coroners Prevention Unit (**CPU**)[8]. I

[8] The Coroners Prevention Unit (CPU) was established in 2008 to strengthen the prevention role of the coroner. The unit assists the Coroner with research in matters related to public health and safety and in relation to the formulation of prevention recommendations. The CPU also reviews medical care and treatment in cases referred by the coroner. The

requested that the CPU review his management at the Victorian Heart Hospital on both attendances.

29. The CPU initially considered that the diagnosis of angina was the most likely cause of Michael's presentation at VHH on 25 August 2023, and the initial assessment was reasonable, particularly when the description of his chest pain sounded typical for cardiac concern and the swelling of his right leg was noted to be of years' duration.

30. However, the CPU did have concerns about the decision to discharge Michael with a diagnosis of 'stable' angina. As such, the CPU sought a statement from VHH. A statement was provided by Professor Stephen Nicholls, Program Director, Monash Heart, Intensive Care and Victorian Heart Hospital at Monash Health. Prof Nicholls is a specialist Cardiologist.

31. Prof Nicholls considered that a 58-year-old man with a history of hypertension and one week of symptoms of exertional breathlessness and left sided chest pain, with ECG changes and a low-level troponin rise should undergo evaluation for a potential diagnosis of coronary ischaemia, with differential diagnoses to be considered including pulmonary embolism and aortic dissection.

32. Prof Nicholls was asked to define the terms 'stable angina' and 'unstable angina'. He advised that 'stable angina pectoris' is a symptom of myocardial ischaemia and characterised by chest discomfort or symptomatic equivalent (such as shortness of breath) that is provoked with exertion and alleviated at rest or with nitroglycerin. 'Unstable angina' refers to the incidence of symptoms of myocardial ischaemia, characterised by chest discomfort or symptomatic equivalent (such as shortness of breath) that occurs at rest or increases in frequency.

33. He considered that Michael's symptoms would raise the concern of unstable angina, which is at odds with the cardiology registrar's assessment of 'stable angina'. He considered that a patient displaying symptoms such as Michael's would ideally be admitted for cardiac monitoring, serial biomarkers, the consideration of alternative diagnoses and cardiology review for the consideration of coronary artery imaging.

34. Prof Nicholls advised the Court that Michael's death was reported to Safer Care Victoria as a sentinel event and reviewed accordingly, which concluded that:

CPU is comprised of health professionals with training in a range of areas including medicine, nursing, public health and mental health.

a) There was a missed opportunity to diagnose pulmonary embolism (**PE**).

b) There was a failure of an emergency consultant to review Michael at the second presentation.

35. Following receipt and review of Prof Nicholls' statement, the CPU wrote to Monash Health to request copies of entries in the Electronic Medical Record that had been referred to in the statement but not previously provided to the Court. Those records were subsequently provided.

SAPSE review

36. Michael's death was subject to a Serious Adverse Patient Safety Event (**SAPSE**) Review.

37. The SAPSE Review Panel considered the following points:

Atypical presentation of PE

38. The symptoms described by Michael at his first presentation, along with the results of testing and imaging, were consistent with ischaemic heart disease and not PE. He had no clinical features of PE such as shortness of breath or chest pain while at rest, nor did he have any risk factors for PE, given his leg swelling was deemed long-standing. The Review Panel agreed that it was reasonable that PE was not included in the differential diagnosis.

39. The CPU agreed with this but advised that small PEs may not be symptomatic at rest and may become so on exertion, as was likely in Michael's case. They advised that lack of shortness of breath at rest in a patient presenting with significant exertional symptoms cannot be used to clinically discount a diagnosis of PE.

Cardiology review and diagnosis (presentation one)

40. The Review Panel assessed the actions of clinicians in the context of a working diagnosis of ischaemic heart disease. The Monash Health organisational guideline – *Assessment of adult patients for presence of myocardial injury or myocardial infarction* provides that patients with an increase in troponin of less than, or equal to 25 ng/L from that of their initial troponin must be discussed with the senior ED doctor to determine disposition and the need for specialty referral. In Michael's case, the ED Registrar discussed the matter with the ED Consultant, and he was referred to Cardiology for review. The Review Panel considered that this was appropriate.

