# Intentional hastening of death through medication: A case series analysis of Victorian deaths prior to the Voluntary Assisted Dying Act 2017

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## Abstract

**Background:** Voluntary assisted dying is lawful in Victoria in limited circumstances and commences in Western Australia in mid-2021. There is evidence that in rare cases unlawful assisted dying practices occur in Australia.

**Aims:** To determine whether assisted dying practices occurred in Victoria in the 12 months prior to the commencement of the *Voluntary Assisted Dying Act 2017* (Vic) ('VAD Act'), and to examine features of any identified cases.

**Methods:** Exploratory case series of adult patients in Victoria who died between May 2018 and 18 June 2019 as a result of medication administered with the primary intention of hastening death. Cases were identified from a self-administered survey about medical end-of-life decisions for adult patients, completed by Victorian specialists treating adults at the end of life. We examined reported use of medication with the primary intention of hastening the patient's death; characteristics of assisted dying cases, including doctors' classification of such practices.

**Results:** Nine cases met the inclusion criteria. Death did not occur immediately after providing medication with the intention of hastening death. In eight cases, it was framed as palliative or terminal sedation and/or continuous deep sedation. Most doctors used language that distanced their practices from assisted dying.

**Conclusions:** Unlawful assisted dying practices seem to have occurred in a small number of deaths in Victoria prior to commencement of the VAD Act. These practices typically occurred within the context of palliative or terminal sedation and may be difficult to distinguish from lawful palliative care practice. Some survey responses possibly reflect ambiguity in doctors' intentions when providing medication.


**Keywords:** assisted dying, end-of-life decision-making, health law, medical law, palliative care, treatment decisions

# Introduction

A key policy issue for Australia is whether voluntary assisted dying (VAD) should be legalised. VAD is lawful in Victoria in limited circumstances and will commence in Western Australia in mid-2021. In March 2021, legislation legalising VAD was enacted in Tasmania and will commence operation in 2022. VAD remains unlawful elsewhere. Nevertheless, there is historical evidence that unlawful assisted dying (AD) practices occur across the country.[1-7] Previous Australian studies have reported that 35% of doctors (and 43% of doctors treating terminally ill patients) have received VAD requests from patients, and around a third of these doctors comply with these requests [2, 5, 7]. In 1997, Kuhse and colleagues[6] reported that VAD accounted for 1.8% of Australian deaths, and that 3.5% of deaths involved a doctor ending the patient's life without their explicit request. Douglas and colleagues[3] found that 36.2% of surveyed surgeons had administered medication in doses they perceived to be greater than those required to relieve symptoms with the intention of hastening death. Surgeons were most likely to hasten death by using an analgesic or sedative infusion, while only 5.3% reported giving a bolus lethal injection in response to patient request.

There are no recent Australian data available to understand whether unlawful AD practices are occurring, and updated information is needed to understand this vitally important issue. The primary aim of this study was to fill gaps in the research evidence by determining whether AD practices were reported in Victoria in the 12 months prior to the commencement of the *Voluntary Assisted Dying Act 2017* (Vic) ('VAD Act') on 19 June 2019. Our secondary aim was to examine these cases to identify common features and to understand how doctors characterise such practices.

# Materials and methods

### Study design

A cross-sectional survey of Victorian doctors was conducted from May to September 2019. To maintain participant anonymity (thus protecting doctors from legal harm if disclosing unlawful activity), the different processes i.e. the sampling and mailing, receiving, and processing of the questionnaires were spatially separated and performed by different parties. More information on the method is available in S1 (Supplementary material).

**Setting**

Doctors received invitations to their postal and/or email address from the Medical Directory of Australia (MDA), maintained by Australasian Medical Publishing Company (AMPCo). Participants contacted by post only could complete the survey online as their letters included a personalised survey link. Three reminders were sent to non-responders via post and/or email at intervals of two to four weeks.

**Participants**

A random sample was drawn from the MDA of doctors who: (1) identified their main specialty as one of the 28 listed in Table 1, S1 Supplementary material (participants were from a range of specified specialties including surgery, general medicine, general practice, oncology and palliative care); (2) had a Victorian primary practice address; and (3) were not from an earlier 'wider sample'. (The wider sample occurred because AMPCo initially recruited doctors from outside Victoria as well and this data could not be used: see S1.) A sample of 3,087 was drawn from 10,846 eligible doctors.

**Data sources/measurement**

The survey was an English version of a survey on medical end-of-life decisions (ELDs) originally developed by van der Maas et al in the Netherlands.[8] It has also been used extensively in other countries[9-19]. The survey was adapted to ensure suitability for the

Australian context and to reflect our method (utilising database sampling and focusing on ELDs involving adults)[20].

