

# Cannabis and End-of-Life Care: A Snapshot of Hospice Planning and Experiences Among Illinois Medical Cannabis Patients With A Terminal Diagnosis

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## Abstract

**Introduction:** Between 2013 and 2019, Illinois limited cannabis access to certified patients enrolled in the Illinois Medical Cannabis Program (IMCP). In 2016, the state instituted a fast-track pathway for terminal patients. The benefits of medicinal cannabis (MC) have clear implications for patients near end-of-life (EOL). However, little is known about how terminal patients engage medical cannabis relative to supportive care. **Methods:** Anonymous cross-sectional survey data were collected from 342 terminal patients who were already enrolled in ( $n = 19$ ) or planning to enroll ( $n = 323$ ) in hospice for EOL care. Logistic regression models compare patients in the sample on hospice planning vs. hospice enrollment, use of palliative care vs. hospice care, and use standard care vs non-hospice palliative care. **Results:** In our sample, cancer patients ( $OR = 0.21 (0.11)$ ,  $p < .01$ ), and those who used the fast-track application into the IMCP ( $OR = 0.11 (0.06)$ ,  $p < .001$ ) were less likely to be enrolled in hospice. Compared to patients in palliative care, hospice patients were less likely to report cancer as their qualifying condition ( $OR = 0.16 (0.11)$ ,  $p < .01$ ), or entered the IMCP via the fast-track ( $OR = 0.23 (0.15)$ ,  $p < .05$ ). **Discussion:** Given low hospice enrollment in a fairly large EOL sample, cannabis use may operate as an alternative to supportive forms of care like hospice and palliation. Clinicians should initiate conversations about cannabis use with their patients while also engaging EOL Care planning discussions as an essential part of the general care plan.

## Keywords

medical cannabis, hospice, palliative care, end-of-life, symptom management

## Introduction

Through popular referenda, legislative action, and executive orders, states have extended opportunities for patients to access medical cannabis for therapeutic use.<sup>1,2</sup> This shift often relied on framing the issue around patients experiencing severe symptoms from terminal conditions, usually attaching personal stories, such as the young epilepsy patient Charlotte Figi who inspired the production of the cannabis product Charlotte's Web,<sup>3</sup> or the popular film Dallas Buyers Club.<sup>4</sup> Without question, patients near end-of-life (EOL) often suffer complex conditions, multimorbidity, functional limitations, and a decline extending beyond a 6-month prognosis.

The evidence associating positive outcomes with cannabis use relates directly to symptoms experienced by terminal patients, particularly pain, gastrointestinal issues, and emotional problems.<sup>5-8</sup> As cannabis use increases and acceptance grows, there is consensus among patients, providers, and politicians that those near EOL be among the first to access these programs.<sup>9,10</sup> Forms of supportive care (i.e., hospice and

palliation) are theoretically sound starting points to explore cannabis use at EOL. Figure 1 presents the supportive care continuum for seriously ill patients adapted here for terminal patients using cannabis.<sup>11-13</sup> With a model driven largely by patient preferences, hospice is particularly open to the inclusion of complementary and alternative, non-pharmacological methods for symptom management. In an increasing number of states, this specifically includes cannabis.

