Physicians' preferences for their own end of life: A comparison across North America, Europe, and Australia

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Abstract

Objective:
To study physicians' personal preferences for end-of-life practices, including life-sustaining and life-shortening practices, and the factors that influence preferences.

Design:
A cross-sectional survey (May 2022 – February 2023).

Setting:
Eight jurisdictions: Belgium, Italy, Canada, USA (Oregon, Wisconsin, and Georgia), Australia (Victoria and Queensland).

Participants:
Three physician types: general practitioners, palliative care physicians, and other medical specialists.

Main outcome measures:
Percentage of physicians who preferred various end-of-life practices and provided information about influence on preferences and demographics.

Results:
We analyzed 1157 survey responses. Physicians rarely considered life-sustaining practices a (very) good option (in cancer and Alzheimer's respectively, CPR, 0.5% and 0.2%; mechanical ventilation, 0.8% and 0.3%; tube feeding, 3.5% and 3.8%). About half of physicians considered euthanasia a (very) good option (respectively, 54.2% and 51.5%). The proportion of physicians considering euthanasia a (very) good option ranged from 37.9% in Italy to 80.8% in Belgium (cancer scenario), and 37.4% in Georgia, USA to 67.4% in Belgium (Alzheimer's scenario). Physicians practicing in a jurisdiction with a legal option for both euthanasia and physician-assisted suicide were more likely to consider euthanasia (very) good option in both cancer (OR=3.1, 95% CI 2.2-4.4) and Alzheimer's (OR=1.9, 95% CI 1.4-2.6).

Conclusion:
Physicians largely prefer to intensify alleviation of symptoms at the end of life and avoid life-sustaining techniques. In a scenario of advanced cancer or Alzheimer's disease, over half of physicians prefer assisted dying. Considerable preference variation exists across jurisdictions and preferences for assisted dying seem to be impacted by legalization of assisted dying within jurisdictions.

INTRODUCTION

Globally, people are living longer than they were 50 years ago. However, higher rates of chronic disease and extended illness trajectories have made the need for improved end-of-life care an issue of growing clinical and societal importance.[1] Physicians play a critical role in initiating and conducting conversations about end of life with their patients whose death is often preceded by decisions about end-of-life practices.[2] These decisions may include choosing to forego life-prolonging therapies, or treatments that potentially hasten death, which have a significant impact on individuals, families, and healthcare systems.[2–4]

Research suggests a link between physicians' consideration of their own end-of-life and their clinical practice. General practitioners (GPs) who have prepared their own advance directive tend to initiate consultation on end-of-life issues more frequently.[5] Moreover, physicians' perceptions of their patients' treatment wishes are influenced by their own preferences.[6] Studies suggest most physicians wish to forego high-intensity treatments for themselves, especially those with high exposure to very sick patients.[7,8] Moreover, most would refuse life-sustaining treatments in a scenario with poor prognosis[9,10] with nearly 40% expressing a preference for physician-assisted suicide if they had advanced amyotrophic lateral sclerosis.[10] Previous research has not reached a consensus on whether it is appropriate for physicians' personal preferences and values to influence their clinical practice. However, research indicates that physicians are reluctant to provide information they feel will bias the patient.[11]

Since physicians have significant influence on patients' end-of-life care, it is important to better understand their personal perspectives about end-of-life care and the associated ethical implications.[12] However, existing studies on physicians' preferences for end-of-life practices are outdated and/or focus on a narrow range of end-of-life practices. Additionally, knowledge on whether physicians would consider assisted dying for themselves is limited and no international comparative studies have been conducted.

Various terms are used to refer to assisted dying including euthanasia, physician-assisted suicide, medically assisted suicide, physician-assisted dying, voluntary assisted dying, and medical aid in dying,[13] though the meaning and use is not consistent or universally agreed

upon. In this article, we use “assisted dying” as an umbrella term covering both “euthanasia” and “physician-assisted suicide”. Euthanasia refers to the act of intentionally ending the life of a patient by a physician by active drug administration at that patient’s explicit request and physician-assisted suicide is the provision of or prescribing of drugs by a physician for a patient to use to end their own life.[13] The legality and acceptability of these practices varies greatly, and an international comparison of physicians’ preferences, which are likely impacted by macro-level factors, is lacking.

This study explored physicians’ preferences for end-of-life practices across three continents (North America, Europe, Australia). We address the following research questions:
1. What are physicians’ preferences for end-of-life practices in hypothetical medical scenarios of advanced cancer and Alzheimer’s disease?
2. To what extent do physicians’ preferences for end-of-life practices vary by assisted dying legislative environment, sociodemographic and professional characteristics, and what factors are associated with physicians’ end-of-life preferences?

METHODS

Study design

This study involved a large-scale, self-administered, cross-sectional survey in countries in North America, Europe, and Australia.