**Case selection criteria**

Potential cases involving AD practices (the subject of this paper) were identified, consistent with previous studies[6, 8], by an affirmative response to the following question:

> Was death the result of the use of medication prescribed, provided or administered by you or another doctor with the primary intention of hastening the end of the patient's life (or enabling the patient to end their own life)?

An affirmative response here indicated that the "last mentioned act" about which remaining questions were answered was the use of medication with the primary intention of hastening death. Consistent with doctors reporting that the use of medication caused death, doctors in all these cases reported that life was shortened by the last mentioned act (the relevant question was "in your opinion, what is the estimated length of time the patient's life was shortened by the last mentioned act?" with no doctors responding "life was probably not shortened at all"). These cases were then assessed by three authors, with input and agreement from the remaining authors, to ensure that survey responses as a whole reflected AD practices (which by definition are unlawful). Responses to all survey questions for each of these cases were reviewed so that the fullest possible picture was obtained regarding the decision-making processes, and care and treatment of the patient.

**Data analysis**

Data were managed and analysed using SPSS 25 (IBM Corp., Armonk, NY, USA) and Excel (Microsoft Corporation, Redmond, WA, USA). Preliminary analyses (descriptive statistics) of cases involving AD practices were implemented to explore the characteristics and distribution of variables. Next, data (primarily qualitative) for eligible cases were inserted into an Excel

spreadsheet to undertake the case series analysis. A case series analysis reports on data from a series of similar individual cases, and this type of observational method is appropriate when examining rare outcomes.[21] While the primary focus for analysis was reported use of medication with the primary intention of hastening the patient's death, and characteristics of these cases (including doctors' classification of practices), we examined all responses for each individual case. After this a cross-case analysis was undertaken to examine relevant themes, commonalities, and differences across the cases.

### Ethical considerations

The study was approved by the human research ethics committees at Queensland University of Technology, The University of Queensland and Vrije Universiteit Brussel. All participants provided informed consent by submitting a completed survey.

## Results

### Case selection

Usable surveys were returned by 358 of the 3,087 doctors (response rate 11.6%). Of those, twelve doctors reported that their most recent adult death was due to use of medication with the primary intention of hastening the end of the patient's life. Medication was administered by a nurse and/or doctor. Three cases were excluded because of internal inconsistencies regarding primary intention.

### Characteristics of doctors and patients

The nine participating doctors (Table 1) were a mix of general practitioners (n = 5) and specialists (including in training) (n = 4). On average, they had been the treating or attending doctor for 5.1 adult deaths in the last year. All doctors had contact with the patient prior to death.

The patients were aged 75 years and over (Table 2). All patients were dying of chronic disease and received palliative care, generally in the last month before death (range 2 - 214 days). All died in an institution (hospital n = 6, residential aged care facility n = 2, hospice n = 1).

All patients' treatment during the last week before death mainly focused on comfort/palliation (Table 2, S1 Supplementary material). A diverse range of medical ELDs were described. Doctors reported that in addition to addressing pain or symptom relief using medication(s), they or another doctor withheld (n = 6) or withdrew (n = 6) a treatment (or ensured a treatment was withheld or withdrawn) that probably or certainly hastened the patient's death or resulted in the patient's life not being prolonged. These treatments included intravenous hydration, antibiotics and other medications, dialysis, and surgery.

**Use of medication to hasten death**

Only nine of the 358 responding doctors reported the unlawful practice of using medication with the primary intention of hastening death and satisfied the inclusion criteria. Medications were administered by a nurse (n = 5), the respondent or another doctor (n = 3), or a nurse and a doctor (n = 1). No medication was self-administered. Doctors estimated the patient's life was shortened by more than 6 months (n = 1), 1-6 months (n = 1), 1-4 weeks (n = 1), 1-7 days (n = 5), or less than 24 hours (n = 1). In four of these cases, doctors reported granting a request to prescribe, provide or administer medication to hasten the patient's death. Medications administered were morphine or other opioids alone (n = 5) or in combination with benzodiazepine (n = 4). Morphine was started less than 24 hours (n = 1), one to seven days (n = 4), one to four weeks (n = 2), or more than one month before death (n = 1) (unknown in one case). The survey asked about the dosage of morphine and/or other opioids in the last 24 hours of life. In three cases, the dose of morphine and/or other opioids was

higher than necessary to relieve pain and/or other symptoms in the last 24 hours prior to the patient's death.

AD practices were often associated with palliative or terminal sedation. Eight cases involved palliative or terminal sedation and/or deep sedation up until death, consistent with the use of morphine or other opioids and/or benzodiazepine. Most doctors reported the most appropriate term for the AD act was "palliative or terminal sedation" (n = 6) or "symptom management" (n = 2) rather than "assisted dying" (n = 1).