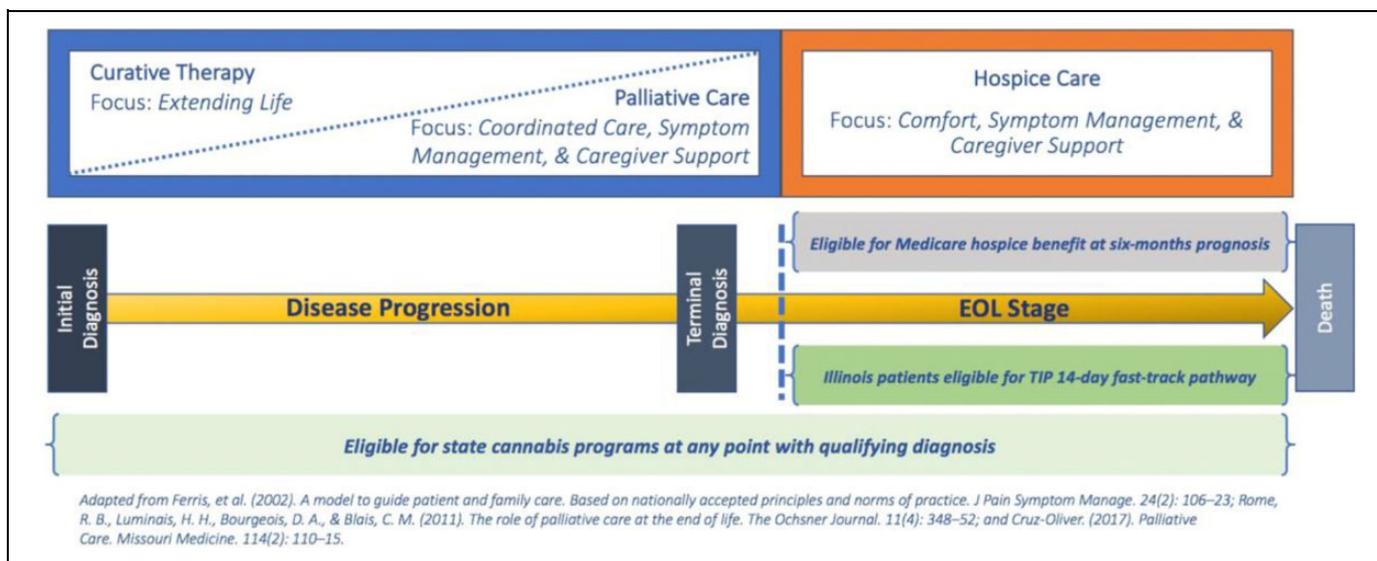
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**Figure 1.** Supportive care continuum adapted for medical cannabis patients with serious or terminal illness.

### Terminal Illness and the Illinois Medical Cannabis Program (IMCP)

In 2013, the State of Illinois authorized the Illinois Medical Cannabis Program (IMCP), allowing residents with certified diagnosis of qualifying conditions the right to purchase and consume cannabis products from licensed dispensaries.<sup>14</sup> In 2016, the statute was extended and a terminal illness eligibility category was added.<sup>15</sup> Through the Terminal Illness Program (TIP), Illinois was the first state to offer a no-cost, ‘fast-track’ certification pathway for terminal patients certified by their physicians, including those in hospice.<sup>16</sup>

### Hospice Care

Patient preferences are the foundation of the hospice model. Patients near EOL have expressed preference for spending their final days at home as opposed to in a hospital or nursing home, and for palliative medications and comfort care, as opposed to life-prolonging treatments for short extensions of life.<sup>17,18</sup> Moreover, hospice enrollment is associated with improved EOL quality measures developed by the National Quality Forum,<sup>19,20</sup> and overall satisfaction with hospice services is associated with previously identified concepts of a ‘good death’.<sup>21</sup>

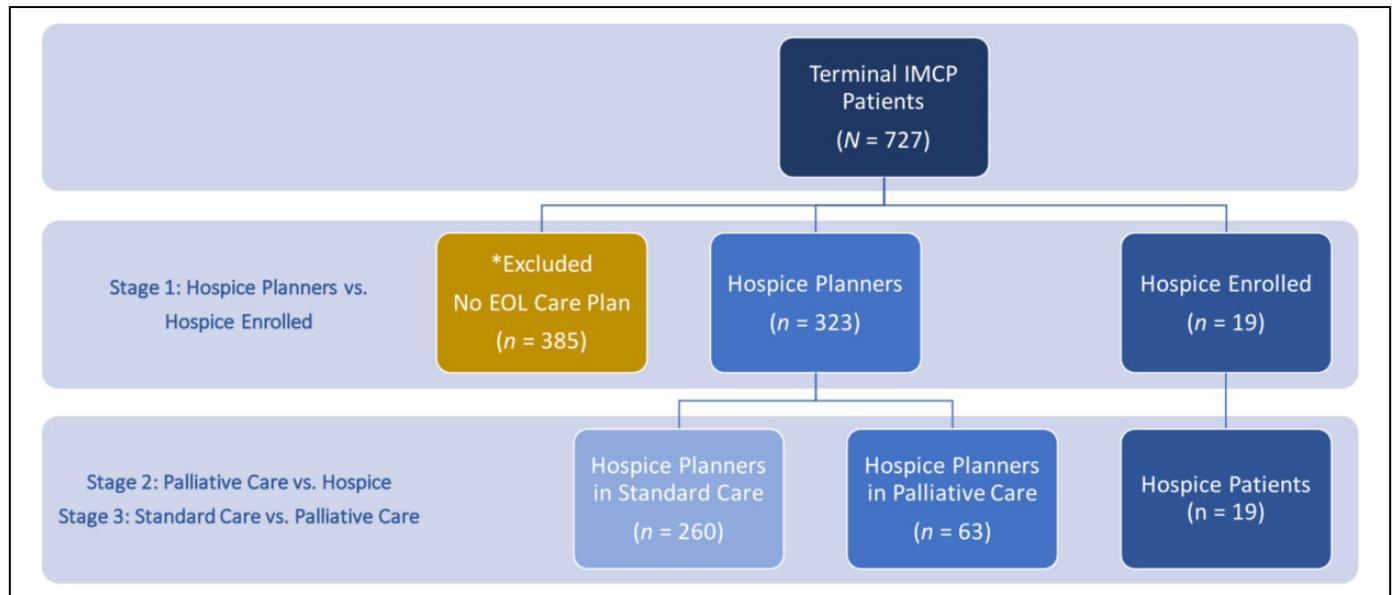
Recently, CMS started incentivizing providers for planning discussions to promote EOL care consistent with patient preferences.<sup>22,23</sup> An estimated 2 million patients use hospice annually, and 48 percent of Medicare decedents (some 1.4 million patients) used hospice in their last year of life.<sup>24</sup> How cannabis use among patients near EOL relates to their use of hospice is underexplored. *How does the use of cannabis intersect with the use, or the intent to use, hospice for EOL care? Is medical cannabis being used as a complement, or does it serve as an alternative?*

