Rule 63(1)

IN THE CORONERS COURT

OF VICTORIA

AT MELBOURNE

Court Reference: COR 2017 1795

FINDING INTO DEATH WITH INQUEST

Form 37 Rule 63(1)

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

Amended on 12 November 2021 pursuant to section 76 of the Coroners Act 2008

Inquest into the death of: MICHAEL PETER ANDERSON

Findings of:	AUDREY JAMIESON, CORONER
Delivered On:	12 November 2021
Delivered At:	Coroners Court of Victoria, 65 Kavanagh Street, Southbank 3006
Hearing Dates:	8 December 2020, 10 March 2021.
Appearances:	Catherine Fitzgerald of Counsel on behalf of Smile Solutions Pty Ltd T/A Collins Street Specialist Centre (Barry.Nilsson Lawyers); Mr Paul Halley of Counsel on behalf of Dr Singh up to 12 February 2021; Dr Ian

	Freckelton SC on 10 March 2021 (Avant Law); Mr Patrick Over of Counsel on behalf of the family (Maurice Blackburn Lawyers)
Police Coronial Support Unit:	Senior Constable Jeff Dart

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I, AUDREY JAMIESON, Coroner, having investigated the death of MICHAEL PETER ANDERSON

AND having held an Inquest in relation to this death on 8 December 2020 and 10 March 2021

at the Coroners Court of Victoria, 65 Kavanagh Street, Southbank 3006

find that the identity of the deceased was MICHAEL PETER ANDERSON

born on 13 November 1980

who died on 18 April 2017

at the Alfred Hospital, Commercial Road Prahran 3181

from:

1 (a) CARDIORESPIRATORY ARREST COMPLICATING PROPOFOL ADMINISTRATION FOR ENDODONTIC PROCEDURE IN A MAN WITH BORDERLINE CARDIOMEGALY

In the following summary of circumstances:

Michael Peter Anderson suffered a cardiorespiratory arrest after having been administered an anaesthetic/conscious sedation[1] for a root canal endodontic procedure at the Collins Street Specialist Centre in Melbourne. Despite resuscitative attempts he was later declared deceased at the Emergency Department of the Alfred Hospital.

[1] "Conscious sedation" is one of the treatment modalities available for patients who are nervous about dental procedures and is recognised as being appropriate by the Dental Board of Australia who have issued guidelines concerning its administration. (DBA 2014 Guidelines – Conscious Sedation Area of Practice Endorsement) - Forensic Odontology Report from Dr Jeremy Graham dated 17 August 2017. See also paragraph 74 of this Finding referencing Transcript of Proceeding pages 41 – 43 where Dr McGain responded to a question about the use of the terminology "Conscious sedation".

BACKGROUND CIRCUMSTANCES

1. Michael Peter Anderson[2] was 36 years of age at the time of his death. He lived in Aspendale with his wife, Victoria and son Joshua. Michael worked as a Real Estate Agent.

2. Michael's only known medical history of significance was that he suffered from obesity – he weighed 125 kilograms and was 180cms in height which equates to a BMI[3] of 38.5 kg/m². He also reported anxiety related to dental procedures.[4]

3. On 2 February 2017, Michael consulted with Dr Anthony O'Rourke (Dr O'Rourke), Lead Dentist at Level 1/100 Collins Street Melbourne in relation to a fractured lower molar tooth.

4. On 14 March 2017, Dr O'Rourke attempted to prepare Michael's tooth for a ceramic crown, but he was unable to obtain full anaesthesia around the affected tooth using local anaesthetic, causing pain and stress. Dr O'Rourke subsequently referred Michael to Endodontist Dr Gregory Tilley (Dr Tilley).

5. On 23 March 2017, Michael consulted with Dr Tilley. With the aim of proceeding to repair Michael's tooth, Dr Tilley recommended to Michael that he undergo conscious sedation during the root canal endodontic procedure which Michael agreed to.

SURROUNDING CIRCUMSTANCES

6. On 18 April 2017 Michael presented to the Collins Street Specialist Centre for his scheduled root canal procedure. He was met by Anaesthetist Dr Anthony Singh (**Dr Singh**) who completed a pre-anaesthesia questionnaire. Michael's height of 180 cms and his weight of 125 kilograms was recorded on the questionnaire. Michael signed the 'Pre-anaesthetic questionnaire' which included his consent to undergo the procedure.

7. At 8.45am Michael was seated and reclining in the dental chair. An intravenous cannula was inserted, and Michael was administered supplemental oxygen of 4-6 litres via nasal prongs. Noted in Dr Singh's Contemporaneous Record of Event is that '*[h]e was*

[2] With the consent of his family, Michael Anderson was referred to as "Michael" during the course of the Inquest and for consistency, except where formality requires it, I have also referred to him as "Michael" throughout this Finding.

[3] Body mass index (BMI) is a value derived from the mass and height of a person. The BMI is defined as the body mass divided by the square of the body height and is expressed in units of kg/m², resulting from mass in kilograms and height in metres. A BMI of 30 or more is equivalent to a classification of obese.

[4] Described in the Collins Street Specialist Centre notes as 'dental phobic'.

monitored in terms of heart rate and oxygen saturations, with other monitoring available and ready to apply (BP, ECG, defib)'.[5]

8. Between approximately 9.00am to 9.10am Michael was administered three 50mg incremental doses of Propofol.[6] Michael was drowsy but able to respond by raising his hand.

9. Dr Tilley administered a local anaesthetic nerve block[7] into Michael's affected tooth and after waiting approximately 4-5 minutes for it to take effect he commenced the root canal procedure. Dr Tilley removed the dental pulp tissue and shaped the canals in readiness to receive the root canal filing. He was preparing to take a radiograph of the tooth when there was a change to Michael's vital signs.

10. Approximately 10 minutes into the procedure it was noted that the pulse oximeter showed intermittent and fluctuating oxygen saturation levels, followed by episodes of bradycardia. The procedure was suspended at Dr Singh's request. Dr Singh performed a jaw thrust to open Michael's airway – his breathing was shallow, and his skin colour was pale. Dr Singh inserted an oropharyngeal airway and administered oxygen utilising an Air Viva bag and mask. Despite confirming effective ventilation, Michael looked pale and at approximately 9.15am, when Dr Singh could not detect a pulse, cardiopulmonary resuscitation was commenced initially in the dental chair with the assistance of Dr Tilley and other members of staff.

11. At 9.17am a 000 call was received by Telstra, at 9.18am the 000 was received at the Emergency Services Communication Authority (ESTA) and an Advanced Life Support (ALS) ambulance dispatched at the same time. At 9.19am two Mobile Intensive Care (MICA) paramedics were dispatched. The ESTA Operator advised that Michael be moved from the dental chair to the floor for effective CPR purposes. The ESTA Operator then guided the caller to remove upper body clothing and apply the Automated External Defibrillator (AED). The AED delivered one direct shock at approximately 9.24am. Dr Singh administered two doses of 1mg adrenalin but there was no return of spontaneous

[5] Contemporaneous Record of Event M. Anderson (DOB Nov 1980) – 18 April 2017 – Dr Anthony Singh.

[6] Propofol is a short-acting anaesthetic agent. Fatalities due to Propofol have been reported at blood concentrations of 0.2mg/L. Adverse reactions include hypotension and convulsions. (Toxicology Report – Attachment 2 – Coronial Brief (CB) at p 44). See also paragraph 32 of this Finding.

[7] "An inferior alveolar nerve block to anaesthetise #36 during the root canal therapy being performed under conscious sedation" – Forensic Odontology Report from Dr Jeremy Graham dated 17 August 2017.

circulation. CPR continued. Dr Singh made an unsuccessful attempt to intubate Michael so continued to ventilate him via the bag and mask.

12. At 9.23am Metropolitan Fire Brigade (MFB) members were at the scene and continued with CPR. At 9.25am the ALS ambulance arrived. The ALS paramedics described access to Michael as difficult and delayed due to the long walkway from the foyer on the street level, the small elevator, narrow corridors on the 8th floor and the small size of the dental treatment room. Nevertheless, when they entered the dental procedure room, the MFB members were performing CPR and managing Michael's airway using the oropharyngeal airway with bag and mask ventilation that Dr Singh had instigated.