Five cases involved deep sedation until death, with this sedation being started 1-2 weeks (n = 2), 1-7 days (n = 1), or less than 24 hours prior to the patient's death (n = 1) (in one case duration of deep sedation was unknown). Of these, two patients did not receive any artificial nutrition or hydration (ANH), one received ANH that was stopped before death, and another received ANH continuously up until death (in one case receipt of ANH was unknown).

Survey responses varied in the degree to which they were internally consistent. The question relating to the last mentioned act indicated that the medication caused the death, and clearly specified a primary intention to hasten death using medication. By definition, at the time of survey, such responses necessarily involved unlawful action. However, despite describing intentional hastening of death, eight doctors described their practices using terms for potentially lawful acts such as "palliative or terminal sedation" and "symptom management".

## Discussion

AD continues to occur in Australia in a small number of cases, despite being unlawful. This finding is consistent with earlier, although dated, research[1-7]. Our survey's low response rate precludes reliable estimates of the prevalence of AD in Victoria in the study period. To the extent that medical practice in Victoria reflects medical practice in other states and territories,

this research suggests that the unlawful practice of intentionally hastening death using medication may be occurring across Australia.

This research identified a small number of cases in which unlawful actions causing death were reported by doctors. All cases reported here involved responses which are concerning from a legal perspective because of two common features reported by the treating or attending doctor. The first feature related to intention. In these nine cases, the primary intention of the doctor in providing medication was to hasten the patient's death. The second feature related to causation of death, namely that the medication caused premature death. There were two responses which indicated causation: the doctor's affirmative response that 'death was the result of the use of medication prescribed, provided or administered'; and response to a later question in the survey about the length by which the patient's life was shortened (no participants reported that the patient's life was 'not at all' shortened by the last mentioned act).

Cases varied regarding whether or not doctors reported that the dose of morphine and/or other opioids in the last 24 hours prior to the patient's death was higher than necessary to relieve pain and/or other symptoms. Here, the research identified two broad groups of cases.

(a) Morphine and/or other opioids were higher than necessary

The first, smaller group comprised three cases. This small group of cases clearly involved AD practices, although all were labelled "palliative or terminal sedation" by the doctors. Morphine and/or other opioids were started less than 24 hours before death (in one case) and one to seven days before death (in two cases).

(b) Morphine and/or other opioids were not higher than necessary

The second, larger group comprised six cases. Although doctors reported that doses given were not more than necessary to address pain and/or symptoms, the doctors' reported action remains legally concerning because the treating or attending doctors self-reported that their primary intention in providing medication was to hasten death, and that in their opinion, the medication did cause a premature death. If this could be proved, these doctors could face criminal sanction.

The current research did not yield data to definitively explain how doctors reported that a patient death was caused by medication but did not also report inappropriate use of morphine and/or other opioids in the 24 hours before death. Here we present two possible interpretations, both of which are legally problematic for the doctors involved.

Firstly, it is possible that death was hastened using a combination of medications although dosages were not specifically captured by the survey. Our survey only asks about dosage of morphine and/or other opioids in the last 24 hours of life, and hence information about dosage of benzodiazepines (and earlier dosage of morphine and/or other opioids) is unavailable. For example, it is possible that death was hastened using medication *other than* morphine and/or other opioids. Four of these six cases involved the administration of benzodiazepine as well as morphine and/or other opioids, and in all these cases the participant indicated that benzodiazepine was one of the medications used to hasten death (along with morphine and/or other opioids). It would be unlawful for a doctor to use of a combination of these drugs with the primary intention to hasten death, even if an appropriate amount of morphine was given in the 24 hours preceding death. It is also possible that the use of medication to hasten death involved action(s) taken over days without a marked increase in medication (at least morphine and/or other opioids) in the last 24 hours of life. This interpretation is consistent with the work of Douglas and colleagues, who found that bolus lethal injection is a less commonly

used method of hastening death in Australia than analgesic and/or sedative infusions among surgeons and general physicians[3, 22].

Secondly, it is possible that some doctors intended to relieve pain and suffering but may have been confused or uncertain about their intention in providing medication despite responding in the survey that they provided the medication 'with the primary intention of hastening the end of the patient's life'. A level of ambiguity in doctors' intentions is consistent with findings by Douglas and colleagues[3] in their study of physicians. They concluded that some doctors may have a level of uncertainty regarding their intentions when giving analgesic and/or sedative infusions at the end of life.