We hypothesize hospice enrolled patients will be more likely to have (1) medically complex conditions, and (2) higher

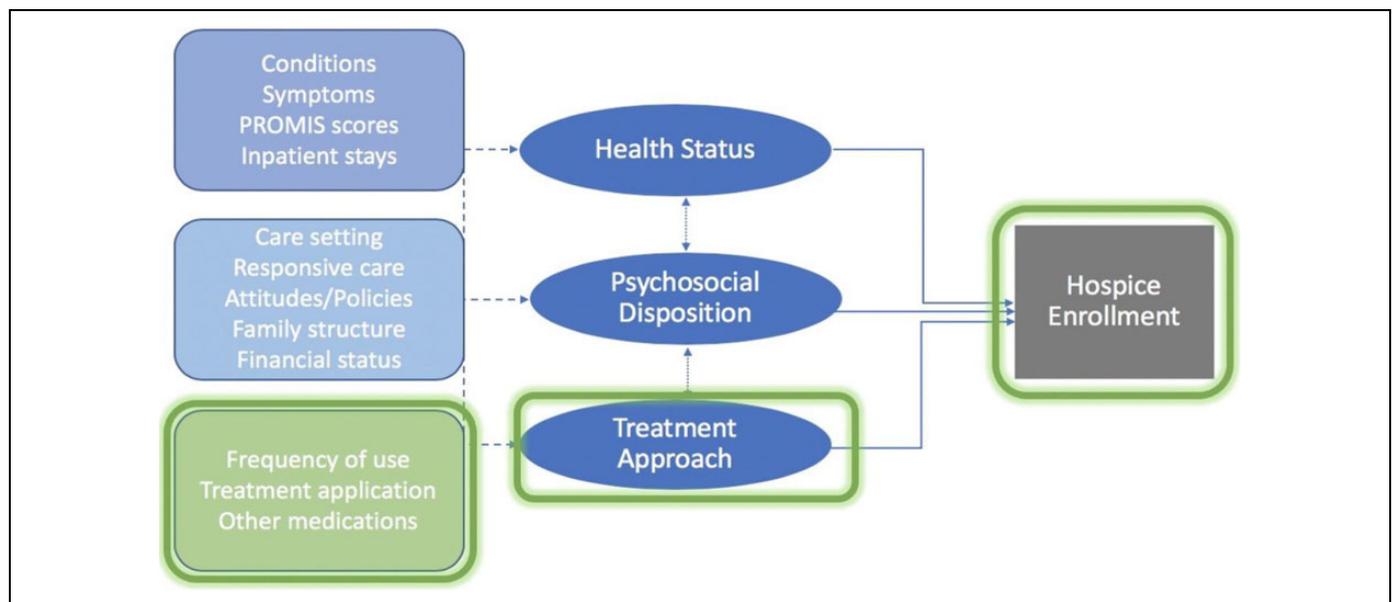
levels of pain than terminal patients in the sample planning for hospice. Also, (3) hospice enrolled patients will be more likely to use cannabis for exclusively medical purposes, when compared to terminally diagnosed patients planning for hospice. As one of the first studies to engage a sample of cannabis patients who are enrolled in or planning for hospice, we aim to identify key variables associated with hospice enrollment to test in larger studies.