Context and setting

Considering assisted dying legislation can have a substantial impact on the role of physicians, medical practice, and end-of-life culture[14], we intentionally selected physicians practicing in jurisdictions which have diverse cultural environments and varied levels of experience with assisted dying legislation (Box 1). We included jurisdictions in North America (Canada and the US states of Oregon, Wisconsin, and Georgia); Europe (Belgium (Flanders), Italy); and Australia (states of Victoria and Queensland).

In North America, Oregon is among the most socially progressive states.[15] It has had the longest standing physician-assisted suicide law (since 1997) and is also among the least

religious US states.[16] Wisconsin is largely rural with isolated pockets that are urban and progressive.[15] Death with Dignity legislation has been introduced there numerous times over the past 20 years but remains illegal.[17] Physicians from Georgia offer perspectives from a southern state without assisted dying legislation, which ranks among the most religious US states by the Pew Research Center (79% Christian) and where end-of-life care decisions are influenced by widely held conservative views.[16] Canadian physicians will provide further comparison in a setting which has a national health care system (unlike the USA) and allows both physician-assisted suicide and euthanasia (since 2016).

In Europe, physicians in Belgium offer perspectives from a more socially liberal European environment[18] where assisted dying has been legal since 2002 and attitudes about end-of-life care and assisted dying have evolved over time through intense debate and exposure to euthanasia. Italy offers a contrasting viewpoint as one of the most religious countries in Europe where assisted dying remains illegal. Although a Constitutional court ruling in 2019 allows physician-assisted suicide, patients must meet extremely narrow criteria and it is not generally accessible, though there is ongoing social and legal debate.[16,19,20]

Australia is a secular country with a high level of religious freedom and diversity.[21] The Australian state of Victoria implemented assisted dying legislation in June 2019 and offers perspectives from physicians experiencing recent implementation of the Act.[22] In Queensland, assisted dying legislation was passed in 2021, but had not commenced at the time of data collection for this study.[23]

Participants

Due to their varied levels of experience treating patients at the end of life, we sought to include three types of physicians: GPs, palliative care physicians, and other medical specialists with a high likelihood of seeing patients facing end-of-life issues (i.e. cardiologists, emergency medicine, gastroenterologists, geriatricians, gynecologists, internal medicine, intensivists, nephrologists, neurologists, oncologists, pulmonologists*)*. A convenience sample in each jurisdiction was sought. Our goal was a distribution of physician types that included a minimum of 60 general practitioners, 30 palliative care physicians, and 60 medical specialists

in each jurisdiction, for a minimum total of 150 physicians in each jurisdiction, which was considered sufficient to make inferences about the population.

Data collection

Data was collected between May 2022 and February 2023 using a self-administered web-based questionnaire (Supplement) on the Qualtrics online survey platform. The survey was shared via email utilizing physician organizations, medical licensing boards, commercial registries, partners' professional networks and social media. An initial survey invitation was sent by email, followed by a maximum of three reminders.

The survey instrument is an adaptation of a validated questionnaire, which underwent substantial assessment and modification.[24] Cognitive testing was conducted to evaluate the questionnaire for question order, clarity, and appropriateness of terminology with two to four physicians in each jurisdiction followed by revision and incorporation of feedback. The final survey included 38 questions in total, with a completion time of approximately 10 minutes.

To assess physicians' preferences for end-of-life practices, we used two case vignettes with hypothetical situations – one cancer scenario and one Alzheimer's disease scenario (Box 2). We asked physicians the extent to which they would consider various end-of-life practices for themselves including: cardiopulmonary resuscitation, mechanical ventilation, artificial nutrition and hydration, intensified alleviation of symptoms, palliative sedation, using available medications to end one's own life, physician-assisted suicide, and euthanasia. Physicians' preferences were measured using a 4-point Likert scale. Respondents were asked "Right now, which of the following end-of-life decisions would you consider possible options for yourself (if there were an indication for it and it was a legal option in your jurisdiction)?", using the following response options: (1) Not at all a good option, (2) Not such a good option, (3) A good option, or (4) A very good option.

Additional questions were included on demographic-, cultural-, and institutional-level factors that may influence physicians' preferences including gender, age, physician specialty, average number of end-of-life patients annually, ethnicity, and religion.

Statistical analysis

We dichotomized the 4-point Likert scale into 'not at all/not such a good option' and 'a good/very good option'. To examine the association between physicians' own end-of-life decision preferences in two hypothetical scenarios and the legislative environment or sociodemographic and clinical characteristics, we conducted backward stepwise binomial logistic regression models (one for each scenario). At each step, variables were chosen based on p-values; a threshold of 0.05 was used to set a limit on the total number of variables included in the final model. We report odds ratios and 95% confidence intervals. All analyses were done using SPSS (version 28).

