IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2012 004565

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 60(2)

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

I, PARESA ANTONIADIS SPANOS, Coroner,
having investigated the death of AB
without holding an inquest:
find that the identity of the deceased was AB
born on 13 September 1978, aged 34
and that the death occurred between 24 and 26 October 2012
at Coburg, Victoria 3058
from:

I (a) COMBINED DRUG TOXICITY (PROPOFOL, SEVOFLURANE AND OTHERS).

Pursuant to section 67(2) of the **Coroners Act 2008**, I make findings with respect to **the following circumstances**:

1. AB was a 34-year-old woman who lived alone at the above address, and was an anaesthetist employed at the Royal Melbourne Hospital (RMH). AB's parents resided in New South Wales, and she had two siblings, one who also lived in Melbourne. AB moved to Melbourne from NSW in 2007 with her former partner.
2. According to her mother, AB suffered from severe and chronic migraines, that had increased in severity and frequency in the last ten years. So much so, that AB had been hospitalised twice in the three years immediately preceding her death, for migraine treatment.
3. AB's mother also stated that in 2000, AB was diagnosed with depression and anxiety. She was undertaking her Honours year at Sydney University at the time but did not manage to complete her course. However, after seeking treatment, she recovered and enrolled in a Bachelor of Medicine and Bachelor of Surgery at Sydney University in 2001. She completed her studies in 2005, having won an award for academic excellence.

4. In 2010, AB was diagnosed with a depressive disorder and insomnia, prescribed an antidepressant and was referred to a private psychologist. She attended the initial appointment, but cancelled the two follow-up appointments. In December 2010, AB was admitted to John Fawkner Hospital with atypical pneumonia, anaemia, and refractory migraines.
5. AB completed her final examinations in order to practice as an anaesthetist in 2012, and worked at several other hospitals before commencing her employment at the RMH from 2012. In the same year, AB sustained a serious burn injury to her hand at home that required regular dressings and opioid analgesics. She was able to continue working.
6. AB enjoyed a close relationship with her parents who made frequent trips to Melbourne to visit her. Her mother would always stay with her during exam periods as she tended to experience anxiety, poor sleep and migraines at such times.
7. AB's mother last saw her daughter in Melbourne from 6-21 October 2012, when AB arranged to take some annual leave in order to spend time with her parents. AB and her mother spent a weekend away together, and arranged to attend a theatre performance in Melbourne together in November, and a concert in December. AB's mother told police that her only concern during her stay in Melbourne was the number of 'Panadeine' tablets she saw her daughter taking, which she said was how she kept her migraines at bay before returning to night shift duties.
8. AB's father spoke to his daughter on Tuesday 23 October 2012. He said she seemed in good spirits, but complained of an ongoing chest cold. AB's mother's last contact with her daughter was by text message on Wednesday 24 October regarding their concert tickets.
9. On Friday 26 October 2012, AB did not show up for work. Her supervisor at RMH contacted AB's father, who was listed as her next of kin, to advise that she had not attended work, and to ask whether she had returned from leave. AB's father explained that AB was not on leave. He and AB's mother then became concerned as they had also been unable to contact their daughter. They contacted their son, and asked him to visit his sister. He in turn called the police and asked them to conduct a welfare check. He met the police at his sister's home, where he gained access via a rear sliding door, and found her deceased inside.
10. Attending police officers observed AB's body slumped forward in an armchair in the lounge area. She had a ceramic bowl sitting on her knees containing a liquid substance and covered with cling wrap, with a small opening in the centre. A syringe was found on the floor beside her.
11. Police found the house to be untidy with clothing strewn over the bed and bedroom floor. There were also three empty bottles labelled 'Severone 250mL' in the bedroom, and a box containing

syringes and approximately 10 empty vials labelled 'Fresofol 1% 500mg/50mL'. Prescriptions for Maxalt Wafers 10mg, indicated for the treatment of migraines, were also found in the house. There were no signs of injury or trauma, or anything to indicate suspicious circumstances.

12. An autopsy of AB's body was performed by Senior Forensic Pathologist Dr Malcolm Dodd, from the Victorian Institute of Forensic Medicine (VIFM), who reviewed the circumstances as reported by the police to the coroner and provided a detailed written report of his findings. Dr Dodd advised that it would be reasonable to attribute AB's death to *combined drug toxicity (propofol, sevoflurane and others).*

13. Dr Dodd advised that the autopsy showed no evidence of significant naturally occurring disease or significant trauma, apart from multiple well-healed scars on the left forearm in keeping with repeated episodes of self-inflicted injury. Furthermore, examination of the dorsum of both hands showed a heavy application of a skin-coloured cosmetic which was very difficult to remove. Removal of the cosmetic showed extensive scarring of the superficial veins of the hand, which in many areas showed myriads of small punctate perforations, consistent with intravenous injecting over a protracted period.