Ambiguity in responses may also arise from uncertainty about lawfulness of palliative or terminal sedation practices. Palliative or terminal sedation can be an important component of end-of-life care[23-25]. The primary purpose of palliative sedation is to sedate a person near the end of their life to relieve their symptoms. This therapy should be provided in accordance with relevant professional guidelines[23]. Palliative sedation is lawful when it is administered to manage refractory symptoms, with the intention of relieving pain and suffering, not to cause or hasten their death as the 'doctrine of double effect' will apply[26]. This remains an important protection given the fact that under-treatment of symptoms can occur[27]. In this study, two doctors reported providing deep sedation with the primary intention of hastening the end of the patient's life. Such a practice is legally problematic as they are unlikely to be protected by the doctrine of double effect. Despite the development and availability of practice guidelines, aspects of palliative or terminal sedation (particularly continuous deep sedation) remain contested and there has been relatively little exploration of the legal and ethical implications of these practices.

In practice, some doctors may experience difficulties in distinguishing AD practices from accepted and lawful palliative care. Uncertainty about lawfulness may particularly arise if a doctor has not had formal palliative care training or has limited exposure to ELDs. None of the doctors here was a member of a palliative care team or unit, they typically had no formal palliative care training, or training only as part of basic medical training, and attended only a small number of adult deaths. These findings highlight the need for universal education of medical students and doctors in palliative care.

Another possible cause of ambiguous responses may be a desire for doctors to describe their actions in language that distances them from unlawful and ethically fraught AD practices. This is easier to do given the practices described generally did not involve an immediate life-ending act. Rather, they tended to involve an extended period of medication and so the unlawful nature of these actions depends on intention.

Overall, this research sheds light on how unlawful AD practices may occur and how they are conceptualised by the doctors involved. Hastening death using medication did not tend to involve immediate life-ending acts. Use of medications typically associated with AD such as barbiturates, propofol or other medications were not reported here. The nature of these practices and the timing of medication provision is linked with how they were described. Eight cases labelled the death as being “palliative or terminal sedation” or “symptom management”. Significantly, three doctors used the term “palliative or terminal sedation” even when the patient was not deeply sedated. Only one doctor referred to “assisted dying” and none selected response options of “ending life out of compassion”, “euthanasia” or “assisted suicide”. These findings about how a death is labelled may reflect the fact that marginal hastening of death in the final hours before an inevitable and imminent death is not considered AD by some doctors[7]. This remains hard to reconcile with the law which is clear

that it is unlawful to provide medication when the primary intention is to hasten the patient's death.

Relevantly, research from Belgium found that despite AD being legal, some doctors who report that their primary intention is to hasten death still use medications associated with palliative sedation (morphine or other opioids and/or benzodiazepine) rather than recommended medications to hasten death, and that use of these medications is often termed by doctors there as "palliative sedation" or "alleviation of pain and symptoms"[28].

**Strengths and limitations**

The authors acknowledge that a limitation of this study is the survey's low response rate, and the small case size of nine patients. Further, three cases were excluded from the analysis because of internal inconsistencies regarding doctors' primary intention when providing medication. Given the controversial topic, there is a risk that participants may under-report unlawful actions[23]. For this reason, the true number of cases of AD practice in the sample may differ from what we have reported here. Identified cases may not be representative of all cases of unlawful AD in Victoria in the study period. However, the aim was to achieve the greatest possible amount of information on practices of unlawful AD, rather than to understand a 'typical' or 'average' case, and the cases here displayed both key similarities and differences. A further limitation is the use of a single data source (survey) without validation of data through cross-checking clinical notes. Thus, we relied on doctors' assessment and reporting of the situation. However, a self-administered survey is an appropriate method to understand doctors' intentions and description of their practices, and we implemented an adapted version of a survey that has been used internationally and is reported extensively in the research literature. Further, although the survey was subject to multiple rounds of cognitive pre-testing with different specialties[20], survey responses depend on doctors interpreting the questions as intended and the research team's interpretation of those answers. Consistent with other

research in this area, some survey responses were potentially ambiguous. Ambiguity may reflect the fine line between lawful and unlawful practices but may also be due to limitations of the survey and/or doctors' interpretation of survey questions. There are varying clinical views about how certain medications and use of sedation may hasten death, and it is possible that some doctors mistakenly believe that they hastened death. Doctors may also be uncertain about their primary intention when providing medication. Despite these limitations, this study fills gaps in the literature on unlawful AD practices, building on dated research and providing a snapshot of contemporary medical practice. The qualitative case study approach provided rich, detailed information, and enabled us to investigate the topic in detail. Although this survey does not relate to the VAD Act, it should provide baseline data that will be important in assessing the extent to which medical practice may have changed after the legalisation of VAD in Victoria. Results of this exploratory research may provide more general insights relevant to further research.