41. The CPU agreed with the Review Panel.

Patient disposition and subsequent discharge (presentation 1)

42. The Review Panel noted that the Cardiology Registrar initially planned to admit Michael for monitoring and investigations, but he opted for discharge. The Review Panel assessed the appropriateness of discharging Michael, agreeing that an inpatient admission would have provided the best chance of survival. The organisational guideline - *Assessment of adult patients for presence of myocardial injury or myocardial infarction* - states that where the patient's primary problem has improved, discharge is an option.

43. When discharge is being considered, further evaluation of a patient's risk of major adverse cardiac events (**MACE**) via calculation of a HEART score (a validated clinical risk stratification tool) is recommended. Once applied, the tool guides clinicians on what further actions need to be taken.

44. During interviews conducted as part of the review, The ED Consultant, ED Registrar and Cardiology Registrar each reported calculating Michael's HEART score as five. The Review Panel agreed he had a HEART score of five of six, with guidelines recommending cardiology review and outpatient investigations within one week.

45. The Review Panel agreed that Michael met the criteria for outpatient investigation and review, and therefore the decision to discharge was reasonable.

46. The CPU was unable to comment on the Review Panel's considerations in this regard, as neither the decision for discharge nor the calculation of a HEART score was documented in the medical record.

A D-dimer was not performed

47. The Review Panel commented that with the benefit of hindsight, a D-dimer may have aided in earlier diagnosis of Michael's PE. Despite his presentation being consistent with ischaemic heart disease, PE was apparently considered by clinicians and his risk factors assessed using the Wells Score. A Wells Score of zero was calculated, discounting PE as a possible diagnosis. With no classical clinical features of PE and a Wells Score of zero, the panel determined that the criteria for ordering a D-dimer were not met and the decision to not do so was therefore acceptable.

48. The CPU again commented that there was no documentation in the medical record that PE was specifically considered by clinicians, although the observation and questioning around Michael's right leg swelling may imply that deep vein thrombosis was considered and discounted.

49. The CPU advised that Monash Health's application of the Wells Score was incorrect and goes against their Pulmonary Embolism Guideline. I will discuss this issue separately below.

Diagnostic anchoring on re-presentation

50. The Review Panel considered that symptoms of light-headedness, dizziness and syncope can be associated with beta-blocker use, particularly in beta-blocker naïve patients such as Michael. Therefore, attributing his symptoms to a diagnosis of postural hypotension secondary to beta-blocker use was reasonable.

51. The CPU disagreed with this, stating that the only documented measurement of Michael's postural blood pressure change indicated that his blood pressure did not fall (and actually increased very slightly) when he stood up. This does not support the diagnosis of postural hypotension.

52. At interview as part of the review process, the ED Clinician reported that as Cardiology review had taken place the previous day and a clear follow up plan was in place, detailed re-prosecution of Michael's initial presentation was unnecessary.

53. The Review Panel considered that Michael's medical management at his second presentation was appropriate, and even if re-examination of his previous presentation had occurred, it was highly unlikely to elicit consideration of PE.

Senior Medical Staff in-person review at re-presentation

54. The Review Panel noted that the organisational procedure – *Patients Re-Presenting to the Emergency Department* states that patients with unplanned re-presentations to the ED within 72 hours must be reviewed in person by a Consultant. The clinicians reported that their understanding was that while all re-presentations must be discussed with the Consultant, the need for an in-person review could be based on the Registrar's assessment. While an in-person Consultant review did not occur due to a lack of understanding of procedure, the Review Panel considered that even had it occurred, it was unlikely to elicit suspicion of PE due to the absence of risk factors and clinical features.