13. At 9.26am the first MICA paramedic arrived. At 9.30am the second MICA paramedic arrived. The MICA paramedics were also delayed in accessing the 8th floor of the building due to the busy nature of the complex. On their arrival they noted oxygenation and ventilation to be adequate. At 9.36am a size 4 supraglottic airway and laryngeal mask had been put in place by the MICA paramedics for ongoing ventilation. Intubation was achieved at 9.53am. The intravenous cannula inserted earlier by Dr Singh was no longer patent and this was re-sited. By approximately 10.01am a Lucas Chest Compressor was successfully in position. At 10.25am Michael was extricated on a spine board stretcher, a task also difficult for the paramedics due to Michael's size and the architectural impediments.

14. During transportation to the Alfred Hospital, Michael continued to be administered intravenous adrenaline at 4-minute intervals, receiving a total of 20 milligrams but with no return of spontaneous circulation.

15. At 10.45am Michael arrived at the Alfred Hospital Emergency Department (ED). Automated chest compressions had continued *en route* but were paused in the ED for a cardiac ultrasound to be undertaken. The ultrasound confirmed that there was no cardiac movement or output. Michaels's pupils were fixed and dilated. His prognosis was deemed poor.

16. At 10.48am Michael was declared deceased.

JURISDICTION

17. Michael Peter Anderson's death was a reportable death under section 4 of the *Coroners Act 2008* ('the Act'), because it occurred in Victoria, and was considered unexpected,

unnatural or to have resulted, directly or indirectly, from an accident or injury. His death also meets the reportability criteria because it occurred during or following a medical procedure where a medical practitioner would not have reasonably expected death to occur.[8]

PURPOSE OF THE CORONIAL INVESTIGATION

18. The Coroners Court of Victoria is an inquisitorial jurisdiction.[9] 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.[10] 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. [11]

19. 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.[12] Coroners are also 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.[13] These are effectively the vehicles by which the prevention role may be advanced.[14]

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[8] The E-Medical Deposition Form from Alfred Health – Alfred Hospital identified this as being the reason for the medical practitioner notifying the death to the Coroner.

[9] Section 89(4) Coroners Act 2008.

[10] Section 67(1) of the *Coroners Act 2008*.

[11] See for example *Harmsworth v The State Coroner* [1989] VR 989; *Clancy v West* (Unreported 17/08/1994, Supreme Court of Victoria, Harper J).

[12] The "prevention" role is explicitly articulated in the Preamble and Purposes of the Act.

[13] See sections 72(1), 67(3) and 72(2) of the Act regarding reports, comments and recommendations respectively.

[14] See also sections 73(1) and 72(5) of the Act which requires publication of Coronial Findings, comments and recommendations and responses respectively; section 72(3) and (4) which oblige the recipient of a Coronial recommendation to respond within three months, specifying a statement of action which has or will be taken in relation to the recommendation.

20. 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.

21. Section 52(2) of the Act provides that it is mandatory for a Coroner to hold an Inquest into a death if the death or cause of death occurred in Victoria and a Coroner suspects the death was as a result of homicide, or the deceased was, immediately before death, a person placed in custody or care, or the identity of the deceased is unknown. Section 52(2) did not apply in this case.

22. Pursuant to section 52(1) of the Act, Coroners have absolute discretion as to whether to hold an Inquest. However, a Coroner must exercise the discretion in a manner consistent with the preamble and purposes of the Act. In deciding whether to conduct an Inquest, a Coroner should consider factors such as (although not limited to), whether there is such uncertainty or conflict of evidence as to justify the use of the judicial forensic process; whether there is a likelihood that an Inquest will uncover important systemic defects or risks not already known about and, the likelihood that an Inquest will assist to maintain public confidence in the administration of justice, health services or public agencies.

23. This finding draws on the totality of the material; the product of the Coronial Investigation into the death of Michael. That is, the court records maintained during the Coronial Investigation, the Coronial Brief and further material sought and obtained by the Court, the evidence adduced during the Inquest as well closing submissions from Counsel Assisting and Counsel representing the Interested Parties.

24. In writing this finding, I do not purport to summarise all the evidence but refer to it only in such detail as appears warranted by its forensic significance and the interests of narrative clarity. The absence of reference to any particular aspect of the evidence does not infer that it has not been considered.

STANDARD OF PROOF

25. All coronial findings must be made based on proof of relevant facts on the balance of probabilities. In determining whether a matter is proven to that standard, I should give effect to the principles enunciated in *Briginshaw v Briginshaw*.[15] These principles state

[15] (1938) 60 CLR 336.

that in deciding whether a matter is proven on the balance of probabilities, in considering the weight of the evidence, I should bear in mind:

- the nature and consequence of the facts to be proved;
- the seriousness of any allegations made;
- the inherent unlikelihood of the occurrence alleged;
- the gravity of the consequences flowing from an adverse finding; and
- if the allegation involves conduct of a criminal nature, weight must be given to the presumption of innocence, and the court should not be satisfied by inexact proofs, indefinite testimony or indirect inferences.

26. The effect of the authorities is that Coroners should not make adverse findings against or comments about individuals, unless the evidence provides a comfortable level of satisfaction that they caused or contributed to the death.

INVESTIGATIONS PRECEDING THE INQUEST

Identity

27. Michael Peter Anderson was visually identified by his wife, Victoria Louise Anderson at the Alfred Hospital on 18 April 2017.

28. The identity of Michael Peter Anderson was not in dispute and required no further investigation.

Medical Cause of Death

29. Dr Matthew J. Lynch, Forensic Pathologist (Dr Lynch) at the Victorian Institute of Forensic (VIFM) performed an autopsy on the body of Michael Peter Anderson on 21 April 2017. In preparing his report dated 14 July 2017, Dr Lynch relied upon other materials including:

- Victoria Police Report of Death Form No. 83;
- Information in the VIFM contact log;
- Medical Records from Smile Solutions, Collins Street;
- Contemporaneous notes of Anaesthetist Dr Anthony Singh;
- Medical records and E-Medical Deposition Form from the Alfred Hospital; and
- Post mortem CT scan.

30. Dr Lynch also had available to him a Neuropathology Report from Dr Linda Iles, Forensic Pathologist at the VIFM and a dental opinion from Dr Jeremy Graham, Consultant Forensic Odontologist at the VIFM.

Post mortem examination

31. Dr Lynch reported that the autopsy findings included:

- Clinical history of arrest during dental procedure with Propofol given as a general anaesthetic;
- Obesity with a body mass index (BMI) of 40;[16]
- Cardiomegaly due to left ventricular hypertrophy;
- Pulmonary oedema; and
- No coronary artery disease.

32. In relation to his clinical findings at autopsy Dr Lynch commented that a number of natural disease processes were identified including evidence of obesity[17] and cardiomegaly due to left ventricular hypertrophy based on height. He stated that the presence of cardiomegaly increases the risk of cardiac arrythmia. In considering possible mechanisms of death Dr Lynch stated that included adverse effects of the Propofol administration and a primary cardiac event. Dr Lynch further expanded on the adverse effects of Propofol administration including respiratory depression, bradycardia, hypotension and other cardiac arrhythmias and expressed the view that an expert opinion from an anaesthetist be sought.[18]

Toxicology

33. Post mortem toxicology analysis detected Propofol at 0.2 mg/L and post mortem biochemistry revealed a non-specific mild elevation in tryptase[19] and IgE[20]. Renal function was deemed normal.

[16] I accept this BMI reading as the most accurate because Michael was weighed and measured in the course of the medical examination, and therefore his height/weight (the basis upon which the BMI is calculated) was verified in this process.

[17] Dr Lynch explained that obesity is defined as a body mass index exceeding 30 and Michael's BMI had been calculated to be 40 kg/m².

[18] Coronial Brief at pp 26 -38 – Medical Examiners Report, Dr Matthew Joseph Lynch dated 14 July 2017.