## Conclusion

Unlawful AD practices (including the administration of life-ending drugs without explicit request) occurred in a minority of cases in Victoria during the 12 months prior to the commencement of the VAD Act. Hastening death using medication generally did not involve immediate life-ending acts. These practices were typically linked with the provision of palliative or terminal sedation, although there was a lack of consensus regarding what constituted palliative or terminal sedation, and the primary intention behind providing it. Some survey responses likely reflect doctors' own ambiguity about their intentions and highlight difficulties with studying doctor's self-perceived and self-reported intentions. While this study's findings suggest that features of unlawful AD practices in Australia may make them largely invisible, unlawful activity is occurring as evidenced by a small number of doctors' stated primary intention of hastening a patient's death.

**References**

1. Magnusson RS, Ballis PH. Angels of death: exploring the euthanasia underground. Melbourne: Melbourne University Press; 2002.

2. Baume P, O'Malley E. Euthanasia: attitudes and practices of medical practitioners. *Med J Aust* 1994;**161**: 137-144.

3. Douglas CD, Kerridge IH, Rainbird KJ, et al. The intention to hasten death: a survey of attitudes and practices of surgeons in Australia. *Med J Aust* 2001;**175**: 511-515.

4. Hassan R. Euthanasia and the medical profession: an Australian study. *Aust J Soc Issues* 1996;**31**: 239-252.

5. Kuhse H, Singer P. Doctors' practices and attitudes regarding voluntary euthanasia. *Med J Aust* 1988;**148**: 623-627.

6. Kuhse H, Singer P, Rickard M, et al. End-of-life decisions in Australian medical practice. *Med J Aust* 1997;**166**: 191-196.

7. Neil DA, Coady C, Thompson J, et al. End-of-life decisions in medical practice: a survey of doctors in Victoria (Australia). *J Med Ethics* 2007;**33**: 721-725.

8. Van der Maas PJ, Van Der Wal G, Haverkate I, et al. Euthanasia, physician-assisted suicide, and other medical practices involving the end of life in the Netherlands, 1990–1995. *N Engl J Med* 1996;**335**: 1699-1705.

9. Riou F, Aubry R, Pontone S, et al. When physicians report having used medical drugs to deliberately end a patient's life: findings of the “End-of-Life in France” survey. *J Pain Symptom Manage* 2015;**50**: 208-215.

10. Malpas P, Mitchell K, Koschwanez H. End-of-life medical decision making in general practice in New Zealand-13 years on. *N Z Med J* 2015;**128**: 27-29.

11. Mitchell K, Owens G. End of life decision-making by New Zealand general practitioners: a national survey. *N Z Med J* 2004;**117**: U934.

12. Bilsen J, Vander Stichele R, Broeckaert B, et al. Changes in medical end-of-life practices during the legalization process of euthanasia in Belgium. *Soc Sci Med* 2007;**65**: 803-808.

13. Deliens L, Mortier F, Bilsen J, et al. End-of-life decisions in medical practice in Flanders, Belgium: a nationwide survey. *Lancet* 2000;**356**: 1806-1811.

14. Van der Heide A, Deliens L, Faisst K, et al. End-of-life decision-making in six European countries: descriptive study. *Lancet* 2003;**362**: 345-350.

15. Schildmann J, Hoetzel J, Mueller-Busch C, et al. End-of-life practices in palliative care: a cross sectional survey of physician members of the German Society for Palliative Medicine. *Palliat Med* 2010;**24**: 820-827.

16. Pennec S, Monnier A, Pontone S, et al. End-of-life medical decisions in France. *Popul Soc* 2012:**494**: 1-4.

17. Seale C. National survey of end-of-life decisions made by UK medical practitioners. *Palliat Med* 2006;**20**: 3-10.

18. Seale C. End-of-life decisions in the UK involving medical practitioners. *Palliat Med* 2009;**23**: 198-204.

19. Marcoux I, Boivin A, Mesana L, et al. Medical end-of-life practices among Canadian physicians: a pilot study. *CMAJ Open* 2016;**4**: E222–E229.

20. Willmott L, White B, Feeney R, et al. Collecting data on end-of-life decision-making: Questionnaire translation, adaptation and validity assessment. *Prog Palliat Care* 2021 doi: 10.1080/09699260.2021.1922795

21. Rezigalla AA. Observational study designs: synopsis for selecting an appropriate study design. *Cureus* 2020;**12**: e6692.

22. Douglas C, Kerridge I, Ankeny R. Managing intentions: the end-of-life administration of analgesics and sedatives, and the possibility of slow euthanasia. *Bioethics* 2008;**22**: 388-396.

23. Cherny NI, Radbruch L, Board of the European Association for Palliative Care. European Association for Palliative Care (EAPC) recommended framework for the use of sedation in palliative care. *Palliat Med* 2009;**23**: 581-93.