### Methods

Using a cross-sectional survey of persons age 60 and older in Illinois, this study explores characteristics of terminally diagnosed individuals who are enrolled in or planning to enroll in hospice. The data were collected from a previously tested, anonymous, limited access e-mail survey of adults who enrolled in the IMCP prior to October 31, 2019. Eligible participants were contacted with assistance from Illinois Department of Public Health (IDPH). A link to the survey was emailed to 17,405 unique email addresses associated with enrolled patients (821 were undeliverable). Reminder requests were emailed at 2 days and 30 days after the initial request. Participants were invited to connect to the online survey via REDCap (Research Electronic Data Capture). The survey was available to complete between October 31 and December 31, 2019. Participants were informed of the research purpose, estimated completion time, where and how long the data would be stored, contact information for the PI and study personnel and provided consent prior to beginning the survey. The research was approved by the Internal Review Board at the University of Illinois at Urbana-Champaign. No incentives were offered for participation. Cookies were not used for identification, however duplicate entries were identified by self-reported email addresses and eliminated before analysis, keeping the more complete entry. In total, 4,066 unique responses were collected from eligible participants.



**Figure 2.** Analytic sample structure.



**Figure 3.** Hospice decision framework for medical cannabis patients near end-of-life.

### Sample

Figure 2 presents the analytic sample structure. To be included in the EOL sample, a respondent had to indicate receiving a terminal diagnosis with a maximum 6-month prognosis, or report applying for the program via the 14-day ‘fast-track’ application. Our sample consists of 342 individuals who report being diagnosed with a terminal illness and indicated they have previously enrolled or plan to enroll in hospice. Of these 342 respondents, 19 indicated they were already enrolled. The remaining respondents are *hospice planners* ( $n = 323$ ) who plan to enroll in hospice ‘when the time comes.’ These patients

reported either being engaged in palliative care ( $n = 63$ ); or indicated they were planning for hospice at some point but not pursuing palliation ( $n = 260$ ) at time of response.

### Data

The survey contained 86 questions and included adaptive measures related to health status, cannabis use, program certification and application pathways, along with hospice intentions, preferences, and experiences. Respondents were able to review and change their answers using the ‘Back’ button.

Figure 3 presents our conceptual framework for hospice enrollment decision-making and the corresponding item measures pulled for analysis. Demographic variables included age, sex, race/ethnicity, marital status, educational attainment, and financial security status.

Illinois allows cannabis patients to certify a caregiver who is able to purchase and possess the cannabis on behalf of the patient. Caregiver proxies were therefore identified given the possibility they may be the contact email address on file with IDPH. Caregiver proxies are also often used in EOL studies to accommodate patients who may have more advanced disease states or who may face recall issues.<sup>25-27</sup> When assessing quality and satisfaction, proxies have been observed to have higher quality/satisfaction scores while also having more negative reports on clinical nursing and care coordination.<sup>28-30</sup> The research shows the difference is small, but significant.

Self-reported health conditions qualifying patients for the IMCP were grouped into categories for analysis including cancer, mental health disorders, musculoskeletal disorders, neurological disorders, other terminal illnesses, multiple morbidity, and medically complex cases (defined here as 3 or more chronic conditions, AIDS complications, or multiple terminal diagnoses). Symptoms treated with cannabis included pain, difficulty sleeping, emotional problems, gastrointestinal issues, and multiple co-occurring symptoms. Pain status was assessed using an 11-point [0 – 10] pain scale.<sup>31</sup> Global measures for capturing self-reported assessments of physical and mental health status were also included.

Cannabis use was assessed with measures capturing purpose of use, frequency of use in past 30-days, dosing methods (smoke inhalation, vaporizer, edible products, oral pill/tablet, cream/ointment), status as a new or ‘naïve’ cannabis user in later life, and reports of negative experiences with cannabis in the past year. To identify potential barriers to accessing the program, and to address potential response bias we account for the source of patient knowledge about the IMCP, whether or not their certifying physician was a routine provider, whether or not the patient’s health insurance covered the cannabis certification visit with their doctor, and whether or not they entered the program through the TIP application.