[19] Serum concentrations of tryptase can be used as an indicator of possible anaphylaxis.

[20] Allergen-specific immunoglobulin E antibodies (IgE) – used to accompany tryptase measurements in suspected anaphylaxis.

Forensic pathology opinion

34. Dr Lynch ascribed the cause of Michael's death to: '1(a) Cardiorespiratory arrest complicating propofol administration for endodontic procedure in a man with borderline cardiomegaly'.

Conduct of my Investigation

35. Given the medical nature of the circumstances surrounding Michael's death I requested the Coroners Prevention Unit (CPU)[21] to assist me with my investigation. The CPU requested statements from relevant persons and assisted in identifying an appropriate independent expert anaesthetist to advise me on the appropriateness of the use of conscious sedation on a man with a high BMI in the setting of a dental procedure.

36. An independent expert opinion was subsequently obtained from Dr Forbes McGain, Anaesthetist/Intensive Care Physician, Department of Anaesthesia and Intensive Care at Western Health, Footscray.[22] Without limiting the importance of the particulars, Dr McGain concluded that Michael's death was most likely from a respiratory arrest which led to an asystolic cardiac arrest. Dr McGain's report was provided to the Interested Parties.

37. An independent expert opinion from Cardiologist, Professor Richard Harper was subsequently submitted by Dr Singh's legal representatives. Without limiting the importance of the particulars, Professor Harper expressed the opinion that he believed the underlying cause of death was cardiac in origin.

Mention Hearing

38. On 13 February 2020 a Mention Hearing was held. I was assisted by Senior Constable (SC) Jeff Dart from the Police Coronial Support Unit (PCSU). Other Interested Party representatives included:

    - Ms G Feery on behalf of Michael's family;

[21] The Coroners Prevention Unit was established in 2008 to strengthen the prevention role of a coroner, the CPU assists coroners with research in matters related to public health and safety. The Unit also reviews the medical care and treatment administered to patients in matters referred to it by a coroner where concerns have been identified. The CPU is comprised of health professionals with training and skill in a range of areas including medicine, nursing, public health and mental health. Any review undertaken by the CPU on behalf of the Coroner is intended to provide clarity to matters that are in dispute and assist the Coroner to determine whether further investigation is warranted, including by way of expert report, or whether there is sufficient material on which to finalise the investigation.

[22] Exhibit 1 – Expert Opinion of Dr Forbes McGain dated 29 March 2019.

- Mr P Halley on behalf of Dr Singh.
- Ms C Fitzgerald on behalf of the Collins Street Specialist Centre;
- Ms I Tatan on behalf of the MFB; and
- Ms D Corden on behalf of Ambulance Victoria.

The purpose of the Mention Hearing was to hear from the Interested Parties about their respective views on whether my investigation would benefit from a public hearing given that my investigation, thus far, had raised concern that there may be risks associated with conscious sedation administered during a dental procedure in an office style setting, particularly for patients with a high BMI, such as Michael.

39. I indicated to the Interested Parties that I had provided the recently received opinion of Professor Harper to the Court-appointed expert for comment, but this had not yet been received. In response to my query why a Cardiologist had been retained Mr Halley of Counsel responded:

The contention on behalf of Dr Singh and the material that was present to him at the time, was that he thought he was dealing with a cardiac cause for the arrest. And we commissioned a cardiologist to look at the material, including the autopsy report, to get an opinion as to what was the likely mechanism of death. And Professor Harper has opined that the likely mechanism of death is cardiac caused due to probably a dissection of the artery going to the atrioventricular node and which will have caused arrythmia plus administration of Propofol which is known to affect conduction of the atrioventricular node. And it's important because Dr McGain makes criticisms of Dr Singh in relation to his management of the arrest, on the assumption that it was a respiratory arrest, and we say that they're ill-founded because it was a cardiac arrest.[23]

40. Mr Halley also submitted that if I was minded to make criticisms of Dr Singh's management of Michael post arrest, then Dr Singh would need to have the right to be heard and given the opportunity to test Dr McGain's evidence.[24]

41. After further discussion with the Interested Parties I indicated that once I had received a response to Professor Harper's opinion from the Court-appointed expert, I would provide

[23] Transcript of Proceedings (**TP**) – 13 February 2020 at p 6.

[24] TP – 13 February 2020 at p 11.

all the material to Forensic Pathologist Dr Lynch, to comment on, provide the same to the Interested Parties and allow them to make submissions on whether I needed to proceed to an Inquest. The taking of concurrent evidence from the experts was flagged.

INQUEST

42. The mechanism of the cardiorespiratory arrest remained in contention and warranted holding an Inquest to enable the experts to give concurrent evidence and be cross-examined by the Interested Parties' legal representatives. I received no objections to adopting this course. An Inquest was listed for 8 December 2020 and conducted via WebEx due to ongoing restrictions related to the COVID-19 pandemic. SC Jeff Dart again appeared to assist me. Only SC Dart and the three experts, Dr Forbes McGain, Professor Richard Harper and Dr Matthew Lynch were present in Court.

- Ms Fitzgerald of Counsel appeared on behalf of the Collins Street Specialist Centre and Dr Gregory Tilley;
- Mr Halley of Counsel on behalf of Dr Singh; and
- Mr Patrick Over of Counsel on behalf of the Family.

The Concurrent Evidence at the Inquest

43. The concurrent evidence of the following Panel witnesses was obtained:

    - Dr Forbes McGain, Anaesthetist/Intensive Care Physician;[25]
    - Professor Richard Harper, Consultant & Interventional Cardiologist;[26] and
    - Dr Matthew Lynch, Forensic Pathologist at the VIFM.[27]

[25] Exhibits 1 & 2 – reports of Dr Forbes McGain dated 29 March 2019 and 8 December 2020.

[26] Exhibit 6 – report of Professor Richard Harper dated 23 January 2020.

[27] Exhibits 3 & 4 – reports of Dr Matthew Lynch dated 14 July 2017 and 19 October 2017 and Exhibit 5 – email from Dr Lynch to SC Dart dated 28 April 2020.

ISSUES INVESTIGATED AT THE INQUEST - CONCURRENT EVIDENCE[28]

44. The questions posed to the Panel and their responses are as follows:

Pre-anaesthetic Assessment

I. When a patient such as Mr Anderson presents at a dental clinic for the outpatient treatment he underwent, what, if any, pre-procedure investigation(s) should be undertaken prior to the procedure?

45. Dr McGain responded on behalf of the Panel stating that there are Guidelines from the Australian and New Zealand College of Anaesthetists for determining pre-procedure investigations but it was reasonable not to be performing any investigations prior to this procedure for this patient – Michael, apart from being obese, was young and well, and the procedure was minor which did not necessitate an intensive hospital admission. Professor Harper added that all that was required in Michael's case was the taking of a careful medical history.[29]

II. Should Mr Anderson have been required to undertake pre-procedure investigations prior to the treatment?

46. The Panel[30] responded no, as there was no unusual history there was no requirement to undertake pre-procedure investigations.[31]

III. How is a patient's medical history and any health conditions disclosed to a dental surgeon? Is it just by discussion and do you believe this to be appropriate?

47. The Panel responded that the medical history is obtained by discussion and questionnaire and that it was appropriately done in Michael's case.[32]

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[28] The Roman numerals depict the questions posed to the Panel noting that the Panel members had met to discuss the questions prior to being sworn in to give their evidence.

[29] T at pp 16 -17.

[30] Dr McGain was the principal spokesperson for the Panel – where I have stated "the panel responded" it reflects that Dr McGain was the spokesperson.

[31] T at p 17.

[32] T at p 18.

IV. Was it appropriate in these circumstances to administer Propofol in a dentist practice setting having consideration to this patient with a high BMI and/or other potential co-morbidities?

48. The Panel responded that it was appropriate to administer Propofol in this setting and even though the anaesthetist would be concerned about its administration due to Michael's BMI of around 38, 39, it is not inappropriate to administer Propofol in the setting.[33]

V. Does the administration of Propofol to someone with obesity add additional risk from a medical perspective and if so, how?