Ethics

The study protocol was approved by the medical ethics committee of the Brussels University Hospital that acts as central ethics committee (BUN:1432021000562, September 29, 2021). Approvals were also obtained from ethics committees in Australia (Queensland University of Technology:20225080, December 17, 2021), Canada (Ottawa Hospital Research Institute:20220217-01H, August 29, 2022), and Italy (AUSL, Comitato Etico dell'Area Vasta Emilia Nord:748EE93B, April 7, 2022). Formal ethics approvals were not required by the other participating consortium partners/institutions. The study protocol, informed consent form, and supporting documents were approved by the appropriate local research ethics committees, prior to participant recruitment.

RESULTS

We received 1408 survey responses. Of those, 251 were excluded because they were ineligible or incomplete, resulting in a final sample of 1157 physicians (Table 1). The overall response reached our minimum goal of 150 participants in all jurisdictions, except in Canada, Georgia, USA, and in both states of Australia. Most physicians were white/European (74%) and identified as either Christian (39%) or non-religious (43%).

Physicians' personal end-of-life decision preferences

Both scenarios for advanced cancer and Alzheimer's show similar proportions of physicians preferring suggested end-of-life options: CPR (0.5%, 0.2%), mechanical ventilation (0.8%,

0.3%), tube feeding (3.5%, 3.8%), intravenous hydration (21.5, 17.8%) (Table 2). Of all physicians, 93.6% vs 90.9% found intensifying alleviation of symptoms a good or very good option and 58.9% vs 49.9% considered palliative sedation a good or very good option. About half of participating physicians (54.2%, 51.5%) in both scenarios considered euthanasia a good or very good option.

In the cancer scenario, the proportion of physicians considering palliative sedation a good or very good option varied across jurisdictions, from 42.7% in Queensland to 82.0% in Italy (Table 3). Preferences for physician-assisted suicide as an option differed from a minimum of 25.3% in Belgium to a maximum of 71.2% in Oregon. Preferences for euthanasia as a good or very good option differed from a minimum of 37.9% in Italy to a maximum of 80.8% in Belgium. Also, 33.5% of physicians would consider using medications at their disposal to end their own life.

In the Alzheimer's scenario, preferences for palliative sedation as a good or very good option varied from a minimum of 39.3% in Georgia to a maximum of 66.3% in Italy and physicians who considered euthanasia ranged from 37.4% in Georgia to 67.4% in Belgium.

Association between physicians' preferences and legislative environment, sociodemographic and professional characteristics

For the cancer scenario, physicians who live in a jurisdiction that allows both euthanasia and physician-assisted suicide (Belgium, Canada and Victoria) were more likely to consider euthanasia a good or very good option than those in jurisdictions without legalized assisted dying (Table 4). Physicians from jurisdictions which allow only physician-assisted suicide (Oregon) were more likely to consider physician-assisted suicide a good or very good option.

Compared to palliative care physicians, GPs and other medical specialists were less likely to consider palliative sedation a good or very good option (GPs: 55.1% vs 70.3%, other medical specialists: 56.2% vs 70.3%), and were more likely to consider euthanasia, physician-assisted suicide, and using available medication to end one's own life (euthanasia: 55.8% vs 39.1%, physician-assisted suicide: 52.6% vs 31.8%), using available medication to end one's own life (35.3% vs 19.0%); other medical specialists vs palliative care physicians (euthanasia: 60.4% vs

39.1%, physician-assisted suicide: 56.8% vs 31.8%), using available medication to end one's own life: 39.0% vs 19.0%. Physicians who see more than five end-of-life patients per year were less likely to consider physician-assisted suicide or euthanasia a preferable option compared to those who see fewer than 5 per year (physician-assisted suicide 44.9% vs 59.0%, euthanasia 50.4% vs 63.1%). Non-religious physicians were more likely to consider physician-assisted suicide or euthanasia a preferable option than religious physicians: physician-assisted suicide (64.6% vs 38.1%), euthanasia (71.8% vs 40.1%).

For the Alzheimer's scenario, physicians in jurisdictions allowing euthanasia and physician-assisted suicide were more likely to consider euthanasia a good or very good option. Gender, age, and ethnicity did not appear to independently impact physicians' preferences for end-of-life practices.

DISCUSSION

Summary of main findings

Across all participating jurisdictions, our findings indicate that more than 90% of physicians have a personal preference for the intensification of symptom alleviation using medications in both the advanced cancer and Alzheimer's disease scenarios, and more than 95% prefer to avoid life-sustaining techniques like CPR, mechanical ventilation, and tube feeding. Palliative sedation presents a mixed picture across the jurisdictions, with 39% to 66% of physicians considering it for themselves in the Alzheimer's scenario and 43% to 82% in the cancer scenario. In jurisdictions with a legal option for euthanasia at the time of the survey (Belgium, Canada, Victoria) 59% to 81% of physicians considered euthanasia for themselves in an advanced cancer scenario, while 58% to 61% considered it for themselves in an Alzheimer's scenario. Also, in Queensland, where legislation had passed but was not yet implemented at the time of data collection, 51% (Alzheimer's) and 57% (cancer) of physicians considered euthanasia for themselves. Our results also indicate that physician type, average number of end-of-life patients, religiosity and legislative environment is associated with physicians' preferences for end-of-life practices, while physician gender, age and ethnicity did not impact preferences.