14. Toxicological analysis of blood revealed the presence of ethanol (alcohol) at 0.02g/100mL, propofol at ~0.3mg/L, free codeine at ~0.3mg/L, amitriptyline and its metabolite nortriptyline both at ~0.1mg/L, propranolol at ~0.1mg/L, ibuprofen at ~13mg/L, sevoflurane and traces of paracetamol.

15. Dr Dodd stated that the presence of low levels of ethanol is consistent with endogenous production via decomposition, and stated that the presence of sevoflurane and propofol confirms the administration of anaesthetic substances. In addition, Dr Dodd advised that whilst not exceeding their normal therapeutic ranges, the toxicity of the other drugs can be exacerbated by the presence of anaesthetic agents.

16. Police concluded that AB had been taking vials of Sevoflurane (Severone) and Propofol (Fresofol) from her workplace, and self-administering the Propofol intravenously and the Sevoflurane by inhaling it.

17. Dr Elizabeth Pemberton, Deputy Director of the Department of Anaesthesia and Pain Management at the RMH, Parkville, and AB's managing supervisor. Dr Pemberton stated that she had no knowledge that AB suffered any medical condition, that she had been performing her duties to a satisfactory level, was always punctual and helpful and that there had been no reports of any unusual or worrying behaviour. Even in hindsight, Dr Pemberton stated that there were

no observations of her behaviour that would have been considered suspicious, except perhaps that she always wore long sleeves under her scrubs.

18. Dr Pemberton stated that Sevoflurane and Propofol are both anaesthetic agents used for induction and maintenance of anaesthesia. Neither drug is classified as Schedule 8,[1] locked away or accounted for in any formal way. They were stored on unlocked trolleys in every operating theatre in the hospital, and any person with access to the theatres had potential access to these medications with no accountability. Dr Pemberton stated that both medications are high volume use drugs, and that small volume theft would go unnoticed. She further stated that AB was in a position where she had easy access to the medications, as her daily practice involved using these medications on nearly every patient.

19. Dr Pemberton advised that following AB's death, processes have been instituted to restrict access to, and improve accountability for, propofol and volatile agents within RMH. Volatile agents are kept in a locked pharmacy cupboard which is accessible only via a swipe card. The anaesthetic drug trolleys are now padlocked between theatre sessions and after hours. 50mL vials of propofol are signed out to anaesthetists on a per case basis, and are kept in a locked cupboard.

20. I find that the cause of AB's death is combined drug toxicity (propofol, sevoflurane and others), in circumstance of an inadvertent or accidental overdose. The evidence supports a finding that AB had been abusing these drugs over some period of time, likely in the context of seeking relief from migraines or other stress. The evidence does not support a finding that she ingested the drugs found post-mortem with the intention of taking her own life.

CORONERS PREVENTION UNIT REVIEW

21. In light of the circumstances, I asked a Mental Health Investigator (MHI) from the Coroners Prevention Unit (CPU)[2] to review the available evidence regarding AB's death, and also asked the CPU to review previous coronial findings involving abuse of medications by medical and/or nursing staff.

22. The MHI advised that it appears from the available evidence, that AB had experienced symptoms of a depressive illness and periods of high levels of anxiety since 2000. She maintained long periods of wellness, but was in the main taking some form of psychoactive

[1] Schedule 8 (S8) drugs and poisons, otherwise known as Controlled Drugs, are substances and preparations for therapeutic use which have high potential for abuse and addiction. Their possession without authority is illegal and it is illegal for anyone other than an authorised doctor to issue a prescription for S8 drugs.

[2] The Coroners Prevention Unit (CPU) is a specialist service comprising a team of investigators and health clinicians. The CPU assists coroners fulfil their prevention role and contribute to a reduction in preventable deaths.

medication, usually a benzodiazepine with intermittent courses of an antidepressant. AB had scars on both wrists and one leg, suggestive of repeated episodes of self-harming. Her health records also document an admission to a psychiatric hospital for six weeks following a self-harm attempt in 2000.

23. In 2010, AB was referred to Dr Joseph Lee, psychologist, for counselling and had a Mental Health Care Plan developed by her GP. She attended one session with Dr Lee but did not arrive for the next two appointments. In January 2012, GP Dr Melanie Simpson advised AB to see a psychiatrist, but she declined and said she did not have time.

24. The overriding issue for AB was severe insomnia, and she reported long periods of not being able to sleep. She reported that many of the benzodiazepine and non-benzodiazepine medications prescribed by her medical practitioners to induce sleep were ineffective for her.