49. The Panel responded, yes – obesity adds to the risk. In the obese person breathing may become more rapidly impaired when compared to a non-obese person receiving a similar dose of Propofol because the obese person has a larger thoracic mass – thoracic cage adipose tissue or fat and as lung activity is reduced by the Propofol, "their compliance is affected by that and thus they can run into trouble breathing in a more difficult fashion". The Panel also added that there are a number of features more concerning for someone who is obese - resuscitation can be made more difficult, intravenous access can be more difficult if this occurs in a confined space.[34]

VI. Does the administration of Propofol to somebody with borderline cardiomegaly add extra risk and the potential of complications? If yes, please explain. And does that change with the extent of the cardiomegaly? For example, can you have different levels or extent of this condition?

50. Professor Harper responded on behalf of the Panel that cardiomegaly, particularly extreme cardiomegaly could potentially enhance the ability of Propofol to cause cardiac arrythmias. But in the setting of borderline cardiomegaly – as Michael was identified as having – this enhancement would be minimal, if at all.[35]

VII. Was the level of Propofol administered appropriate for conscious sedation?

[33] T at p 18.

[34] T at pp 18 – 19.

[35] T at p 19.

51. The Panel responded that the amount of Propofol administered intravenously to Michael – 3 x doses of 50 milligrams (total 150 milligrams) over a 10-minute period was appropriate however, as there is a lot of variation in how people respond to Propofol, constant vigilance by the anaesthetist is important. According to the Panel, the term 'conscious sedation' is somewhat concerning because the response to Propofol is a continuum, varying from a patient that remains interactive with the anaesthetist/staff to someone who might become quickly and dramatically obtunded and unconscious.[36] Professor Harper added that the total dose of 150 milligrams administered to Michael was not a particularly high dose but accepted that people's response to the drug does vary considerably. Professor Harper also commented that the post-mortem toxicological analysis reported the level of Propofol to be in the therapeutic range, however Dr Lynch said that one had to be careful in interpreting post-mortem drug levels, as drug levels can alter post mortem for a variety of reasons, and that there are well-documented cases of patients having significant respiratory depression at levels equivalent to the levels detected in Michael.[37]

VIII. At autopsy it was confirmed that Mr Anderson had a heart weight at the upper limit of normal based on body mass but enlarged for height.[38] Had this information been known prior to the procedure undertaken, what would the advice be in relation to the administration of Propofol for this type of dental procedure particularly in a dental clinic?

52. Professor Harper responded on behalf of the Panel that this information would have only been known if Michael had undergone an echocardiogram prior to the procedure but in the absence of a cardiac history, this was not warranted. Propofol administration was not contraindicated even if this was known.[39]

[36] T at pp 19 – 20.

[37] T at pp 20 – 21.

[38] The correction to the word "height" occurred through Dr Lynch noting that SC Dart had used the word "heart" in error when posing the question.

[39] T at pp 21 – 22.

Observations

IX. Are there any distinguishing signs or symptoms between a cardiac arrest and a respiratory arrest and if so, what are they?

53. The Panel responded that it can be difficult to distinguish between the two and that the final common pathway is that there is a cardiac arrest, and the heart has stopped. Distinguishing signs in a respiratory arrest might be a reduction in the respiratory rate, a slow pattern of breathing, shallow breathing, then there might be the development of a slow or absent pulse, profoundly low blood pressure and the heart stops. Whereas in a cardiac arrest, which can be more rapid in onset, it could be proceeded by bradycardia, low blood pressure and there could be arrythmias as well.[40] The Panel also offered that Propofol can cause respiratory depression and cardiovascular depression – it makes you sleepy, stops you breathing and will eventually stop your heart. It will certainly lower blood pressure and not infrequently cause a reduction in heart rate or bradycardia.[41]

X. Does the sequence of observations of Michael tend to indicate an initial respiratory or cardiac event?

54. In referencing the statement of Dr Singh[42] and his description of the events,[43] the Panel responded that the two are occurring simultaneously.[44] Professor Harper also stated that it was important to point out that bradycardia was the first observation so he thought the cardiac event preceded the respiratory event but he also accepted that both could occur almost simultaneously.[45]

XI. What is the clinical scenario of someone who has been given too much Propofol and what clinical observations should be paid attention to?

55. The Panel responded that there are three main events that happen, the first being that the patient becomes obtunded or sleepy, second their respiratory rate falls, eventually stopping (apnoeic), and third the patient becomes hypotensive. The pulse rate may also

[40] T at p 22.

[41] T at p 23.

[42] Coronial Brief (CB) at pp 61- 69.

[43] CB at pp 66 – 67.

[44] T at pp 23 – 24.

[45] T at p 24.

fall. Because of these cardiovascular, respiratory and cerebral effects when too much Propofol is given, the clinical observations equate to paying attention to the patient's conscious state, respiratory rate, pulse oximetry levels, oxygen saturation levels, blood pressure and pulse.[46]

Monitoring

XII. Was the monitoring of Michael throughout the procedure adequate and what could be improved?

56. The Panel responded by again referencing the Australian and New Zealand College of Anaesthetists Guidelines on adequate monitoring for sedation noting that pulse oximetry is required and was used and that a record of pulse rate is important and was also done through the pulse oximeter. It was noted that the Anaesthesia Record[47] depicts a record of the pulse rate of between 80–100 (beats per minute), and 100% oxygen delivered at 4-6 litres/minute. The Panel said that a record of Michael's blood pressure could not however be located on the Anaesthesia Record and given that it is known that Propofol can drop blood pressure. The Panel noted that it was of concern that blood pressure was not measured before the Propofol was given or after it was given when it was also known that three doses of Propofol was given over a 10-minute period. Reference to Dr Singh's Contemporary Record of Event[48] confirmed that heart rate and oxygen saturations were being monitored *with other monitoring available and ready to apply (BP, ECG, defib).*[49]

XIII. Would monitoring be different in a hospital setting?

57. The Panel responded that the main point was that the blood pressure would be monitored during this procedure in a hospital setting, while pulse oximetry would be the same, and an electrocardiogram (ECG) may or may not be applied in a hospital setting but was not

[46] T at p 25.

[47] CB at p 138.

[48] CB at p 136.

[49] T at pp 25 – 26.

critical. The Panel opined that the location of where the procedure was performed is not the issue, it is the giving of Propofol, a sedating agent.[50]

XIV. Do you believe monitoring would have been the same in a hospital setting, as what it was at the dental clinic?[51]

58. The Panel responded, no, as opposed to the dental clinic, blood pressure would have been monitored and recorded in a hospital setting.

Resuscitation

XV. Should the resuscitation be the same regardless of whether it was a respiratory or cardiac event? Please explain.

59. The Panel responded for an adult, yes it should be the same regardless of the cause. Professor Harper added that the cardiac aspect of the resuscitation depends on what the underlying cardiac rhythm is - if the patient is in ventricular fibrillation they should be given "a shot" but if the patient is in asystole, CPR should continue, and adrenalin administered.[52] Professor Harper concurred that the exact rhythm is only known once a cardiac monitor is in place on the patient. Dr McGain also wished to point out that the resuscitation of Michael proceeded well – he said that there was good attention to seeking help, stopping the dental procedure and chest compressions commencing without delay.[53]

XVI. Would the use of bag and mask ventilation have a similar outcome to the use of an endotracheal tube? If not, explain the benefits of one over the other as a method of respiratory support.

60. The Panel responded that all patients would commence with a bag and mask – it is simple to use and that is its advantage. As soon as possible one should move to intubation with an endotracheal tube as it is more reliable, but one must weigh up the risk to resuscitation attempts by interrupting chest compressions for the time it takes to intubate the patient.[54]

[50] T at pp 26 – 27.

[51] This was an additional question put to the Panel that had not been previously provided to them.

[52] T at p 27.

[53] T at p 28.

[54] T at pp 28 – 29.