Strengths and limitations

A major strength of our study is the inclusion of physicians across three continents, five countries and eight jurisdictions, representing varied legal and cultural environments. This study provides novel evidence on end-of-life preferences by focusing on physicians' preferences for end-of-life options for their own end of life, contrasting jurisdictions with and without assisted dying legislation, and including three contrasting types of physicians - general practitioners, palliative care physicians and other medical specialists.

The study had certain limitations. The pragmatic choice for convenience sampling does not allow for random selection, meaning the point estimates cannot be considered representative of the sampled populations. There may be selection bias as the survey could have attracted those with a particular interest in end-of-life issues. Though the overall recruitment of respondents was satisfactory in all jurisdictions, there was a low representation of GPs in the Canadian sample. On the other hand, the comparison between the jurisdictions and between three selected categories of physicians generates valid results.

Interpretation of main findings

Our findings show that across all jurisdictions physicians largely prefer intensified alleviation of symptoms and to avoid life-sustaining techniques like CPR, mechanical ventilation, and tube feeding. This finding may also relate to the moral distress some physicians feel about the routine continuation of treatment for their patients at the end of life.[25] These findings warrant reflection on current clinical practice since life-prolonging treatment is still widely used with patients[26] yet is not preferred by physicians for themselves.

A majority of physicians consider euthanasia and physician-assisted suicide a good or very good option in an advanced cancer scenario for themselves. However, substantial differences across the jurisdictions have been found and much higher support was found in jurisdictions where assisted dying is already legalized. This is consistent with existing research exploring physicians' preferences for end-of-life practices.[10] For these physicians, the legal availability of assisted dying would provide another option for untreatable refractory symptoms and unbearable suffering of their patients and palliative sedation is not the only final end-of-life treatment option. Furthermore, physicians' jurisdiction is strongly

related to their preferences and those who practice in a jurisdiction which allows physician-assisted suicide and euthanasia are much more likely to consider assisted dying practices a good or very good option.[27] This may be because these physicians are more familiar and comfortable with the practices and have observed positive clinical outcomes. It also suggests that macro level factors heavily impact personal attitudes and preferences and physicians are likely influenced by what is considered 'normal' practice in their own jurisdiction. In the case of Belgium, assisted dying may be more normalized after more than 20 years of experience, than in Canada or in Australia where legalization came much later. It is worth noting that physicians were asked to consider assisted dying practices 'if they were a legal option' in their jurisdiction, so preferences were not distorted by question phrasing.

Jurisdictional differences in physicians' preferences could have significant implications for patient care. For instance, physicians in regions where assisted dying is legal may present these options more readily to patients, potentially creating disparities in end-of-life care access and quality, while in restrictive regions, patients may have limited options, with physicians potentially leaning more heavily on palliative sedation or the intensification of symptom management with medications. Moreover, in some jurisdictions, physicians are restricted from mentioning certain end-of-life options. For example, in the Australian states of Victoria and South Australia physicians are prohibited from initiating conversations about voluntary assisted dying (VAD) with patients.[28] This restriction is intended to prevent potential coercion and ensure that the request originates from the patient, however, it could inadvertently lead to less equitable care.

These jurisdictional differences raise broader ethical and legislative considerations about how end-of-life practices should be integrated into healthcare systems. For instance, does legalizing assisted dying inadvertently pressure physicians to align with societal norms, potentially at odds with their personal values, which could result in emotional conflict? Conversely, do restrictive laws hinder physicians from offering what they personally consider compassionate care? Research has explored some of these complex issues and found that physicians' participation in assisted dying can potentially contrast with their personal expectations about professional roles and responsibilities and result in emotional burden or discomfort, while other physicians who participate experience satisfaction in meeting the

end-of-life needs of patients.[14,29] Further research is needed to better understand how physicians' perceptions of assisted dying and legislative safeguards impact patient care.

The legislative framework and whether assisted dying is administered in a clinical practice setting or is self-administered also has an impact. Some laws specify a preferred form of administration (practice-administration or self-administration), which establishes a normative direction (e.g. euthanasia in Belgium, physician-assisted suicide in Victoria, Australia). It is also noteworthy that in any jurisdiction where euthanasia and physician-assisted suicide are both legal options, euthanasia is preferred.[30] The status of legislation also influences preferences and in some jurisdictions the law has been long established, while in others it has been more recently implemented, or is pending. These findings underscore the complex variation of physicians' personal perspectives and the need for further research on physicians' own end-of-life practice preferences, and the influences on those preferences.