25. Records provided by AB's general practitioners at Harding Street Medical Centre suggest the possibility of analgesic and benzodiazepine abuse. There are repeated notes of the GPs discussing with her, the risks of addiction to benzodiazepines and opioids. There were two occasions when AB requested further scripts for opioids from her GPs, a pharmacist refusing to dispense a prescription for an opioid 'too soon', and references to AB self-medicating.

26. Investigations regarding AB's migraines had not identified a cause, although there appeared to be a link between her menstrual cycles, and the onset and severity of migraine.[3] The migraines also worsened with fatigue. AB was required to work one overnight shift a fortnight, one evening shift a fortnight and a weekend 1-2 times a 13-week term, with an average of 86 hours a fortnight, including 10 hours training time.

27. The main issue identified by the MHI was AB's access to the anaesthetic agents Propofol (injected) and Sevoflurane (inhaled). Her access appears to be to such a degree that she was able to abuse the drugs over a period of time and had boxes of it in her home at the time of her death. The MHI concluded that AB's history suggested a reliance on substances to medicate her anxiety/depression and migraines for a protracted period. The anaesthetic agents may have provided AB with a temporary solution to her insomnia; however, she must have been aware of the risks involved.

28. The CPU also provided general advice on fatal overdoses involving general anaesthetic agents and/or neuromuscular blocking agents in Victoria from 2000-2013. The advice discussed in

[3] The police also found evidence of recent or contemporaneous menstruation.

detail the deaths associated with access to, and misuse of, general anaesthesia and associated drugs.

29. The CPU advised that 15 of the 15 deaths in the above period using general anaesthetics and neuromuscular blocking agents (excluding Ketamine) were deaths of people who worked in the medical field and had access to the drugs by virtue of that employment. This has implications not only for the person who is using the drugs, but also for their patients.

30. AB was able to remove significant quantities of Schedule 4 drugs[4] from the RMH and use them at home. These drugs are high volume and therefore not counted or monitored outside of the system applied to other Schedule 4 medications.

31. Dr Pemberton explained that AB's presence in the theatre complex or individual theatres would not have been questioned due to her role as anaesthetist. Many doctors bring a computer bag or handbag into the operating theatre. Moreover, hospital scrubs are baggy and have many pockets. It therefore would have been very easy to take these medications home undetected.

COMMENTS

Pursuant to Section 67(3) of the **Coroners Act 2008**, I make the following comment/s connected with the death:

1. I understand that it can be onerous to lock away high volume medications in high traffic areas with medications requiring an immediacy in administration, such as emergency department/trauma centres etc, where crisis work is undertaken to stabilize patients, often prior to any surgery. However, use of operating theatres is more planned and although immediate use of medications is required when a procedure commences, there is usually ample planning and set-up time, in which instruments, dressings and other equipment appropriate to that surgery is organised. In the case of operating theatres, there is less rationale for leaving these drugs in easily accessible areas.

2. The number of people who have died, regardless of intent, who were using general anaesthetics and neuromuscular blocking agents is not substantial, unless it is viewed as a specific occupational hazard, through ease of access. Dr Pemberton has instigated changes at the RMH that increase the safety of and decrease the ease of access to general anaesthetics and neuromuscular blocking agents. I am unaware if theses changes met with reluctance or opposition from staff, or if they have been effective. However, I understand that the RMH is the only hospital to have made such changes to the way these drugs are stored.

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[4] Schedule 4 (S4) drugs and poisons are prescription-only medicines.

RECOMMENDATIONS

Pursuant to Section 72(2) of the **Coroners Act 2008**, I make the following recommendations connected with the death:

1. That the Victorian Department of Health consult with the RMH Department of Anaesthesia and Pain Management regarding their response to the death of AB, in particular the changes in place that reduce/regulate access to general anaesthetics and neuromuscular blocking agents.
2. That the Victorian Department of Health consult with Victorian hospitals regarding Victorian overdose deaths from misuse of neuromuscular blocking agents and/or general anaesthetic agents, and seek their advice on whether any further measures could be put in place to reduce misuse of these agents.

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

The family of AB

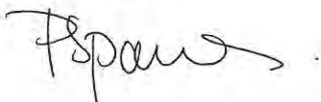
Dr Elizabeth Pemberton, Deputy Director, Department of Anaesthesia and Pain Management, Royal Melbourne Hospital

Royal Melbourne Hospital, c/o Mrs Jan Moffatt, Donaldson Trumble Lawyers

Dr Pradeep Philip, Secretary, Department of Health Victoria

Detective Acting Sergeant David Morrison, Hume Crime Investigation Unit.

Signature:



PARESA ANTONIADIS SPANOS
CORONER
Date: **2 April 2014**