XVII. Do you think it was important for Dr Singh to continue attempts to intubate rather than settling on the bag and mask ventilation?

61. The Panel responded that it would have been reasonable for Dr Singh to make a second attempt to intubate Michael however, it is known that ambulance paramedics also experienced difficulty intubating Michael.[55] Generally, it is reasonable to attempt intubation twice but any more than that would be interfering, and interrupting chest compressions, and it would be better in those circumstances for someone else to make the attempt.[56]

Cause of death

XVIII. In Dr Lynch's response of 28 April 2020 he notes, "Both experts have misinterpreted my supplementary report where I described 'disruption of the internal elastic lamina' of an artery in the region of the AV node as indicating an acute phenomenon, although Professor Harper appears to have attached greater weight to this mis-impression. The change in the artery was long standing and of uncertain significance." Does this change any of the Panel members' initial opinions?

62. Dr Lynch responded in the first instance by providing further explanation of his findings at autopsy.[57] He concluded his explanation: "*So slightly enlarged heart and the narrow vessel are two pathological processes that increase Mr Anderson's vulnerability to developing cardiac arrythmia, independent of anaesthesia and in this case in the setting of anaesthesia."*[58] Professor Harper provided some further information about the cardiac conduction system but effectively agreed with Dr Lynch that the presence of the two pathologies increased Michael's vulnerability for an arrythmia.[59]

XIX. Professor Harper and Dr McGain both made some mention of a dissection of the AV nodal artery. Can Dr Lynch please clarify whether there was evidence of this at autopsy. Does this change the Panel members' initial opinions?

[55] Dr McGain referred to it as a Grade 3 intubation that is, at the more difficult end of attempting intubation with an endotracheal tube.

[56] T at pp 29 – 30.

[57] T at pp 30 – 31.

[58] T at p 31.

[59] T at p 31.

63. Dr Lynch responded that he had seen "*some changes microscopically in the blood vessel that were longstanding but […] saw nothing to indicate some kind of acute phenomena had occurred at the time of the anaesthesia or resuscitation."*[60] Professor Harper stated that he accepted Dr Lynch's explanation but also wished to emphasise that the artery was diseased.[61]

XX. Professor Harper, you note arteries with fibromuscular dysplasia are susceptible to spontaneous dissection, particularly in the setting of emotional stress. What is the significance of this statement in regard to Michael?

64. Professor Harper responded that the statement was true but accepted that it did not occur in Michael's case.[62]

Hospital v. Office setting for the procedure

XXI. In what circumstances would dental treatment, as that received by Michael, be done in a hospital inpatient or a day procedure clinic setting as opposed to a dentist's clinic?

65. The Panel responded that one must take into account a patient's comorbidities in making the decision whether the dentist's clinic is appropriate. For example, if the patient had heart or lung disease, was emotionally unstable/mental health problems or was very large/obese – these would be good examples of reasons for not doing the procedure in a dental clinic but in a day procedure clinic or hospital because there are more safety features by way of staffing and equipment. The Panel stated that they had been deliberating whether a decisive factor should be the need for sedation/anaesthesia/conscious sedation for a dental procedure, whilst acknowledging that it was a common practice in the dental clinic environment and questioned whether the increment of safety offered in a day procedure clinic or hospital environment warranted not undertaking any procedures in the dental clinic that required

[60] T at p 32.

[61] T at p 32.

[62] T at p 32.

sedation/anaesthesia/conscious sedation. The Panel said that the question required further exploration.[63]

XXII. If the procedure was performed in a hospital would this have provided a better opportunity to react to the medical emergency and if so, how?

66. The Panel responded that if the procedure was performed in a hospital, this would have provided a better opportunity to react to the medical emergency because of two important factors, in the hospital or day procedure clinic there are better staffing levels to assist in resuscitation/care of the patient and there are more facilities that is, space and equipment, than in the dental clinic.[64] Professor Harper added he thought the number of staff at the dental clinic during Michael's procedure was adequate, but the difference in a day procedure clinic in a hospital setting is that there are a lot more staff and that their level of training is likely to be better.[65]

Concluding questions (to the Panel)

XXIII. Is it your opinion that the overall management of Michael, a 36-year-old man attending for a root canal procedure, was adequate?

67. The Panel responded that they all agreed that the resuscitation was quite adequate and appropriate. What was troubling – specifically to Dr McGain, was '*that the anaesthetist was delivering Propofol without checking the blood pressure […] at any point*' that Dr McGain could see. He acknowledged that the blood pressure could have been taken after the arrest '*but it certainly didn't happen before'* and consequentially, he worried about the use of the word 'adequate' in this regard.[66] Dr McGain also commented on the adequacy of the dental clinic setting to conduct this sort of procedure '*when things don't go well'* and concluded that for him '*there were two areas that were inadequate – blood pressure monitoring early on and the size of the space available for the staff for the resuscitation of Michael'*[67] Professor Harper added that from a cardiac point of view, recognising the bradycardia, immediately attending to the airway, getting the "defib"

[63] T at pp 32 – 34.

[64] T at p 34.

[65] T at pp 34 – 35.

[66] T at pp 35 – 36.

[67] T at p 36.

pads on to identify the cardiac rhythm and then giving adrenalin was all standard cardiac resuscitation procedure.

68. Neither Professor Harper nor Dr Lynch made any additional comment or reference to the adequacy of Michael's management.

XXIV. Other than not having the procedure and the Propofol, do you believe there was anything that could have been changed in the management that could have prevented Michael's death?

69. The Panel responded in the same vein as the response to the previous question and said that if anything could have been changed it would have been to measure Michael's blood pressure prior to and after the administration of multiple doses of Propofol. The Panel noted that could be done for example, on a two and half minute cycle on the blood pressure monitor. In addition to very close attention the blood pressure, the Panel also noted Michael's breathing/intubation issues[68] and the somewhat confined arrangement of the Collins Street Specialist Centre that may have impacted on the emergency response.[69]

XXV. Were the experts able to reach a consensus on whether the catalyst was cardiac or respiratory in Michael's case?[70]

70. Professor Harper responded in the first instance by saying that it is difficult to know because both could have occurred almost simultaneously. However, because the first observation of a change in Michael's vital signs was that of a bradycardia and not of respiratory distress, Professor Harper said that suggests a cardiac event was the initial cause. He then said '*but accepting that Propofol causes both cardiac and respiratory depression. And I think there is - the disease AV node artery did make him more susceptible to that particular effect of Propofol'.*[71] Dr McGain said that both cardiac and respiratory effects are standard for Propofol because it is being used to stop breathing without wanting the patient's heart to stop. He said that it is very common/almost routine

[68] This was not expanded on by the Panel.

[69] T at pp 36 -37.

[70] This was an additional question that SC Dart sought to put to the Panel.

[71] T at p 37.

with this anaesthetic agent to administer a dose of metaraminol to increase the patient's blood pressure, because *'Propofol affects your brain, it affects your heart and it affects your lungs. And I think that's why it's an incredibly dangerous drug that has to be very, very carefully titrated and a lot of attention to detail has to be made both from a respiratory and a cardiovascular point'*.[72]

71. I asked Dr McGain to clarify if he was saying to me that Propofol was too dangerous a drug to be administering in a dental clinic. He responded that it would be dangerous to be administering Propofol in that setting to a patient with comorbidities but in Michael's case – a young man with obesity but who has walked into the dental clinic and died after being administered Propofol which shows that you must be cautious/very careful about its use, but Dr McGain stated that he was not saying it should *not* be used in that setting.[73]

XXVI. Do you have any suggestions or comments for the Coroner that you believe could assist with preventing similar deaths from occurring?