24. Schildmann E, Pörnbacher S, Kalies H, et al. 'Palliative sedation'? A retrospective cohort study on the use and labelling of continuously administered sedatives on a palliative care unit. *Palliat Med*. 2018;**32**: 1189-97.

25. Sterckx S, Raus K. The practice of continuous sedation at the end of life in Belgium : how does it compare to UK practice, and is it being used as a form of euthanasia? In: Jones DA, Gastmans C, MacKellar C, editors. Euthanasia and assisted suicide : lessons from Belgium. Cambridge: Cambridge University Press; 2017. p. 86–100.

26. Australian and New Zealand Society of Palliative Medicine (ANZSPM). Palliative sedation therapy guidance document [Internet]. Canberra: ANZSPM; 2017 [cited 2021 Mar 23]. Available from: http://test.anzspm.org.au/c/anzspm?a=sendfile&ft=p&fid=1618280817&sid=

27. Akashi M, Yano E, Aruga E. Under-diagnosis of pain by primary physicians and late referral to a palliative care team. *BMC Palliat Care* 2012;**11**: 1-9.

28. Dierickx S, Cohen J, Vander Stichele R, et al. Drugs used for euthanasia: a repeated population-based mortality follow-back study in Flanders, Belgium, 1998–2013. *J Pain Symptom Manage* 2018;**56**: 551-559.

**Table 1: Characteristics of participating doctors reporting assisted dying practices (n = 9)**

| Variable | n |
|---|---|
| **Age (years)** | |
| 35 or under | 1 |
| 36-45 | 0 |
| 46-55 | 2 |
| 56-65 | 2 |
| >65 | 4 |
| **Gender** | |
| Male | 6 |
| Female | 3 |
| **Region of practice †** | |
| City (100,000+ people) | 8 |
| **Specialty** | |
| General practice ‡ | 5 |
| Specialist § | 4 |
| **Formal palliative care training** | |
| None | 5 |
| In basic medical training | 2 |
| In continuing professional development | 2 |
| **Member of palliative care team/unit** | |
| No | 9 |
| **Mean number of deaths in last 12 months (SD)** | 5.1 (2.76) |

† Missing data for one participant ‡ includes general practitioners in training § includes specialists in training

**Table 2: Characteristics of patients (n = 9)**

| **Variable** | **n** |
|---|---|
| **Age (years)** | |
| 75-84 | 3 |
| 85-94 | 4 |
| 95+ | 2 |
| **Gender** | |
| Male | 5 |
| Female | 4 |
| **Main cause of death** | |
| Cancer | 3 |
| Heart disease | 2 |
| Neurodegenerative disease | 1 |
| Renal disease | 2 |
| Chronic respiratory disease | 1 |
| **Applicable situations †** | |
| Serious physical disease | 8 |
| Several ageing-related health problems | 6 |
| Dementia | 1 |
| **Legal capacity ‡** | |
| Yes | 5 |
| No | 3 |
| Undetermined | 1 |
| **Place of death** | |
| General hospital ward | 3 |
| Palliative care bed/unit in hospital | 3 |

| **Variable** | **n** |
|---|---|
| Residential aged care facility | 2 |
| Hospice | 1 |

† Multiple responses allowed ‡ whether the patient had legal capacity to make a decision about the last mentioned act

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**Data availability statement**

To protect participants' privacy, supporting data cannot be made openly available. Please contact the authors should you wish to request a copy of the survey.

**S1 Supplementary material: detailed description of methodology**

Data sources/measurement

The survey had four semi-structured sections and addressed the following issues relating to the most recent death of an adult in the last 12 months for which the doctor had been acting as the treating or attending doctor: the patient's illness and end-of-life care (including palliative care); decisions made that probably or certainly hastened the end of the patient's life or resulted in the patient's life not being prolonged, including withholding or withdrawing a treatment, or use of medication to increase pain or symptom relief; who was involved in these decisions (e.g., the patient, or their substitute decision-maker); the degree to which the patient's life was shortened by medical ELDs, if at all; practices of palliative or terminal sedation and voluntary stopping of eating and drinking; the provision of morphine and/or other opioids as part of end-of-life care (including dosage in the last 24 hours of life), and further comments.

Survey questions which were the primary focus for analysis included the following.