Point of care ultrasound (POCUS)

55. The Review Panel identified that clinicians did not enter Michael's patient details into the ultrasound machine, meaning the images from presentation one were not saved, and nor were the images taken during resuscitation.

56. The CPU commented that while this was another shortcoming in the documentation associated with Michael's care, it likely did not affect the outcome.

Documented use of Validated Clinical Decision-Making Tools and differential diagnoses

57. The Review Panel noted that clinicians reported using validated clinical decision-making tools such as the Wells Score and HEART score, however the use of these tools was not documented, and this resulted in the insufficient and/or incomplete documentation of differential diagnoses considered.

58. The CPU agreed with this and opined that in general, the medical documentation of Michael's care and of the diagnoses, reasoning and decisions made was extremely poor.

Finding

59. The Review Panel identified the following finding:

    Care Delivery Issue – A diagnosis of PE was not made, resulting in the patient being discharged home, this was contributed by:

    1.1. At ED presentation one, the patient's symptoms, congested lung fields on chest x-ray, mildly elevated troponin, ECG changes, observations and POCUS, were more consistent with ischaemic heart disease than pulmonary embolism, therefore PE was not diagnosed.

Learnings

60. The following learnings were identified as part of the SAPSE review:

    Learning 1.1 – In-person ED Consultant patient review did not occur due to an inaccurate interpretation, or insufficient awareness of the Organisational Procedure – *Patients Re-Presenting to the Emergency Department*.

Learning 1.2 – There is a reluctance amongst some JMS to record POCUS images due to fear of having their imaging technique critiqued in a non-constructive manner.

Learning 1.3 – Recording of POCUS imaging is not an embedded practice for many clinicians which results in the inability to review and clarify POCUS findings.

Learning 1.4 – The use of validated clinical decision-making tools is not demonstrated in documentation and as such, resulted in the insufficient and/or incomplete documentation of differential diagnoses considered.

Learning 1.5 – Paper notes, such as GP letters and ECGs, are often being misplaced, preventing them from being scanned into Scanned Medical Record.

61. The Review Panel made the following recommendations:

Recommendation 1 – Program to ensure the findings/lessons of the review are shared with relevant employees, with a focus on learning and improvement

Recommendation 2 – Quality and Safety Unit to ensure all findings/learnings related to the current five themes being workshopped in 2023-2024, will feed into the current programs of work for improvements, remedial measures and any other measures to prevent similar harm in the future. The five themes include:

a) Lack of Escalation
b) Lack of Senior Involvement
c) Cognitive Errors
d) Failures in Communication
e) Failure to Follow Procedure

Recommendation 3 – Quality and Safety Unit to ensure that any other findings/learnings are placed on the *"SAPSE findings and learnings themes database"* and are included in selection for prioritisation for the next top five themes to be workshopped for recommendations for improvement to prevent recurrence of a similar event. This will occur when the current themes have been completed.

Missed diagnosis of PE

62. The specific issue of the missed diagnosis of PE was not raised in any question posed by the Court to Monash Health. Monash Health, through their initial response of Prof Nicholls and

interview of clinicians in the SAPSE process, volunteered that this was considered and excluded by appropriate means.

63. In particular, the clinicians interviewed as part of the SAPSE Review indicated that they considered PE in the differential diagnosis, although this was not recorded in the medical records:

> *Nevertheless, PE was considered by clinicians, and the patient's risk factors for PE were then assessed through the use of the validated clinical decision-making tool the Wells Score (as reported by clinicians during interview). With the unilateral lower limb abnormality deemed chronic, a Wells score of zero (no risk factors) was calculated, reassuring clinicians and further discounting PE as a possible diagnosis. With no classical clinical features of PE, and a Wells Score of zero the panel determined that criteria for ordering a D-dimer were not met, and the decision not to order a D-Dimer at that time was acceptable.*

64. The CPU considered that it was reasonable to apply the Wells Score in the setting of a patient with shortness of breath and chest pain, to assist with estimating their risk of PE as part of the diagnostic process for potential PE. However, the score had been applied incorrectly and the comment *"…a Wells Score of zero the panel determined that criteria for ordering a D-dimer were not met, and the decision not to order a D-Dimer at that time was acceptable"* suggested that both Michael's treating clinicians and the SAPSE panel were unaware of how to correctly use and apply the Wells Score, and Monash Health's own PE guideline.