72. The Panel responded that it is vital to have a Consultant Anaesthetist, blood pressure monitoring and constant vigilance of patients undergoing dental procedures in a clinic setting akin to that of Michael's. The Panel also noted that there should be some discussion between the College of Anaesthetists, the Australian Dental Association and the Department of Health about minimum safety requirements and planning for 'worst case scenarios' in the dental practice setting. The Panel further noted that, whilst acknowledging that the Collins Street Specialist centre did have an AED present, it is equally important to ask questions about how big the room should be, what is the arrangement of the trolleys and the like.[74]

73. That concluded the questions put to the Panel by Counsel Assisting.

74. I sought clarification from Dr McGain about the use of the terminology "conscious sedation" as he had earlier indicated some concern about its use. Dr McGain responded that it was not used very much, though centrally it was a term used to explain to patients undergoing procedures such as colonoscopies or gastroscopies in day procedure centres

[72] T at pp 37 - 38

[73] T at p 38.

[74] T at p 39.

or hospitals. He explained that it is not a general anaesthetic that is being administered, however the patient is told they won't remember much, if anything about the procedure. The patient is generally told that they are receiving a drug which impairs their memory, impairs their sense of pain and impairs their recall – there is a graduation towards becoming deeply sedated with the anaesthetic agent and becoming unconscious. Dr McGain agreed with me that the phrase "conscious sedation" was a little misleading – he said for the lay person 'conscious' denotes a capacity to still have a chat.

75. Counsel representing the Interested Parties were then provided an opportunity to ask questions to the Panel.

76. Mr Halley, on behalf of Dr Singh, addressed Dr McGain in relation to his criticism about blood pressure monitoring and in so doing referred Dr McGain to his own statement,[75] Dr Singh's statement[76] and enquired if Dr McGain was familiar with the Phillips SureSigns VS2+ machine that Dr Singh had used on Michael to monitor his saturations, pulse and blood pressure.[77] Dr McGain responded that he was familiar with Phillips' devices but not that particular one. Mr Halley then pointed out to Dr McGain that Dr Singh had identified in his statement that the device had an automated blood pressure cuff, defaults to 5-minutely blood pressure readings as soon as the machine is set up and that Michael was continuously monitored with the use of this device. Dr McGain however did not say this information/clarification changed his criticism about the lack of blood pressure monitoring. He responded instead that there were discrepancies in what was said in the referred paragraphs and the lack of blood pressure recordings on the anaesthetic chart and in Dr Singh's own Contemporaneous Record[78] of the events where he makes reference to what was being monitored – heart rate and oxygen saturations and that '*other monitoring was available and ready to apply (BP, ECG, defib.)'*. In the absence of evidence that blood pressure has been documented, Dr McGain said he remained concerned - the Phillips SureSigns VS2+ was an appropriate machine for

[75] Exhibit 1, p107 Coronial Brief (CB).

[76] At pp 65 & 66 CB.

[77] p 65 CB at paragraph 8(b).

[78] pp 136 – 137 CB.

monitoring blood pressure but he did not know '*whether it was applied other than to say it was ready to apply'.*[79]

77. During further questioning of Dr McGain by Mr Halley regarding whether Michael's arrest was respiratory or cardiac in origin, Dr McGain reiterated that he did not think that was important but what was certain was that Propofol had contributed to Michael's death. Dr McGain said that he had no criticism of the resuscitation attempts – resuscitation was appropriate. His 'surprise' that Dr Singh had not made a second attempt at intubation was based on that Dr Singh had indicated that he was an expert in intubation.[80]

78. Of Professor Harper, Mr Halley sought clarification whether his opinion about conductivity through the AV node had changed after the Panel accepted that the state of the artery supplying the AV node was of a chronic state rather than of an acute state. Professor Harper responded that it was not possible to be 100% certain but the combination of a diseased artery and Propofol – which affects electrical properties of the heart – could have contributed to the identified bradycardia.[81] And in also seeking clarification if Professor Harper remained of the view that the initial mode of Michael's arrest was cardiac in origin, Professor Harper again stated that because bradycardia was the first observed alteration to Michael's vital signs, this made him think it was cardiac in origin but, he accepted '*that there is some uncertainty regarding this'.*[82]

79. Mr Over asked Professor Harper if one would expect to see shortness of breath with bradycardia, to which Professor Harper responded that there can be a delay between the onset of a bradycardia and an affect to breathing.[83]

80. Of Dr McGain, Mr Over also sought clarification of matters pertaining to blood pressure including the need to take a baseline blood pressure reading before the administration of Propofol because in the event that the patient had low blood pressure, a more cautious approach to the administration of the Propofol would follow. Dr McGain noted further that recording of the baseline blood pressure was also important for comparison with

[79] T at p 45.

[80] T at pp 49 – 52.

[81] T at p 53.

[82] T at p 53.

[83] T at p 54.

later recordings to ascertain any subsequent significant change because the two main cardiovascular effect of Propofol are hypotension and bradycardia.[84] Furthermore, Dr McGain agreed with Mr Over that blood pressure monitoring was an important factor in managing the risk of a cardiac arrest from the administration of Propofol.[85]

81. A number of other questions/points of clarification were put to Dr McGain by Mr Over including, but not limited to whether he maintained his criticism of Dr Singh for making only one attempt at intubation, and whether it remained his opinion that Michael most likely suffered a respiratory arrest due to Propofol administration which led to an asystolic cardiac arrest. Dr McGain responded that it did remain his opinion, although acknowledging that they can occur simultaneously, because if one gives enough Propofol one will stop breathing, and after that the heart stops, either by bradycardia and then arrest – '*we know that the effects of Propofol dampen the respiratory system dramatically'*.[86]

82. Ms Fitzgerald had no additional questions for the Panel and Mr Halley did not seek to put any further questions to it. The Panel was then excused. No other issues of concern were identified, effectively closing the evidence, and I informed the interested parties that we would return to Court in the new year to hear closing submissions and that they should file and serve an outline of their respective closing submissions two weeks before returning to Court.

83. The matter was subsequently listed to return for closing submissions for 12 February 2021.

Mention Hearing – 12 February 2021

84. The hearing date for closing submissions was converted to a Mention Hearing date at the request of the family's legal representatives on the grounds that Dr Singh's legal representatives had sought to provide to the Court additional material, after the close of the evidence, and without seeking leave of the Court or consent of the other Interested

[84] T at p 56.

[85] T at pp 57 – 58.

[86] T at p 61.

Parties to do so. The Mention Hearing progressed on the basis that I was seeking clarity about whether a formal application to re-open the evidence was being made.

85. Mr Halley stated that he did not have instructions about making a formal application at that point in time.[87]

86. Mr Over submitted that the evidence was closed at that point, and if there was no application to reopen, the new material provided by Dr Singh's legal advisors should not be allowed. He continued: '*Dr Forbes McGain provided two reports. Dr Singh had an opportunity to put in expert reports, he put in a report of cardiologist Professor Harper, and elected presumably not to provide an anaesthetic opinion at that stage'*.[88]

87. Mr Halley sought time to clarify if he had instructions to make a formal application to re-open the evidence, which was granted, and when I returned to the Bench, he confirmed that no such application was to be made.[89]

88. The matter was relisted for closing submissions.

Closing Submissions Hearing – 10 March 2021

89. Dr Ian Freckelton SC appeared on behalf of Dr Singh. Counsel Assisting and Counsel for the family and Collins Street Specialist Clinic remained unchanged. All Interested Parties had provided, as requested, an outline of their respective submissions and they were invited to speak to them and to respond to the submissions of others.[90]

COMMENTS

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

1. The dental practice procedure room was referred to as a 'confined space' - a not unreasonable description particularly as its size was being compared to other spaces where a procedure involving the administration of an anaesthetic agent is taking place, for example, a day-procedure clinic or a hospital. The size of the space at the Collins Street Specialist Clinic was identified as a possible contributing factor to hampering the resuscitative attempts to Michael after his arrest. For example, Advanced Life Support

[87] T at p 4 (12 February 2021).

[88] T at p 5 (12 February 2021).

[89] T at p 7 (12 February 2021).

[90] See Transcript for 10 March 2021 pp 1 – 45.