18. Did you or another doctor carry out one or more of the following actions (or ensure that one or more of the actions was carried out) that probably or certainly hastened the end of the patient's life or resulted in the patient's life not being prolonged? – please answer a, b and c –

a. Withholding a treatment*? Yes / no

If yes, which treatment?

b. Withdrawing a treatment*? Yes / no

If yes, which treatment?

c. Increasing pain or symptom relief by means of one or more medications? Yes / no

If yes, what medication was used? – tick all that apply – Morphine or other opioids / benzodiazepine / other medication

* 'treatment' here includes artificial hydration and nutrition

19. Was hastening the end of life partly intended by increasing the pain and symptom relief? Yes / no

20. Was death the result of one or more of the following actions, decided by yourself, another doctor, the patient or their substitute decisionmaker with the primary intention of hastening the end of the patient's life or not prolonging the patient's life? – please answer a and b –

a. Withholding a treatment*? Yes, decision of doctor / yes, decision of patient / yes, decision of substitute decision-maker / no

If yes, which treatment?

b. Withdrawing a treatment*? Yes, decision of doctor / yes, decision of patient / yes, decision of substitute decision-maker / no

If yes, which treatment?

* ‘treatment’ here includes artificial hydration and nutrition

21. Was death the result of the use of medication prescribed, provided or administered by you or another doctor with the primary intention of hastening the end of the patient’s life (or enabling the patient to end their own life)? Yes / no

If yes, what medication was used? – tick all that apply – Muscle relaxant (curare or similar medication) / barbiturate / benzodiazepine / morphine or other opioids / other medication

If yes, by whom were the medications administered? – tick all that apply – The patient / you or another doctor / nurse / other person

22 In your opinion, what is the estimated length of time the patient’s life was shortened by the last mentioned act? More than six months / one to six months / one to four weeks / one to seven days / less than 24 hours / life was probably not shortened at all

Q 31 In your opinion, which is the most appropriate term for the last mentioned act? – tick only one response – Non-treatment decision / symptom management / palliative or terminal sedation / ending life out of compassion / assisted dying / euthanasia / assisted suicide / other

33. Did the patient receive morphine and/or other opioids as part of end of life care? Yes / no

If yes, how long before death was the administration of morphine and/or other opioids started? Less than 24 hours before death / one to seven days before death / one to four weeks before death / more than one month before death

In the last 24 hours prior to the patient’s death, was the dose administered higher than necessary to relieve pain and/or other symptoms? Yes / no

Survey distribution

The initial invitations were distributed in April 2019. Approximately 30% of doctors did not provide an email address. Therefore, a mixed-mode (paper and online) survey was implemented whereby all participants were contacted by post and those with email addresses were also emailed. Participants were posted and/or emailed an invitation, participant information sheet, hard copy survey and/or personalised link to the online survey, and for post communications, a reply-paid envelope to return the survey.

Due to an error in the process, AMPCo produced a sample of doctors that included other states (‘wider sample’), and doctors outside of Victoria were erroneously sent the survey. When the error was identified, the wider sample participants were contacted to apologise for the error and asked to not complete the survey. All surveys from the wider sample were destroyed and this data withdrawn from the study. Wider sample doctors from Victoria only were invited to provide feedback on the survey topics by completing a one-page form. To ensure the study’s integrity, a new sample was created (‘final sample’), excluding previously contacted doctors. The survey was distributed to the final sample in May 2019. Any surveys sent out after the commencement of the Victorian legislation on 19 June 2019 included instructions to consider a death that occurred prior to this date.

Sample selection

Medical specialties were selected based on the possibility of making a medical ELD in the past 12 months. Specialties matched those from the Kuhse study [1], except as follows. Doctors-in-training and medical officers were added based on their involvement in ELDs [2, 3]. Specialties exclusively treating minors (including neonatology) were excluded as deaths of minors are outside the scope of this study. General practitioners are overrepresented in the AMPCo database, hence we oversampled doctors from the smaller medical specialties to achieve better representation.

Sample stratification

The AMPCo database for Victoria consists disproportionately of general practitioners (over 6,000), and the numbers vary substantially across specialties (from nine for gynaecological oncologists to 459 for medical officers). We therefore adopted disproportionate sampling of specialties to include more doctors from the smaller medical specialties. This should result in better representation of all specialties sampled, enabling comparisons in responses across medical specialties. According to the number of Victorian doctors in the database, specialties are grouped into one of three strata and sampled disproportionately (see Table 1).

**Table 1: Three strata for disproportionate stratification based number of specialists in database†**

| |
|---|
| Stratum 1 |
| The number of specialists in a specialty is 'low' (< 101). |
| Included specialties: Clinical haematology, immunology, otorhinolaryngology, palliative care, radiation oncology. |
| Every doctor in this stratum is selected for the questionnaire. |
| Stratum 2 |
| The number of specialists in a specialty is 'mid-range' (101-750). |
| Included specialties: Abdominal surgery, breast surgery, cardiology, cardiothoracic surgery, doctor in training, emergency medicine, endocrinology, gastroenterology, general medicine/general physician, general surgery, geriatric medicine, gynaecological oncology, ‡ infectious diseases, intensive care, medical officer, medical oncology, neurology, neurosurgery, renal medicine, respiratory medicine, vascular surgery, urological surgery. |
| One out of every two doctors in this stratum is selected for the questionnaire. |
| Stratum 3 |
| The number of specialists in a specialty is 'high' (>750). |
| Included specialties: General practice. |
| One out of every ten doctors in this stratum is selected for the questionnaire. |

† Specialties were grouped into strata based on the number of doctors within the specialty available in the Medical Directory of Australia for Victoria.
‡ Includes Obstetrics & Gynaecology and Gynaecology.