It is striking that many physicians would also consider euthanasia in the Alzheimer's disease scenario, despite the progressive status of this disease making it a complex basis for making a competent assisted dying request. In most jurisdictions, the law would not allow physicians to grant this request. It also highlights the need for further discourse on assisted dying, and, in particular, end-of-life practices for complex conditions like Alzheimer's disease.

Our results indicate there are a variety of influences on physicians' end-of-life practice preferences including practice type and personal characteristics. We found palliative care physicians consider palliative sedation a preferable option than assisted dying. This corroborates other research indicating that palliative care physicians have more negative attitudes toward life-shortening practices.[31] The preference for palliative sedation may be because it is better understood by palliative care physicians and is therefore considered more manageable and acceptable. It may also arise from differing ethical perceptions, as palliative sedation aligns with traditional medical values of relieving suffering without directly hastening death, whereas assisted dying challenges longstanding medical and societal boundaries regarding the physician's role and the sanctity of life. Assisted dying legislation affects certain groups of physicians more directly. While palliative care physicians

may be intimately involved with an end-of-life trajectory, general practitioners are the primary physicians involved in euthanasia or physician-assisted suicide in 93% of cases in the Netherlands, 60% in Belgium, and 71% in Switzerland.[30] Although physicians have the option to exercise conscientious objection and decline to participate in assisted dying, concerns related to the wellbeing of physicians involved in the practices exist as participation can potentially contrast with personal feelings and professional expectations.[32,33]

We found physicians with more strongly held religious beliefs are less likely to consider assisted dying a good or very good option. This finding is in line with other studies[34] and is likely due to the conflict between religious beliefs about the sanctity of life and the unacceptability of active life-shortening practices. This may also contribute to the ethical tension and emotional dissonance some physicians feel in being involved in the provision of assisted dying.

Several additional important ethical considerations arise from these study findings including whether physicians' personal preferences should influence their clinical practice, how physicians balance their personal beliefs and clinical practice, the sensitive context of end-of-life conversations and the impact of physicians’ preferences on patient care.

Whether physicians' personal preferences should influence their clinical practice is a question of key concern. Patients frequently ask for their physicians’ personal recommendations when they are weighing important treatment decisions and research has found many physicians are reluctant to provide information they feel will bias the patient.[11] Most physicians feel negative or ambivalent about sharing their personal recommendations though it is worth noting that research shows patients value knowing what their physician would choose in their position.[11] The involvement of physicians’ personal beliefs in patient care underscores a deep ethical tension as physicians must carefully balance their dual roles as a neutral guide upholding patient autonomy and an experienced expert providing professional guidance. While the potential harm of physicians sharing their personal preferences remains uncertain, research highlights that trust in the physician-patient relationship depends on transparency and ensuring that care decisions

prioritize patients' goals over physicians' personal values.[35] Given the significance of trust in the patient-provider relationship, it is understandable that many physicians are reluctant to divulge their personal preferences. Sharing may blur the line between personal bias and professional expertise. However, in some cases, physicians explaining their decision-making process and personal reasoning could clarify and deepen the patient’s understanding of the available options and even strengthen trust if the patient has asked what the physician would do in a similar situation. Further research could help determine whether, and under what circumstances, it is appropriate for physicians to share their personal preferences with patients.

Research indicates physicians face challenges balancing their personal end-of-life preferences and beliefs with professional practice, particularly in the context of clinical decision-making.[36] They also encounter difficulty squaring their personal ethical integrity with their practice, particularly when confronted with ethically controversial situations.[37] To understand the challenges physicians encounter, the concept of relational autonomy should be considered as the traditional, individualistic approach to autonomy may fail to incorporate the complexities of real-life decision-making, especially in the context of end-of-life care. Relational autonomy recognizes the interconnectedness between individuals and their social contexts and incorporates the perspectives of family, caregivers, and broader social influences.[38] This perspective aligns more closely with the realities of end-of-life care, where decisions are often made in a communal context and involve emotional and relational factors. These factors highlight the practical challenges physicians face trying to ensure their own beliefs do not inadvertently overshadow the values of the patient, their significant others, or family members within the wider interpersonal environment. Effectively managing the relationship between personal preferences and clinical practice may depend on the individual physician's ability to prioritize their patients' values and preferences above all else.

The context in which end-of-life conversations occur adds another layer of ethical complexity. Sensitive discussions about end-of-life care are often emotionally charged, requiring physicians to consider not only the clinical scenario but also the patient’s emotional state, cultural background, personal circumstances and family perspectives.[39]

Sharing personal preferences might be particularly fraught in cases where patients or families hold strong beliefs that differ from the physician's perspective and highlights the culturally and emotionally nuanced issues physicians must navigate while maintaining a focus on patient-centered care.