(ALS) Paramedic Clinical Instructor, Ken Whittle stated that '*the resuscitation was complicated by the lack of available space… the room was only 10-15 square metres in size, making it difficult to position oneself to perform the necessary resuscitation tasks…there were no other suitable or immediately available areas…..extrication was difficult due to Michael's […] size and weight....and the route and distance back to the ambulance'*.[91] Annette Rubin, Mobile Intensive Care Ambulance (MICA) Paramedic in describing that Michael was anatomically difficult to intubate, and that she experienced difficulty opening his mouth to insert the laryngoscope blade, stated that '*this was made more difficult by the cramped environment of a small room with an immovable dentist chair in the middle of it'* – there was no way to remedy this and no larger spaces nearby to move Michael to.[92] ALS paramedic Vinh Khuu also stated that complications encountered included '*the limited space of the dental treatment room'* and that *'there was very little room available to perform the necessary resuscitation tasks'.*[93] In a slightly different depiction of the space that first responders found themselves in in response to the 000 call, the four attending firefighters from the Metropolitan Fire Brigade reported that *'the size of the room did not adversely affect the treatment of the patient'.*[94]

2. Having reviewed the statements of attending emergency personnel, and considered the submissions of Ms Fitzgerald, the size of the dental procedure room was not the ideal setting for anything other than a dental procedure and the size and configuration of the room presented challenges for the administration of emergency care and treatment by emergency responder personnel. I am however satisfied that it did not hamper how the emergency response unfolded and how it was managed. This is further supported by the evidence of the Panel that the resuscitation was entirely appropriate.

3. Furthermore, I acknowledge that at the time of Michael's attendance at the Collins Street Specialist Clinic there were no stipulated minimum size requirements for a dental procedure room or for access for emergency personnel for patients undergoing sedation for a dental procedure in a private office/dental practice setting. This remains the situation

[91] Statement of Ken Whittle (undated) – CB at pp 78 – 80.

[92] Statement of Annette Rubin (undated) – CB at pp 84 -86.

[93] Statement of Vinh Khuu (undated) – CB at pp 81 – 83.

[94] Statement of Kirsty McIntyre, General Counsel Metropolitan Fire and Emergency Services Board dated 6 September 2018 – CB at pp 72 – 77.

despite a review of the Sedation Guidelines issued by the Department of Health and Human Services (as it then was) on 1 July 2018 entitled '*Information for registered mobile anaesthesia and IV-sedation services in office settings*'. The physical requirements of office settings where these services are provided is not dealt with. However, I refrain from making any recommendations for minimum standards related to room size requirements where conscious sedation/anaesthesia is to be administered as the size and configuration of a procedural room, and whether it is fit for purpose or fit for all purposes,, is multi-layered in complexity. It has however been considered by the Department of Health at least in part, and perhaps should be considered further by them for incorporation into their already existing Sedation Guidelines. I will provide them with my Findings for their consideration on this issue.

4. Michael's weight was also identified as contributing to his risk of complications from undergoing the endodontic procedure under conscious sedation/anaesthesia. Dr Singh noted that Michael was 180cms tall and weighed 125 kilograms equating to a BMI of 38.5 and that his particular risks, above those of the general population, '*arose from his weight* however Dr Singh *'did not perceive Michael's weight to present a life threatening risk or barrier to him safely receiving treatment under light conscious sedation'*.[95] Annette Rubin, MICA paramedic in describing that Michael was anatomically difficult to intubate said she anticipated a difficult intubation due to Michael's '*obesity, bull neck'* and the comments of Dr Singh that he attempted laryngoscopy on Michael but had difficulty obtaining a view of his vocal cords.[96] Questions *IV* and *V* to the Panel also addressed the potential risks associated with obesity and the Panel's responses are to found at paragraphs 47 and 48 of my Findings.

5. It is generally acknowledged that there is increased risk to health *per se* from obesity however, nothing definitive was enunciated in the evidence that would support a finding that Michael should have been excluded from undergoing the procedure at the Collins Street Specialist Clinic because of his weight alone.

6. It should also be acknowledged that Dr Singh, in his statement to the Court,[97] said that since Michael's death, he has implemented a more restrictive exclusion criteria for

[95] Statement of Dr Anthony Singh dated 1 February 2018 – CB at pp 61-69.

[96] Statement of Annette Rubin (undated) – CB at pp 84 -86.

[97] Statement of Dr Anthony Singh dated 1 February 2018 – CB at pp 61-69.

intravenous sedation for dental procedures where the patient's BMI is less than 40. For patients with a BMI in excess of 40 Dr Singh says that he does not offer the option of intravenous sedation for dental procedures.

7. Dr Singh's review of his own benchmarks for procedures requiring conscious sedation/anaesthesia to be undertaken in the dental procedure room whilst commendable would not have excluded Michael as his BMI was assessed by Dr Singh as being 38.5. Further, the practicalities of him implementing his renewed benchmark are not entirely clear as it would necessitate his knowledge of the patient's BMI prior to him accepting the booking for his professional services at the risk of inconveniencing all others, including the patient if he arrived at the clinic then Dr Singh declared his inability to proceed to provide the services for which he had been engaged because the patient had a BMI in excess of 40. From his statement, I understood that Dr Singh only consulted with Michael on the day of the procedure, but perhaps Dr Singh now intends to seek that information in advance.[98] I take this no further as nothing turns on it.

8. Dr McGain's response to question 23 (*XXIII*) about the adequacy of Michael's management[99] was critical about the lack of evidence/documentation that any blood pressure readings had been taken before Michael's arrest. He was thus of the view that this element of Michael's management was inadequate. He identified this as his concern but neither Professor Harper nor Dr Lynch added any additional comment or contradiction to Dr McGain's views, and I am therefore entitled to consider that they are the views of the Panel *per se.*

9. Similarly, the response to question 24 (*XXIV*) again reflected Dr McGain's concerns about the lack of blood pressure monitoring and in the absence of any apparent disagreement by the Panel members, the opinions expressed are taken to be that of the Panel *per se*.

10. The question whether the administration of an anaesthetic agent played a role in Michael's death was apparent from the outset as Michael suffered a cardio-respiratory arrest during a dental procedure after having been administered the anaesthetic agent,

[98] I note that Dr Singh's estimate of the BMI of Michael differs to that in the MER of Dr Lynch.

[99] See paragraph 67.

Propofol, by Dr Singh. The Medical Examiner's Report from Dr Matthew Lynch[100] ascribed the cause of death, in part, to the administration of Propofol and highlighted a potential issue for my investigation in Comment 13 of his report when Dr Lynch said: '*In my view, it would be appropriate in this instance to seek expert medical opinion from an anaesthetist as to the appropriateness of the anaesthetic management'* (my emphasis). The Medical Examiner's Report was sent to Dr Singh by the Coroners Prevention Unit (CPU) in their first request to him for a statement on 27 October 2017.

11. If Dr Singh had not himself anticipated by this stage of my investigation that he might be requested to participate in the Coronial investigation about his role as the attending Anaesthetist at the dental procedure, his lawyers, Avant Law, appear to have anticipated this when they filed a Form 45 requesting the Coronial Brief on the grounds that they represent Dr Singh '*who provided treatment to the deceased and has been asked to provide a statement to the coroner as part of the investigation'.*[101] In addition and at the same time, Avant Law filed a Form 31 seeking leave to appear as an Interested Party on behalf of Dr Singh[102] and provided to the Court a statement with attachments, from Dr Singh, dated 1 February 2018.[103]

12. I am entitled to thus believe that Dr Singh had sought and been provided with legal advice about his role in the surrounding circumstances to the death of Michael through the administration of the anaesthetic agent, at the latest, on 1 February 2018. Avant Law continued to provide Dr Singh with legal representation up to and including the Inquest and Avant Law remain on the Court record as his legal representatives. At no time was Dr Singh without legal representation and therefore legal advice and he was represented at the Inquest by Counsel with many years of experience in the Coronial jurisdiction. His anaesthetic management was an issue from the outset of my investigation and when identified and highlighted by Dr Lynch following his performance of an autopsy on the body of Michael, Dr Singh and/or his legal advisors would have been cognisant of the

[100] Exhibit 3, pp 26 -38 CB.