Correct application of the Wells Score

65. The Wells' criteria for pulmonary embolism was first published in 2001.[9] It is a risk stratification score and clinical decision rule to estimate the pre-test probability for acute PE in patients where history and examination suggests that PE is a diagnostic possibility.

66. It provides a pre-test probability which, if deemed 'unlikely' or 'low risk', can then be used in conjunction with a negative D-dimer[10] to rule out PE and avoid imaging.

[9] https://pubmed.ncbi.nlm.nih.gov/11453709/ Wells PS, Anderson DR, Rodger M, Stiell I, Dreyer JF, Barnes D, Forgie M, Kovacs G, Ward J, Kovacs MJ. Excluding pulmonary embolism at the bedside without diagnostic imaging: management of patients with suspected pulmonary embolism presenting to the emergency department by using a simple clinical model and d-dimer. Ann Intern Med. 2001 Jul 17;135(2):98-107.

[10] D-dimer is a commonly tested biological marker which is produced by the enzymatic breakdown of cross-linked fibrin which forms the fibrous mesh of a blood clot. The measurement of D-dimer in the circulation acts as a marker of

67. Clinicians score the patient on a number of criteria, with the resultant 'score' used to assign the patient to a risk group. The level of risk determines the nature and extent of further investigation.

Clinical feature	Score
Clinical signs and symptoms of DVT	3
PE is most likely or equally likely diagnosis	3
Heart rate >100	1.5
Immobilisation at least 3 days or surgery in previous 4 weeks	1.5
Previous diagnosed DVT or PE	1.5
Haemoptysis	1
Malignancy with treatment within 6 months or palliative	1

68. The minimum score is 0 and the maximum score is 12.5.

69. There are two 'models' of how the Wells Score is used to assign risk:

Two-tiered model

- Where a patient risk is determined to be 'PE likely' (>4 points), consider a CT pulmonary angiogram (**CTPA**)
- Where a patient risk is determined to be 'PE unlikely' (0-4 points), consider high sensitivity D-dimer testing.
    - If the D-dimer is negative, consider stopping the work-up.
    - If the D-dimer is positive, consider CTPA.

coagulation and fibrinolysis. D-dimer will be raised in conditions where there is blood clotting present, including trauma. It may also be raised in other non-clot related conditions.