### Statistical Analyses

Descriptive statistics included hospice enrollment vs ‘hospice planning’, and 3 approaches to EOL: hospice, palliation, and usual care (no hospice or palliation) in addition to those variables included in our decision framework. We perform univariate analyses to describe the sample and identify variables with strong associations to include in the models. Respondent count and proportion were calculated based on total respondents per question, missing observations were treated as missing at random and the number skipping a question was not included in the denominator. To determine group differences for continuous variables (age, pain levels, 30-day use frequency), we compare the item means using independent sample *t* tests. To

determine group differences for discrete variables (sex, education, marital status, caregiver use, etc.), we use chi-square tests.

Finally, to examine significant correlates of enrollment decisions we use logistic regression models to (1) compare hospice enrolled patients to other terminally diagnosed patients planning to enroll in hospice ( $n = 299$ ), (2) compare hospice enrolled patients to hospice planners engaged in palliative care ( $n = 74$ ), and (3) compare hospice planners on use of palliation ( $n = 280$ ). Independent variables in the models included age (in years), being age 80 or older, sex (male/female), education (less than college/college degree or more), marital status (not married/married), prior military service (non-veteran/veteran), and financial security status (insecure/secure), in addition to those variables pulled for analysis. A *p* value of .05 or less was considered statistically significant. All data management and statistical analyses were performed using Stata 16.1, by StataCorp. We followed the CHERRIES and STROBE cross-sectional study checklists to develop this report.<sup>32,33</sup>

## Results

### Comparing Hospice Patients to Hospice Planners

Our sample focuses on terminal patients in the IMCP by their plan for EOL care, distinguishing those who expressed intention to enroll in hospice ‘when the time comes,’ from those who are already enrolled. Table 1 presents the comparisons of means by hospice enrollment status for all terminal patients in the sample.

Table 2 presents the results of the logistic regression comparing enrolled hospice patients in the sample to those terminal patients still planning to enter hospice at some future point in time. For terminal patients reporting cannabis use to treat gastrointestinal issues, the odds of hospice enrollment were greater ( $OR = 3.51 (2.02)$ ,  $p < .05$ ). However, cancer patients in our sample ( $OR = 0.21 (0.11)$ ,  $p < .01$ ), and those who engaged the fast-track application into the program were less likely to be in hospice ( $OR = 0.11 (0.06)$ ,  $p < .001$ ).

### Comparing Hospice Patients to Those Hospice Planners in Non-Hospice Palliative Care

Table 3 presents the results of the logistic regression comparing hospice enrolled patients to those hospice planners pursuing palliation. Compared to those in palliative care, hospice patients in our sample were less likely to report a cancer diagnosis as their qualifying condition ( $OR = 0.16 (0.11)$ ,  $p < .01$ ) and less likely to have enrolled via the fast-track application ( $OR = 0.23 (0.15)$ ,  $p < .05$ ).

### Comparing Palliative Care Patients to Those Not in Supportive Care

Table 4 presents the results of the logistic regression comparing palliative care patients in the sample to the patients not pursuing palliation. Palliative care patients in the sample were more