[101] Application for Access to Coronial Documents/Inquest Transcript, Form 45 Rule 67, Sections 115 and 63 of the *Coroners Act 2008,* signed by Rebecca Kovacs, Avant Law on 2 February 2018 and received by the Court on 5 February 2018.

[102] Application for Leave to Appear as an Interested Party, Form 31 Rule 53(2), Section 56 of the *Coroners Act 2008* signed by Avant Law on 2 February 2018 and received by the Court on 5 February 2018.

[103] Both Applications and the statement, with attachments, from Dr Singh dated 1 February 2018 (pp 61 – 71 CB), were provided to the Court under cover of a letter from Avant Law dated 2 February 2018 and received by the Court on 5 February 2018.

direction of my enquiries. The appointment by the Court of an independent expert opinion and the distribution of the same to the Interested Parties would have alerted Dr Singh and/or his legal advisors that unless Dr Singh wished to concede the criticisms made by Dr McGain about Dr Singh's anaesthetic management of Michael, the matter would need to progress to an Inquest.

13. In paragraphs 38 – 41 of my Findings I have dealt with the chronology of events thereafter and the receipt only of the expert opinion of Cardiologist, Professor Harper which focussed on the mechanism of death being cardiac in origin rather than respiratory. No other expert opinion addressing Dr Singh's anaesthetic management was provided. No rebuttal of Dr McGain's opinions was provided.

14. As such, there was always the potential for adverse comment or Findings against Dr Singh, Dr Tilley and the Collins Street Specialist Clinic because Michael unexpectantly died whilst under the care of these specialists at this Clinic. The purpose of the Inquest was to explore the issues that remained in contention after receipt of the Coronial Brief and additional statements. It should be anticipated that "new evidence" may arise through the hearing of *viva voce* evidence whether that be from individual witnesses or through the dynamics of a conclave Panel. I therefore consider that Dr Singh has been appropriately and amply afforded natural justice in these proceedings and that the question that arose as to the potential re-opening of the proceedings after the close of evidence has not impinged upon this requirement.

RECOMMENDATIONS

Pursuant to section 72(2) of the Coroners Act 2008, I make the following recommendation(s) connected with the death:

1. With the aim of promoting public health and safety through addressing the increased risks to health by obesity, I recommend that the Australian and New Zealand College of Anaesthetists develop guidelines around the use of conscious sedation/anaesthesia, including but not necessarily limited to Propofol, in the dental practice setting on patients within WHO Class II and Class III obesity.
2. With the aim of promoting public health and safety through ongoing professional development of its members, I recommend that the Australian and New Zealand College of Anaesthetists use the circumstances surrounding the death of Michael Peter

Anderson as an educational tool for emphasising the importance of documenting vital signs following the administration of anaesthetic.

FINDINGS

1. I find that Michael Peter Anderson, born 13 November 1980, died on 18 April 2017 at the Alfred Hospital, Commercial Road Prahran 3181 in the State of Victoria.

2. I find that Michael Peter Anderson suffered a cardiorespiratory arrest whilst undergoing a dental procedure at the Collins Street Specialist Clinic on 18 April 2017 and that he suffered the cardiorespiratory arrest proximate to the administration of Propofol for the purposes of conscious sedation/anaesthesia.

3. AND having considered the evidence of the Panel on whether Michael Peter Anderson suffered a cardiac arrest or a respiratory arrest in the first instance, I find that it is not possible to make a definitive Finding in this regard but that little turns on that detail because it is the response to his arrest that is paramount.

4. I make no adverse Finding about the decision to use the anaesthetic agent Propofol, or the dose used, as I accept that it is a commonly used anaesthetic in the dental clinic setting and that despite the presence of obesity, there was nothing known by Michael Peter Anderson himself, or Dr Anthony Singh to contraindicate that Michael Peter Anderson was a suitable candidate to undergo this procedure in a dental clinic

5. I am unable to make Findings about whether Michael Peter Anderson's blood pressure would have or could have alerted Dr Singh of haemodynamic instability prior to the onset of bradycardia because there are no recordings of blood pressure either as a baseline reading before the administration of Propofol or during the administration of the subsequent doses, which was conceded by Mr Freckelton QC[104] and who also informed me that if I was minded to be critical of Dr Singh for a failure to generate appropriate documentation of the monitoring, Dr Singh accepts that criticism.[105]

[104] T at p 18 (10 March 2021)

[105] T at p 20 (10 March 2021).

6. I find that the lack of recordings/documentation of Michael Peter Anderson's blood pressure is not in accordance with best practice. I accept that blood pressure monitoring *was available* through the features of the Phillips SureSigns VS2+ and I acknowledge that Dr Singh states that blood pressure was continuously monitored using this equipment, but a failure to make a recording/document the blood pressure is a departure from best practice and an opportunity lost to substantiate that holistic and vigilant monitoring of vital signs was occurring whilst administering Propofol for anaesthetic purposes. However, I am unable to definitively find that the knowledge of, or the recording of Michael Peter Anderson's blood pressure would have altered the sequence of events and the ultimate tragic outcome. Having administered Propofol for anaesthetic purposes with its known rapid respiratory and cardiac effects, I find that it is the response to the compromised state of, and the arrest of Michael Peter Anderson, that is paramount.

7. I accept the opinions of the Panel in this regard and I find that the response to Michael Peter Anderson's arrest proceeded well in that it was both timely and appropriate.

8. I make no adverse comment against Dr Singh for not making a second attempt to intubate Michael.

9. AND I further find that the evidence indicates that Michael Peter Anderson likely suffered an asystolic arrest and that the survivability of such an arrest is not guaranteed and is indeed in the order of only 15 percent[106] even within a hospital setting. As such, in the circumstances, it is not possible to make Findings that Michael Peter Anderson's death was preventable.

10. I accept and adopt the medical cause of death as identified by Dr Matthew Lynch, Forensic Pathologist at the Victorian Institute of Forensic Medicine and I find that Michael Peter Anderson, a man with borderline cardiomegaly, died from a cardiorespiratory arrest complicating Propofol administration for an endodontic procedure. It is not necessary to amend the cause of death as submitted by the family as the cause of death ascribed by Dr Lynch encapsulates the cause and circumstances appropriately.

[106] Exhibit 6 – Expert opinion of Professor Richard Harper dated 23 January 2020 at p 117 CB

11. AND I further find that in the absence of any knowledge of the existence of an underlying cardiac condition in the form of borderline cardiomegaly, I make no adverse comment or finding on the decision to undertake the procedure at the Collins Street Specialist Clinic including the decision to administer the commonly used anaesthetic agent Propofol to undertake the procedure at the Collins Street Specialist Clinic. I accept that despite the presence of obesity, there was nothing known by Michael Peter Anderson himself, or Dr Tilley, to contraindicate that Michael Peter Anderson was a suitable candidate to undergo this procedure in a dental clinic –a practice which I accept is both commonly undertaken and considered acceptable practice within the professions of dentistry and anaesthesia. Accordingly, I make no adverse Findings against Dr Gregory Tilley or the Collins Street Specialist Clinic.

12. I offer my condolences to the family of Michael Peter Anderson for their sudden, unexpected and tragic loss.

To enable compliance with section 73(1) of the *Coroners Act 2008* (Vic), I direct that the Findings will be published on the internet.

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

Maurice Blackburn Lawyers on behalf of Vikki Anderson

Avant Law on behalf of Dr Anthony Singh

Barry.Nilsson Lawyers on behalf of Dr Gregory Tilley and the Collins Street Specialist Clinic

Safer Care Victoria

Australian and New Zealand College of Anaesthetists (ANZCA)

K & L Gates on behalf Ambulance Victoria

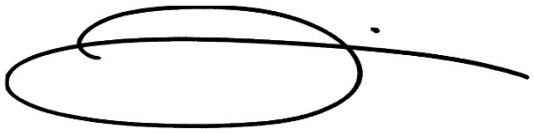
Metropolitan Fire and Emergency Services Board

Alfred Health

Australian Health Practitioners Regulation Authority

Department of Health

Signature:



AUDREY JAMIESON

CORONER

Date: 12 November 2021