This study's finding that physicians clearly prefer less aggressive, life-prolonging care—and the potential implications of this preference for patient care—also deserves careful consideration. While this finding might suggest that physicians could be more reluctant to recommend or provide these treatments to patients at the end of life, the opposite is more commonly found. Research has shown that patients frequently receive unwanted invasive, life-extending treatments.[8] There are a variety of complex factors influencing medical decision-making and encouraging the use of more intensive care,[8,40] however, these findings suggests a desire among physicians to prioritize quality of life over prolonged suffering and highlight an incongruence between their personal preferences and clinical practice.

These ethically and emotionally complex end-of-life issues draw attention to the challenges physicians face balancing their roles as individuals with personal convictions and as professionals committed to patient autonomy and equitable care. To navigate these difficulties, it is essential to employ ethical frameworks, such as relational autonomy and shared decision-making in the context of end-of-life care, as studies show these emphasize the importance of a collaborative environment where patient values take precedence while allowing physicians to maintain their moral integrity.[38,41]

In conclusion, there is a high level of agreement among physicians who prefer to intensify alleviation of symptoms at the end of life and avoid life-sustaining practices. Considerable variation in preferences exists across jurisdictions and preferences for assisted dying seem to be impacted by the legalization of assisted dying within jurisdictions. Physicians face significant ethical challenges as they navigate the tension between their personal preferences and the provision of patient-centered care.

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Supplement

eAppendix 1. PROPEL Survey questionnaire - Wisconsin

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Box 1: Assisted dying status of the PROPEL study jurisdictions			
Jurisdiction	**Year of legislation**	**Title of legislation**	**Legalization status**
North America			
Canada	2016	Medical Assistance in Dying Law	Euthanasia and Physician-Assisted Suicide (PAS)[a]
Oregon, USA	1997	Death with Dignity Act	PAS
Wisconsin, USA	No existing legislation[b]	None	None
Georgia, USA	No existing legislation	None	None
Europe			
Belgium	2002	Law on Euthanasia	Euthanasia[c]
Italy	No existing legislation[d]	None	*Court judgement on PAS[c]*
Australia			
Victoria	2017 (commenced 2019)	Voluntary Assisted Dying Act	Euthanasia and PAS (Euthanasia only permitted if PAS not possible)
Queensland	2021 (commenced 2023)	Voluntary Assisted Dying Act	Euthanasia and PAS[e]
[a] While PAS is legal in Canada, euthanasia is usually requested/administered, and PAS is rarely practiced			
[b] Laws have been introduced in Wisconsin numerous times but never passed			
[c] Belgian law stays silent on the issue of PAS and the status is still unclear after significant legal debate			
[d] Italian Constitutional court ruling in 2019 allows PAS (It has been performed but it is not generally accessible or supported by physicians, and patients must meet very narrow requirements).			
[e] The Queensland law also has a default for Euthanasia ahead of PAS, but because patient choice is a relevant consideration, in practice, euthanasia is widely available to patients who want it. Legislation had passed but was not in effect at the time of the survey.			

Box 2. End-of-life scenarios and end-of-life decision preferences included in the PROPEL questionnaire	
Cancer scenario	You have been diagnosed with cancer with extensive lung and bone metastases and your treating oncologist has said no further treatments are available. You have an estimated life expectancy of no more than two weeks and are fully competent. You are experiencing ongoing severe pain and agitation. A palliative care provider is involved and palliative care services (e.g. home care, inpatient hospice) are available for you.
Alzheimer's scenario	You are suffering from Alzheimer's dementia in gradual cognitive decline and you no longer recognize your family or friends. You refuse to eat and drink and have become more and more withdrawn. It is no longer possible to communicate with you about medical treatment options. A palliative care provider is involved and palliative care services (e.g. home care, inpatient hospice) are available for you.
Preferences for end-of-life decisions[a]	Right now, which of the following would you consider possible options for yourself (if there were an indication for it)? Response options *(1) Not at all a good option (2) Not such a good option (3) A good option (4) A very good option* - the use of cardiopulmonary resuscitation - the use of mechanical ventilation - the use of intravenous hydration - the use of a feeding tube (gastrostomy, jejunostomy, or intravenous) to provide nutrition - to intensify the alleviation of symptoms by using medications, taking into account the probability or certainty that this could hasten your death - to use high doses of medications, such as benzodiazepines or barbiturates, to be kept in deep sedation until death - to request medications from your health care practitioner that would allow you to end your own life, if it is currently legal or were to become a legal option in your jurisdiction - to use medications which are at your disposal as a physician to end your own life - to request assistance from a medical practitioner who could administer a substance to end your life, if it is currently legal, or were to become a legal option in your jurisdiction
[a] End-of-life decision preference options were adjusted to fit each scenario	