Three-tiered model

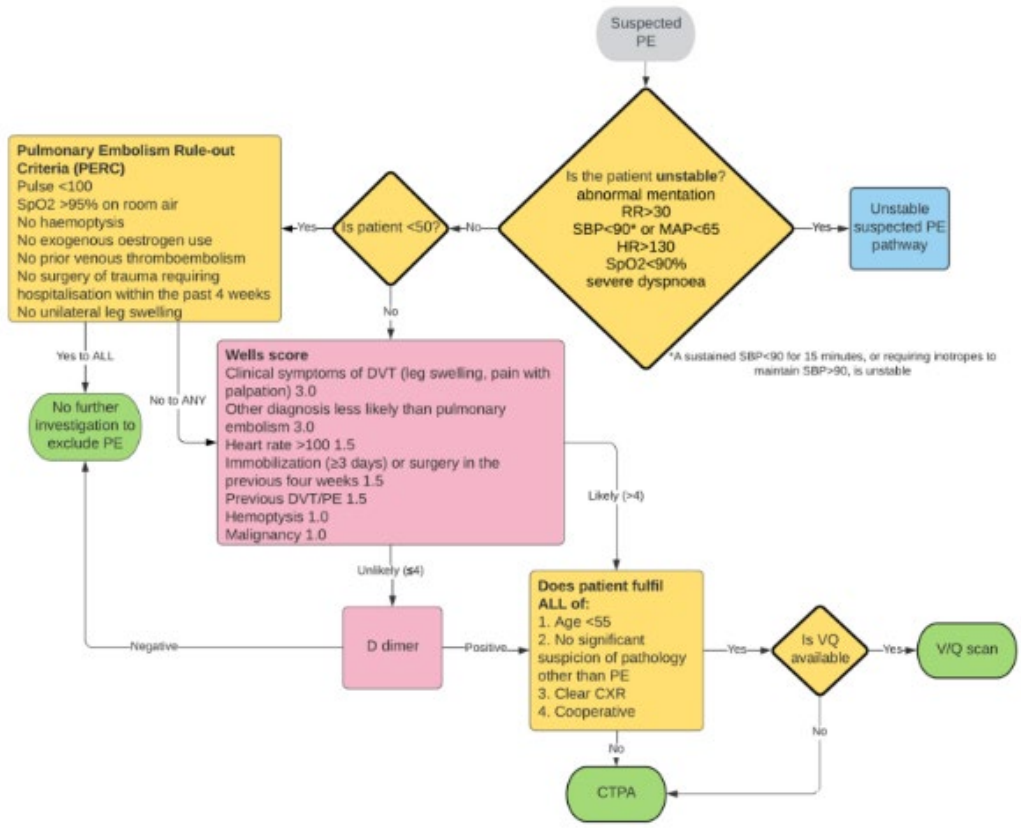
- Where a patient is determined to be low risk (<2 points), consider D-dimer testing. Alternatively, consider a rule-out criteria such as PERC[11].
    - If the D-dimer is negative, consider stopping work-up.
    - If the D-dimer is positive, consider CTPA.
- Where the patient is determined to be moderate risk (2-6 points), consider high sensitivity D-dimer testing or CTPA.
    - If the D-dimer is negative, consider stopping work-up.
    - If the D-dimer is positive, consider CTPA.
- Where the patient is determined to be high risk (>6 points), consider CTPA. D-dimer testing is not recommended.

70. There are no situations where further testing, whether by D-dimer or CTPA, is not indicated on calculation of the Wells score. In other words, once a clinician has determined to calculate a Wells score, they have entered the algorithm and must follow it through by proceeding to further testing.

71. Monash Health considered that Michael had a Wells score of zero, placing him in either the 'PE unlikely' group in the two-tiered model, or the 'low risk' group in the in the three-tiered model. In either model, a D-dimer would have been recommended.

72. At the Court's request, Monash Health provided a copy of the *Pulmonary Embolism Diagnosis and Management (Adults) Clinical Guideline* (**PE Guideline**). The guideline includes a flowchart for suspected PE:

[11] PERC is PE rule-out criteria. This is another decision support tool that can be used to further refine low-risk patients. If the PERC 'negative' in a low-risk patient, no further testing can be considered. If PERC is positive a D-dimer is done. 'PERC' was not specifically utilised by Monash Health clinicians on Michael, but it would have been positive by virtue of his age being >50 and would have required D-dimer testing.



73. The Monash Health PE Guideline uses the 'two-tiered model' described above on patients over the age of 50. According to the above flowchart, Michael, with a Wells Score of zero, would have been in the 'unlikely' group for suspected PE. Performing a D-dimer is then the next step to safely exclude PE, or to indicate that further testing (CTPA) was indicated.

74. The CPU advised me that given the burden of clot in the lungs and right leg found at the post-mortem examination, it was highly likely that a D-dimer would have been positive at Michael's first attendance, and the CTPA then required by the PE Guideline would have demonstrated PE.

75. Having considered the advice of the CPU, I directed that the Court write to Monash Health and advise the following:

    a) I considered that the medical record was generally of a poor standard; and

    b) The CPU had advised me that the decision not to perform a D-dimer was contrary to accepted clinical practice and Monash Health's PE guidelines, and this resulted in a missed opportunity to diagnose PE at Michael's first presentation. This may have resulted in hospital admission and anticoagulation treatment, altering his clinical course.