**Table 1.** Univariate Analysis and Comparison of Means by Hospice Enrollment ( $n = 342$ ).

	Hospice planners ( $n = 323$ ) mean (SE)	Hospice enrolled ( $n = 19$ ) mean (SE)	$p$ -value
<i>Demographic Measures</i>			
Age in years	68.15 (.37)	70.68 (2.01)	0.23
<b>Age 80 years and older</b>	<b>0.08 (.02)</b>	<b>0.21 (.10)</b>	<b>0.05</b>
Female	0.53 (.03)	0.32 (.11)	0.06
Non-white	0.06 (.01)	0.16 (.09)	0.09
College degree or more	0.51 (.03)	0.42 (.12)	0.43
Married	0.65 (.03)	0.68 (.11)	0.78
Military veteran	0.14 (.20)	0.16 (.09)	0.84
Financially secure	0.81 (.02)	0.78 (.10)	0.73
<i>Health Status Measures</i>			
<b>Caregiver proxy</b>	<b>0.12 (.02)</b>	<b>0.53 (.12)</b>	<b>&lt; .001</b>
Disabled	0.35 (.03)	0.42 (.12)	0.54
<b>Low quality of life</b>	<b>0.36 (.03)</b>	<b>0.67 (.11)</b>	<b>0.01</b>
Difficulty managing health status	0.21 (.02)	0.33 (.11)	0.22
<b>Negative psychological wellbeing</b>	<b>0.21 (.02)</b>	<b>0.50 (.12)</b>	<b>0.01</b>
<b>Average pain level [0 – 10]</b>	<b>5.08 (.15)</b>	<b>6.28 (.44)</b>	<b>0.02</b>
<b>Frequent emotional problems</b>	<b>0.25 (.02)</b>	<b>0.50 (.12)</b>	<b>0.02</b>
<b>Frequent gastrointestinal issues</b>	<b>0.22 (.02)</b>	<b>0.56 (.12)</b>	<b>&lt; .001</b>
Cancer diagnosis	0.47 (.03)	0.47 (.12)	1.00
Another terminal diagnosis	0.11 (.02)	0.26 (.10)	0.06
Multiple diagnoses	0.23 (.02)	0.11 (.07)	0.22
Medically complex	0.13 (.02)	0.26 (.10)	0.11
Pain symptoms	0.81 (.02)	0.79 (.10)	0.79
Mental health symptoms	0.40 (.03)	0.37 (.11)	0.77
Gastrointestinal symptoms	0.31 (.03)	0.42 (.12)	0.33
Multiple symptoms	0.74 (.02)	0.74 (.10)	0.98
<i>Cannabis Use and Program Access Measures</i>			
Medical purpose use	0.83 (.02)	0.95 (.05)	0.18
Both medical & recreational use	0.20 (.02)	0.05 (.05)	0.12
30-day cannabis use [0 – 30 days]	20.25 (.63)	18.05 (2.82)	0.46
Dosing via smoke inhalation	0.38 (.03)	0.32 (.11)	0.57
<b>Dosing via oral pill or tablet</b>	<b>0.24 (.02)</b>	<b>0.53 (.12)</b>	<b>0.01</b>
Naïve cannabis users	0.35 (.03)	0.47 (.12)	0.26
<b>14-day fast-track applicant</b>	<b>0.73 (.02)</b>	<b>0.42 (.12)</b>	<b>0.01</b>
Learn about IMCP from provider	0.41 (.03)	0.47 (.12)	0.61
Certified by routine provider	0.69 (.03)	0.84 (.09)	0.15
Visit covered by insurance	0.77 (.02)	0.63 (.11)	0.19
Negative experience in past year	0.15 (.02)	0.11 (.07)	0.56

Bold values statistically significant differences between the groups ( $p$ -value < 0.05).

likely to report cancer diagnosis ( $OR = 2.40$  (0.92),  $p < .01$ ), low psychological wellbeing ( $OR = 2.24$  (0.90),  $p < .05$ ), and using cannabis to treat gastrointestinal issues ( $OR = 2.43$  (0.86),  $p < .05$ ), than were patients not pursuing any supportive care.

**Table 2.** Logistic Regression<sup>†</sup> Predicting Hospice Enrollment: Comparing Terminal Hospice Planners to Hospice Enrolled ( $n = 299$ ).

Hospice Enrolled Patients	OR	[95% CI]	$p$ -value
<i>Demographics</i>			
Female	0.25	[0.08 – 0.77]	0.02
College degree or more	0.38	[0.14 – 0.99]	0.05
<i>Health Status</i>			
Cancer diagnosis	0.21	[0.07 – 0.61]	0.01
Frequent gastrointestinal issues	3.51	[1.13 – 10.86]	0.03
<i>Cannabis Use and Program Access</i>			
14-day fast-track applicant	0.11	[0.04 – 0.32]	< .001

<sup>†</sup>This logistic regression included indicators for age 80 and older, caregiver proxy use, low quality of life, low psychological wellbeing, average pain levels, frequent emotional problems, and cannabis dosing via oral pill/tablet as covariates.

**Table 3.** Logistic Regression<sup>†</sup> Predicting Hospice Enrollment: Comparing Terminal Hospice Planners in Palliation to Hospice Enrolled Patients ( $n = 74$ ).