Table 1. Characteristics of participating physicians, per jurisdiction									
	OVERALL (N=1157)	USA			CA (N=113)	BE (N=154)	IT (N=196)	AUS[b]	
		WI (N=161)	OR (N=169)	GA (N=116)				VIC (N=128)	QLD (N=98)
		%	%	%	%	%	%	%	%
Gender [a]									
Male	523	43.0	45.3	50.9	58.4	37.5	47.4	62.1	51.7
Female	542	57.0	54.7	49.1	41.6	62.5	52.6	37.9	48.3
Age									
<40 years	237	29.4	12.1	21.7	28.7	28.5	22.3	17.2	16.1
40-59 years	569	61.4	57.7	39.6	55.4	59.0	46.1	45.7	58.6
>60 years	264	9.2	30.2	38.7	15.8	12.5	31.6	37.1	25.3
Physician type									
General practitioner	390	32.1	43.0	34.5	1.8	26.6	34.2	37.0	64.6
Palliative care physician	249	13.8	7.9	19.8	41.6	27.3	42.3	8.7	7.3
Other medical specialist	509	54.1	49.1	45.7	56.6	46.1	23.5	54.3	28.1
Average yearly end of life patients									
<10	430	39.5	54.3	54.1	22.9	37.1	35.6	39.2	64.9
11-30	197	24.8	18.3	17.1	21.1	27.2	14.4	17.6	3.5
>30	399	35.7	27.4	28.8	56.0	35.8	50.0	43.2	31.6
Religion									
Christian	451	46.8	32.9	60.0	30.7	31.7	61.5	31.0	36.0
Other religion	131	13.0	17.8	25.7	16.8	2.8	3.6	12.9	16.3
Non-religious	481	40.3	49.3	14.3	52.5	65.5	34.9	56.0	47.7
Ethnicity									
White/European	859	82.5	79.3	62.9	74.3	98.6	82.4	83.3	75.6
African/Black	19	0.6	2.1	11.4	0	0.7	0	0.9	1.2
Latino/Hispanic	46	1.3	3.4	4.8	1.0	0	16.1	0	1.2
Asian	79	8.4	10.3	11.4	17.8	0	0	11.4	8.5
Other	56	7.1	4.8	9.5	6.9	0.7	1.6	4.4	13.4
WI=Wisconsin, OR=Oregon, GA=Georgia, CA=Canada, BE=Belgium, IT=Italy, VIC=Victoria, QLD= Queensland									
Missing values: Gender: n=87, Age: n=87; Physician type: n=9; End of life patients: n=131; Religion: n=94; Ethnicity: 98.									
[a] Gender percentages exclude n=5 responses of 'other' and 'prefer not to say'.									
[b] For n=22 Australian cases jurisdiction is unknown.									

Table 2. Physicians' personal end-of-life preferences: overall results (in % of "good" or "very good" option)

	Life-sustaining practices						Assisted dying practices		
	CPR	Mechanical ventilation	Intravenous hydration	Feeding tube	Intensified alleviation of symptoms	Palliative sedation	Physician -assisted suicide	Euthanasia	Use medications at own disposal to end life
	%	%	%	%	%	%	%	%	%
Cancer scenario[a]	0.5	0.8	21.5	3.5	93.6	58.9	50.1	54.2	33.5
Alzheimer's scenario[a]	0.2	0.3	17.8	3.8	90.9	49.9	[b]	51.5	[b]

CPR: cardiopulmonary resuscitation

Missing values: cancer: CPR: n=74, mechanical ventilation: n=76, intravenous hydration: n=76, feeding tube: n=76, intensified alleviation of symptoms: n=76, palliative sedation: n=74, physician-assisted suicide: n=77, use medications at own disposal: n=81, euthanasia: n=80; Alzheimer's: CPR: n=78, mechanical ventilation: n=79, intravenous hydration: n=81, feeding tube: n=80, intensified alleviation of symptoms: n=79, palliative sedation: n=82, euthanasia: n=82

[a] Two hypothetical medical scenarios were included – one using advanced cancer and one using Alzheimer's disease

[b] These end-of-life decisions were not appropriate for inclusion in the Alzheimer's scenario