76. In accordance with the principles of natural justice, I invited Monash Health to respond.

77. Peter Ryan, Chief Legal Officer at Monash Health, provided a response to the Court's correspondence. Mr Ryan advised that Monash Health respectfully rejected the CPU's interpretation of the PE guideline and submitted that the advice of the CPU was misconceived on the following bases:

a) The PE guideline provides a flowchart which only applies where PE is suspected, and in Michael's case it was considered but not suspected, as he had no clinical features of or risk factors for PE. The SAPSE panel concluded that it was reasonable for PE to not be included in the differential diagnoses, and accordingly the workflow in the PE guidelines was not triggered.

b) Dr Wells' own commentary states (emphasis added by Mr Ryan) *"the model should be applied* ***only after a history and physical suggests that venous thromboembolism is a diagnostic possibility. It should not be applied to all patients with chest pain or dyspnea or to all patients with chest pain or dyspnea or to all patients with leg pain or swelling.*** *This is the most common mistake made. Also, never never do the D-dimer first [before history and physical exam]. The monster in the box is that the D-dimer is done first and is positive (as it is for many patients with non-VTE conditions) and then the physician assumes that VTE is now possible and then the model is done.* ***Do the history and physical exam first and decide if VTE is a diagnostic possibility!"***[12]
Accordingly, whilst the Wells criteria can broadly speaking be used in conjunction with D-dimer testing, the advice of the CPU that the application of the Wells score in Michael's case was incorrect, was misconceived.

c) The comment of the SAPSE panel that *"with the benefit of hindsight a D-dimer may have aided an earlier diagnosis"* was simply a comment made with knowledge of the outcome and there is no basis for interpreting this comment as a conclusion that a D-dimer was clinically indicated and should have been performed.

d) The SAPSE panel was chaired by a senior Emergency Department clinician and member of the Quality and Safety Unit who also authored the PE Guideline. Other members included a Cardiologist, two external Emergency Physicians and the

[12] https://www.mdcalc.com/calc/115/wells-criteria-pulmonary-embolism

Director of the VHH ED. The panel were aware of the various guidelines and these, and how they applied or did not apply to Michael were extensively discussed.

78. Monash Health conceded that it did not follow the *Patients Re-Presenting to the Emergency Department Guideline.*

Request for further information

79. It was clear that there was a disconnect between the views of the CPU and that of Monash Health, particularly with regard to the application of the PE Guideline and the use of the Wells score. In an attempt to better understand the position of Monash Health, the Court posed several questions. The Court requested that the questions be answered by the SAPSE Panel, however Monash Health advised that the entire panel was unable to be reconvened.

80. Monash Health, under hand of Chief Legal Officer Mr Ryan, advised that Michael did not undergo assessment with a Wells score during either attendance to VHH – he was considered unlikely to have a PE and as a result, the score was not employed.

81. In answer to the question 'Did the clinician(s) who undertook the assessment of Mr Burns use the Wells Score of the Monash Health PE guideline?', Monash Health responded *"Not as a clinical decision-making tool. The clinician(s) considered PE as a diagnosis, as would be expected for assessment of a patient with chest pain and breathlessness. Accordingly, elements of the Wells score were considered as part of the assessment, but a Wells score as not determined.*

82. In their response, Monash Health emphasised that *Michael's original presentation was with chest pain and shortness of breath. Monash Health policy for evaluation of acute chest pain includes consideration of a range of potential diagnoses involving, but not limited to the heart, lungs, great vessels and oesophagus, in addition to musculoskeletal causes. As a result, PE is expected to be considered in all cases. This does not imply there should be widespread calculation of a Wells score or performance of a D-dimer testing for all patients. Rather, the use of these clinical tools should be guided by clinical suspicion, which aligns with the validation studies of these tools.*

83. Clinicians acknowledged that they considered elements of a Wells score as a screening tool as part of their history and examination and this resulted in no identified risk factors for pulmonary embolus. As there was a reasonable working diagnosis of cardiac ischaemia, they did not suspect he had a PE. Accordingly, the lack of suspicion of a PE and concern that he

may have coronary ischaemia, led to the not ordering a D-dimer, and proceeding with the plan to admit Michael for cardiac monitoring and further evaluation.