Hospice Enrolled Patients	OR	[95% CI]	$p$ -value
<i>Health Status</i>			
Cancer diagnosis	0.16	[0.04 – 0.61]	0.01
<i>Cannabis Use and Program Access</i>			
14-day fast-track applicant	0.23	[0.06 – 0.85]	0.03

<sup>†</sup>This logistic regression included indicators for age 80 and older, sex, race/ethnicity, education, marital status, caregiver proxy use, average pain levels, frequent gastrointestinal issues, frequent emotional problems, and cannabis dosing via oral pill/tablet as covariates.

**Table 4.** Logistic Regression<sup>†</sup> Predicting Palliative Care Utilization: Comparing Terminal Hospice Planners Using Palliation to those Not Using any form of Supportive Care ( $n = 280$ ).

Palliative care patients	OR	[95% CI]	$p$ -value
<i>Demographics</i>			
Married	0.35	[0.18 – 0.66]	< .001
<i>Health Status</i>			
Caregiver proxy	1.06	[0.40 – 2.84]	0.91
Average pain level [0 – 10]	0.80	[0.71 – 0.91]	< .001
Low psychological wellbeing	2.24	[1.02 – 4.91]	0.04
Cancer diagnosis	2.40	[1.13 – 5.07]	0.02
Treating gastrointestinal issues	2.43	[1.22 – 4.87]	0.01

<sup>†</sup>This logistic regression included indicators for age 80 and older, sex, race/ethnicity, education, caregiver proxy use, other terminal illness, medical complexity, treating multiple symptoms, medical purpose only use, provider knowledge source, and 14-day fast-track application as covariates.

## Discussion

We find clear evidence hospice enrolled patients in our sample are different from hospice planners on measures capturing both health status and cannabis access and behaviors. However, the strength and directionality of the associations are not as hypothesized. We also find evidence of lower health status among hospice patients in our sample, with greater reliance on caregiver proxies, lower quality of life and psychological

wellbeing, and relatively higher pain. While cancer was the most commonly reported qualifying diagnosis among hospice enrolled respondents, terminal cancer patients were less likely to have enrolled in hospice and were more likely to have enrolled in palliative care. This is striking given cancer patients have historically had the greatest access to hospice and other forms of palliative care at EOL.<sup>34</sup> However, many cancer patients remain committed to curative efforts, and delay hospice enrollment specifically because of limited access to therapeutics or exploratory treatments and their personal commitment to fight the disease. Studies have shown how patients diagnosed with blood cancers are more likely to delay hospice enrollment because of exclusion of transfusions and other therapies under hospice rules.<sup>35</sup> On the other hand, research has also shown patient perceptions on the ‘curability’ of their cancer is associated with lower hospice enrollment.<sup>36</sup> For some cancer patients, hospice enrollment might be seen as ‘giving up’ in a fight where attitude and commitment to a given course of treatment are essential for success.

Most interestingly we see hospice enrolled patients were less likely to also have enrolled in the program through the fast-track application. While not explicitly structured for the 6-month hospice benefit certification requirement, the requirement is mirrored by the 6-month access period for TIP applicants into the program. Despite this parity in structure, the TIP does not emerge as a pathway to cannabis use for hospice patients, suggesting hospice enrolled patients in the sample were enrolled in the program prior to their condition progressing to the point they needed hospice.

### *Hospice and IMCP Access Barriers*

A key consideration is whether or not there are barriers operating at the patient level reducing hospice enrollment within our sample. It could be we failed to find a large share of the EOL patients in our sample to be hospice enrolled because we sampled among medical cannabis users specifically, and not terminal patients more broadly. Still, given the priority pathway established for hospice and other EOL patients in Illinois, one would assume the sample would have a larger share of EOL patients enrolled in hospice care representative of the hospice enrolled population in the state.<sup>37</sup> However, of the 727 EOL patients in the sample, less than 3 percent of respondents were enrolled in hospice. This is well below the 47 percent of 2016 deaths in Illinois that were Medicare hospice decedents.<sup>38</sup>

Recognized hospice barriers include the 6-months prognosis period, which often becomes a barrier to care.<sup>39</sup> Normative barriers related to the culture of medicine that focus on prolonging life are also often at play. Market barriers to hospice, along with patient attitudes, and misinformation can also work to limit hospice entry among eligible patients and must be addressed by policymakers to improve access for EOL patients overall.