The exception to the above approach was where disproportionate sampling would have resulted in a sample of fewer than 100. Where there were sufficient numbers in the Medical Directory of Australia these sub-samples were increased to 100, with the aim of obtaining a final sample of at least 30 respondents for all specialties, assuming a likely response rate of approximately 30%.

Sample size

Several factors, including statistical power and affordability considerations, determined the sample size. The researchers wanted to ensure sufficient responses from the small specialties to enable comparisons in responses across medical specialties (noting that if respondent numbers for a specialty were fewer than 30, statistical significance testing including those cells would not be valid). Hence, the final sample size was influenced by the approach to disproportionate sampling. Further, we aimed to sample as many doctors as affordable for a mixed-mode questionnaire with three reminders to non-respondents.

Based on these considerations, the original sample size was 3,298. The sampling error and subsequent exclusion of doctors from the wider sample resulted in a slightly smaller sample overall (3,087) and within the speciality groups. However, this approach was necessary to ensure the integrity of the study and the sample size is similar to earlier studies of medical ELDs [1, 4, 5].

The last mentioned act and other medical practices

Patient characteristics, medical care and treatment, and details of the last mentioned act are given in Table 2.

**Table 2: The last mentioned act and other medical practices (n = 9)**

| **Variable** | **n** |
|---|---|
| **Palliative care services received †** | |
| Palliative care consult team in hospital | 4 |
| Community palliative care service | 3 |
| Palliative care unit in hospital | 4 |
| Palliative care consult team in residential aged care facility | 2 |
| Hospice | 1 |
| **Mean length of palliative care in days (SD)** | 39.8 (66.46) |
| **Treatment focus in last week** | |
| Comfort/palliation | 9 |
| Life prolongation | 0 |

| **Variable** | **n** |
|---|---|
| Cure | 0 |
| **Last mentioned act** | |
| Increasing pain or symptom relief using medications ‡ | 9 |
| **Most appropriate term for last mentioned act** | |
| Palliative or terminal sedation | 6 |
| Symptom management | 2 |
| Assisted dying | 1 |
| **Medication(s) administered as part of last mentioned act** | |
| Morphine or other opioids | 9 |
| Benzodiazepine | 4 |
| **Medication(s) administered by** | |
| Nurse | 5 |
| Doctor | 3 |
| Nurse and doctor | 1 |
| **Decision about the last mentioned act** | |
| With the express or implied consent of the patient | 2 |
| At the request of the patient | 3 |
| With the express or implied consent of the SDM | 3 |
| At the request of the SDM | 1 |
| **Discussion about probable/certain hastening of death by last mentioned act** § | |
| With health care professional(s) specialised in palliative care | 7 |
| With the partner and/or family of the patient | 6 |
| With medical colleague(s) | 5 |
| With patient | 4 |
| With nurse(s) | 3 |

| Variable | n |
|---|---|
| **Estimated time the patient's life was shortened by last mentioned act** | |
| More than 6 months | 1 |
| 1-6 months | 1 |
| 1-4 weeks | 1 |
| 1-7 days | 5 |
| Less than 24 hours | 1 |
| **Other medical ELDs ¶** | |
| Withheld a treatment | 6 |
| Withdrew a treatment | 6 |
| **Sedation** | |
| Deep sedation until death | 5 |
| Other palliative/terminal sedation | 3 |

† Three patients accessed multiple services ‡ with the primary intention of hastening death § multiple responses allowed ¶ that probably or certainly hastened death

## References

1. Kuhse H, Singer P, Rickard M, et al. End-of-life decisions in Australian medical practice. *Med J Aust* 1997;166:191-196.
2. Virik K, Glare P. Requests for euthanasia made to a tertiary referral teaching hospital in Sydney, Australia in the year 2000. *Support Care Cancer* 2002;10:309-313.
3. Stevens CA, Hassan R. Management of death, dying and euthanasia: attitudes and practices of medical practitioners in South Australia. *J Med Ethics* 1994;20:41-46.
4. Malpas P, Mitchell K, Koschwanez H. End-of-life medical decision making in general practice in New Zealand-13 years on. *N Z Med J* 2015;128:27-29.
5. Mitchell K, Owens G. End of life decision-making by New Zealand general practitioners: a national survey. *N Z Med J* 2004;117: U934.