COMMENTS

Pursuant to section 67(3) of the Act, I make the following comments connected with the death.

1. I accept that Michael's presentation was consistent with ischaemic heart disease and atypical of PE. I note that the consideration of PE as a differential diagnosis was not raised by the Court but proffered by Monash Health as part of the SAPSE Review, where clinicians stated they applied the Wells score.

2. I am unable to reconcile the conflicting evidence as to whether Michael was in fact assessed with the use of a Wells score. The SAPSE Review is clear that this did occur (emphasis mine):

   PE was considered by clinicians, and the patient's risk factors for PE were then assessed through the use of the validated clinical decision-making tool the Wells Score (as reported by clinicians during interview). With the unilateral lower limb abnormality deemed chronic, a Wells score of zero (no risk factors) was calculated, reassuring clinicians and further discounting PE as a possible diagnosis. With no classical clinical features of PE, and a Wells Score of zero the panel determined that criteria for ordering a D-dimer were not met, and the decision not to order a D-dimer at that time was acceptable.

3. This does not accord with the later assertion of Mr Ryan, that *"[Michael] did not undergo assessment with a Wells score during either attendance."*

4. While the lack of documentation regarding the application of the Wells score would ordinarily suggest it did not occur, the overall quality of the documentation is poor, and I am hesitant to rely on the absence of such documentation as evidence that it did not occur.

5. If a Wells score of zero had in fact been calculated, I am satisfied that the required course of action would have been to perform a D-dimer. This is clearly illustrated in Monash Health's own *Pulmonary Embolism Diagnosis and Management (Adults) Clinical Guideline.*

6. I am concerned that clinicians at Monash Health, including the SAPSE Review Panel, appear to be mistaken about how to apply the Wells score.

7. In answer to a question about what information the Wells score provides to a clinician, Monash Health stated *"The Wells score provides information with regard to the likelihood*

that a patient may have a PE. This can guide additional investigations." The use of the word "guide" suggests that there is an optional element in the performance of additional investigations. Applied correctly, the Wells score requires additional investigation – a D-dimer where the risk of PE is low, or a CT pulmonary angiogram where it is moderate/high.

8. However, in answer to another question from the Court – *"What are the specific 'criteria' that are required to be met before performing a D-dimer once a Wells score has been undertaken and the patient scored as 'zero', 'unlikely' or 'low risk'?"* – Monash Health answered as follows:

   Only patients with suspected PE undergo evaluation with a formal Wells score. Those deemed unlikely to have a PE proceed to D-dimer testing. Those deemed likely or possibly to have a PE proceed to imaging. D-dimer testing is not applied to every patient with chest pain, rather it is used in those who undergo clinical evaluation where there is suspicion of PE. The clinical team that evaluated Mr Burns did not suspect that he had a diagnosis of PE.

9. This illustrates the correct application of the Wells score, but does not accord with the interpretation of the SAPSE Review Panel: *"With no classical clinical features of PE, and a Wells Score of zero the panel determined that criteria for ordering a D-dimer were not met, and the decision not to order a D-dimer at that time was acceptable."*

10. All I am able to say about these conflicting statements is that there are clearly differing understandings among Monash Health clinicians about how to apply the Wells score and their own PE guideline. I will make a recommendation accordingly.

11. I will not make a finding as to whether clinicians did in fact apply the Wells score to Michael's presentation, in circumstances where doing so is fraught given the conflicting evidence and state of the contemporaneous documentation, and Monash Health have reviewed the matter and found that there was a missed opportunity to diagnose PE.