Table 3. Physicians' personal end-of-life preferences: results per jurisdiction (in % of "good" or "very good" option)							
		Cancer scenario[a]				Alzheimer's scenario[a]	
			Assisted-dying practices				Assisted-dying practice
		Palliative sedation	Physician-assisted suicide	Euthanasia	Use medications at own disposal to end life	Palliative sedation	Euthanasia
	N	%	%	%	%	%	%
OVERALL	1157	58.9	50.1	54.2	33.5	49.9	51.5
North America							
Canada	113	61.4	60.0	67.3	32.7	52.5	61.4
Oregon, USA	169	54.9	71.2	57.5	46.4	46.1	54.6
Wisconsin, USA	161	46.5	49.7	42.2	33.5	44.2	46.1
Georgia, USA	116	46.7	43.9	38.7	33.0	39.3	37.4
Europe							
Belgium	154	77.9	25.3	80.8	15.9	54.2	67.4
Italy	196	82.0	35.4	37.9	31.6	66.3	39.3
Australia[b]							
Victoria	128	43.2	66.7	59.0	40.5	43.2	58.5
Queensland	98	42.7	59.6	57.3	38.2	43.2	51.1

Missing values: Cancer: palliative sedation: n=74, physician-assisted suicide: n=77, use medications at own disposal: n=81, euthanasia: n=80; Alzheimer's: palliative sedation: n=82, euthanasia: n=82

[a] See Box 2 for the two medical scenarios

[b] Excludes n=22 Australian cases with location unknown

Table 4. Multivariate binary logistic regression per end-of-life decision with personal preference as dependent variable (1 = a (very) good option, 0 = not such/at all a good option)												
	Cancer scenario								Alzheimer's scenario			
	Palliative sedation		**Physician-assisted suicide**		**Euthanasia**		**Use medications at own disposal to end life**		**Palliative sedation**		**Euthanasia**	
	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)	%	OR (95% CI)
Legislative environment												
Euthanasia & PAS	62.1	*	48.2	NS	70.1	3.1 (2.2-4.4)	28.5	0.6 (0.4-0.8)	50.1	*	62.8	1.9 (1.4-2.6)
Only PAS	54.9	*	71.2	2.6 (1.7-4.1)	57.5	1.6 (1.1-2.4)	46.4	NS	46.1	*	54.6	NS
No assisted dying option	58.5	Ref.	45.1	Ref.	42.5	Ref.	33.5	Ref.	50.8	Ref.	42.8	Ref.
Gender												
Female	61.0	*	50.5	*	55.2	*	31.6	*	51.0	*	51.7	*
Male	57.5	Ref.	49.6	Ref.	53.5	Ref.	36.0	Ref.	48.8	Ref.	52.0	Ref.
Age												
Younger than 60 years	60.4	*	49.9	*	55.6	*	31.8	*	50.3	*	52.6	*
60 years or older	54.9	Ref.	49.8	Ref.	49.8	Ref	39.8	Ref.	48.3	Ref.	48.9	Ref.
Physician type												
General practitioner	55.1	0.5 (0.3-0.7)	52.6	NS	55.8	2.1 (1.3-3.1)	35.3	1.9 (1.2-3.0)	46.1	*	51.9	1.6 (1.1-2.5)
Other medical specialist	56.2	0.5 (0.4-0.8)	56.8	2.5 (1.7-3.6)	60.4	2.5 (1.7-3.6)	39.0	2.7 (1.8-4.0)	51.1	*	58.3	2.5 (1.8-3.6)
Palliative care physician	70.3	Ref.	31.8	Ref.	39.1	Ref.	19.0	Ref.	52.6	Ref.	36.5	Ref.
Average yearly end-of-life patients												
5 or more patients	60.6	*	44.9	0.6 (0.4-0.8)	50.4	0.7 (0.5-0.9)	30.8	*	50.3	*	47.9	0.7 (0.5-0.9)
< 5 patients	58.1	Ref.	59.0	Ref.	63.1	Ref.	38.8	Ref.	49.4	Ref.	59.1	Ref.
Religion												
Non-religious	63.7	1.4 (1.1-1.8)	64.6	3.0 (2.2-4.0)	71.8	2.9 (2.1-3.9)	41.2	1.9 (1.4-2.6)	55.3	1.4 (1.1-1.8)	67.4	2.7 (2.0-3.6)
Religious	55.4	Ref.	38.1	Ref.	40.1	Ref.	27.9	Ref.	45.4	Ref.	39.5	Ref.
Ethnicity												
White	59.4	*	49.4	*	55.7	*	33.4	*	49.5	*	52.5	*
Non-white	61.0	Ref.	54.2	Ref.	49.4	Ref.	36.6	Ref.	53.1	Ref.	50.3	Ref.
Nagelkerke R^2		0.031		0.178		0.216		0.100		0.010		0.163

PAS: physician-assisted suicide; NS: not significant

Jurisdictions: Euthanasia & PAS: Canada, Belgium & Victoria, Australia; Only PAS: Oregon; No assisted dying legislation: Italy, Georgia, Wisconsin & Queensland, Australia (legislation passed but implementation pending at time of survey)

*Variable not included in the equation through stepwise selection process; Variables controlled for: jurisdiction, gender, age, physician type, yearly end-of-life patients, religion, ethnicity