At the state level, Illinois has no laws specifically prohibiting cannabis use in healthcare facilities. However, state anti-

smoking laws would prohibit any dosing form reliant on combustion in or around hospices or outpatient clinics. The legal uncertainty at the federal level could also lead both patients and providers to fear losing a Medicare hospice benefit because of cannabis use.

### *Provider Attitudes*

Provider attitudes in particular have been shown to shape pain-management choices of their patients.<sup>1,40</sup> As public support for cannabis use has increased,<sup>41</sup> healthcare providers remain mixed in their opinions with a large portion of physicians reporting insufficient knowledge and severe discomfort with recommending cannabis to patients.<sup>10,42,43</sup> Some physicians have particular concerns with cannabis use among hospice patients because of the difficulties in diagnosing cannabis related hyperemesis syndrome given the likelihood of complexity and functional limitations to mute the clinical presentation of the condition.<sup>44</sup> Still, physicians remain generally favorable to medical cannabis for patients near EOL.

Hospice providers have overwhelmingly expressed attitudes in favor of allowing the application of cannabis as a therapeutic for their patients.<sup>9,45,46</sup> However, few of the providers were certifying patients with any frequency.<sup>47</sup> In this sample few respondents obtained certification from a hospice doctor, illustrating this phenomenon occurring even in settings where state policy allows providers to certify patients for access to cannabis as a therapeutic.

### *‘Planning to Enroll’ vs. Planning for Enrollment*

Given neither policies nor provider attitudes about cannabis seem to operate as barriers here, the question remains as to why hospice enrollment is so far below anticipated levels? While all patients in this sample indicated they ‘planned to enroll in hospice when the time comes,’ this measure does not capture the formal Advanced Care Planning discussion, which has been shown to be associated with ‘timely’ hospice entry and is tied to increased reimbursement for providers.<sup>18,48</sup> These billable sessions with doctors generally include establishment of Advanced Directives (ADs), Durable Power of Attorneys (DPOAs), and a broader EOL discussion including strategies for pain management and supportive care (billable separately beyond the initial 15-30 min. encounter). These type of encounters can easily occur while doctors and patients are discussing cannabis program certification, or vice versa.

It is also possible symptom severity among patients in our sample may not be as severe as those observed in large sample studies of hospice patients. Cannabis program participation among hospice patients may be also be suppressed due to relatively high prevalence of dyspnea (difficulty breathing) among hospice enrolled beneficiaries. It could also be that other therapies provided as standard care for hospice patients, such as a bowel regimen to manage OIC, are adequately managing symptoms explored here. Or the differences may simply be evidence of late hospice entry. What is clear is the general

'plan' expressed by patients offers an opportunity for more formal EOL care planning, and broader conversations on the role of medical cannabis.

### Medical Cannabis as Hospice Alternative?

Another possibility we should consider is that medical cannabis may be presented to terminal patients in a way that it is understood to be an acceptable *alternative* to supportive care, used instead of hospice or other forms of palliative care. We operate under the hypothesis that terminal patients are primarily using cannabis for pain management. However, terminal patients in this sample reflect other findings that medical cannabis is used therapeutically for a broad range of applications, including appetite stimulation, sleep induction, and mood elevation. For many terminal patients, cannabis may simply be preferred to supportive care at this stage of their disease. The next phase of our research will further investigate the potential for medical cannabis to serve as either a *complement* or *alternative* to supportive care at EOL, and assess perceived changes in health related outcomes among terminally diagnosed medical cannabis users.

### Limitations

The failure to successfully generate the desired patient population already enrolled in hospice at the time of survey completion is certainly a limitation. However, the sample of respondents approaching EOL is not far from the estimated total number of terminal patients within the program (727/891) suggesting this may not be a sampling problem. Still, the results of the larger analysis indicate there is a need for further inquiry with hospice enrolled patients using cannabis as a complement or alternative earlier in the course of their disease. However, larger size data sets are not guaranteed to fully address potential biases.

### Conclusion

This research offers much needed insight into the various symptom management approaches taken by cannabis patients at EOL enrolled in and planning for hospice. Few studies have engaged a large sample size of medical cannabis users and specifically sought to explore the role cannabis plays in hospice decision making and patient experience. The overarching results suggest cannabis is an attractive complement component for hospice, though in our limited sample it operates primarily as an alternative. Future research will explore the various EOL care approaches engaged by the other terminal patients in the IMCP, particularly focusing on the population receiving palliation.

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