12. However, if the Wells score <u>was</u> in fact applied, I consider this would have been a significant missed opportunity – a D-dimer would likely have been positive, leading to further investigation that would have likely led to the diagnosis of Michael's PE while he was still comparatively well.

13. I have mentioned that the overall quality of the documentation from Michael's two attendances at VHH was poor. For example, there is no contemporaneous record of any discussions around admitting Michael to hospital, despite the SAPSE Review stating that

admission was offered and Robyn's assertion that Michael told her they *"ummed and ahhed"* about whether to do so. The notes that do exist are lacking in detail.

14. Clinical documentation is not only a communication tool and integral to patient care, but it is a legal document, an aide-mémoire and protects the clinician in the event of an adverse event. Incomplete documentation allows for misinterpretation and errors and may contribute to substandard patient care.

15. I do not suggest that the poor quality of the documentation in this case was contributory to Michael's death. I do, however, feel it is important to note the difficulty it causes to entities such as the Court who are required to interrogate someone's care and management, determine any shortcomings and identify any areas for prevention.

16. In Michael's case, I am left unable to determine whether a significant missed opportunity arose to potentially prevent his death. This is wholly unsatisfactory.

RECOMMENDATIONS

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

(i) In the interests of promoting public health and safety and preventing like deaths, I recommend that Monash Health provide training to relevant clinicians on the correct application of the Wells' criteria for pulmonary embolism and on the correct application of the Monash Health Pulmonary Embolism Diagnosis and Management (Adults) Clinical Guideline.

FINDINGS AND CONCLUSION

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

a) the identity of the deceased was Michael Robert Burns, born 01 February 1965;

b) the death occurred on 26 August 2023 at Monash Medical Centre, 246 Clayton Road, Clayton, Victoria 3168;

c) I accept and adopt the medical cause of death ascribed by Dr Matthew Lynch and I find that Michael Robert Burns died from pulmonary thromboembolism complicating right calf deep venous thrombosis;

2. AND, I find that Michael Robert Burns' symptoms on presentation to the Victorian Heart Hospital on 25 August 2023 were consistent with ischaemic heart disease and atypical of pulmonary embolism, and in those circumstances the clinical decision-making and treatment provided may have been reasonable;

3. HOWEVER, due to the poor documentation and conflicting evidence before me, I am unable to determine whether clinicians assessed Michael Robert Burns using the Wells criteria for pulmonary embolism. If they did, it was applied incorrectly and was a significant missed opportunity to potentially diagnose pulmonary embolism at an earlier stage;

4. AND, as I am unable to make a definitive finding to the requisite standard as to whether there was a missed opportunity to diagnose Michael Robert Burns' pulmonary embolism at an earlier stage, I am unable to make a finding as to whether his death may have been preventable;

5. AND, I accept the findings, learnings and recommendations of the Serious Adverse Patient Safety Event Review into Michael Robert Burns' death, in particular the reflection of the Review Panel that *"with the benefit of hindsight, a D-dimer may have aided in earlier diagnosis of Michael's pulmonary embolism."*

6. AND FURTHER, I am satisfied that the nature and extent of the Court's enquiries to Monash Health were sufficiently indicative of the scope and content of my investigation and the potential for adverse comments and findings. I am further satisfied that Monash Health have been afforded a reasonable opportunity to mitigate any adverse comments I may make, by way of their responses and submissions in response to those enquiries.

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

Pursuant to section 73(1) of the Act, I order that this finding be published on the Coroners Court of Victoria website in accordance with the rules.

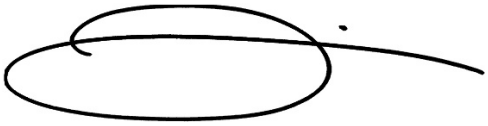
I direct that a copy of this finding be provided to the following:

Robyn Stewart, Senior Next of Kin

Monash Health

Senior Constable Jack Canty, Coronial Investigator

Signature:



AUDREY JAMIESON

CORONER

Date: 11 February 2026

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 Act.