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Opioid safety recommendations in adult palliative medicine: a North American Delphi expert consensus

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ABSTRACT

Objectives Despite the escalating public health emergency related to opioid-related deaths in Canada and the USA, opioids are essential for palliative care (PC) symptom management. Opioid safety is the prevention, identification and management of opioid-related harms. The Delphi technique was used to develop expert consensus recommendations about how to promote opioid safety in adults receiving PC in Canada and the USA.

Methods Through a Delphi process comprised of two rounds, USA and Canadian panellists in PC, addiction and pain medicine developed expert consensus recommendations. Elected Canadian Society of Palliative Care Physicians (CSPCP) board members then rated how important it is for PC physicians to be aware of each consensus recommendation.

They also identified high-priority research areas from the topics that did not achieve consensus in Round 2.

Results The panellists (Round 1, n=23; Round 2, n=22) developed a total of 130 recommendations from the two rounds about the following six opioid-safety related domains: (1) General principles; (2) Measures for healthcare institution and PC training and clinical programmes; (3) Patient and caregiver assessments; (4) Prescribing practices; (5) Monitoring; and (6) Patients and caregiver education. Fifty-nine topics did not achieve consensus and were deemed potential areas of research. From these results, CSPCP identified 43 high-priority recommendations and 8 high-priority research areas.

Conclusions Urgent guidance about opioid safety is needed to address the opioid crisis. These consensus recommendations can promote safer opioid use, while recognising the importance of these medications for PC symptom management.

Key messages

What was already known?

- The opioid crisis has had an effect on all aspects of society, particularly in the USA and Canada.
- Guidelines on management of opioid safety have focused on chronic non-cancer pain populations to the exclusion of palliative care.

What are the new findings?

- Our Delphi Study developed 130 expert consensus recommendations to promote opioid safety in adults receiving palliative care.
- The resulting recommendations provide a necessary paradigm shift from the long-held view that opioid use disorder is rare among patients receiving palliative care.

What is their significance?

- a. Clinical
 - Healthcare providers, administrators, educators and policy makers should be aware of the 43 high-priority recommendations.
 - Improved care plans are suggested that include identification of patient and caregiver risks related to opioid use.
- b. Research
 - Eight high-priority topics have been identified.
 - Key areas include adaptation of urine drug screening and validation studies to better identify screening tools for opioid use disorder in palliative care.

INTRODUCTION

Globally, approximately 115 000 people died in 2017 from opioid-related overdoses, with nearly half of these deaths occurring in the USA and Canada.^{1–5} The opioid crises in these countries have accelerated since the onset of the COVID-19

pandemic, with opioid-related deaths in the USA increasing by 38% during May 2019–2020 compared with June 2018–2019.⁶ Multiple factors are contributing to the worsening of the opioid crisis, including increase in substance use as a coping mechanism, and restricted access to mental health and addiction services.⁷ Though most opioid-related hospitalisations and deaths are caused by fentanyl and its analogues, 27%–38% of deaths are from prescription opioids used by patients or diverted to others.^{1,8} Problematic use of prescription opioids is highly associated with the development of opioid use disorders (OUDs) and opioid-related overdoses.^{9,10} Nevertheless, prescription opioids are essential for symptom management, especially in palliative care (PC).¹¹

PC improves the quality of life for people with life-limiting illnesses through symptom management and psychosocial support.¹² Opioids are mainstay medications in PC, with strong evidence for their effectiveness in managing pain, dyspnoea and cough.^{13,14} Current PC guidelines focus primarily on how to prescribe opioids for symptom management, rather than prevention, detection and management of opioid-related harms.^{15–17} Most existing knowledge about opioid safety is from chronic non-cancer pain and addiction medicine but this evidence cannot be directly applied to all patients receiving PC. In the absence of a strong evidence base for opioid risk mitigation strategies in PC, knowledge synthesis and expert opinion are necessary to inform practice and research.^{18–20} Therefore, the Delphi Study objectives were to develop expert consensus recommendations that can be used by healthcare providers, administrators, educators and researchers to promote opioid safety in adult patients receiving PC. In doing so, we were mindful of the dual obligations of delivering effective symptom relief for people receiving PC, and managing opioid safety for patients, their families and society.

METHODS

Study design

The Delphi technique was used to develop expert consensus recommendations about opioid safety for adult patients receiving PC. This technique has been employed in medical and nursing research ‘to form consensus or explore a field beyond existing knowledge and the current conceptual world’.^{21,22} We used the *Conducting and Reporting of Delphi Studies in Palliative Care* recommendations to design, conduct and report our study.²¹ Our Delphi process involved four phases: (1) Preparation phase, (2) Round 1, (3) Round 2 and (4) Conclusion phase (figure 1). A steering committee of eight leaders in addiction medicine (n=2), pain medicine (n=2) and PC (n=4), from the USA (n=2) and Canada (n=6), provided study oversight from design to knowledge dissemination.

Preparatory phase

Guiding definitions

The following definitions were used to guide the Delphi process: (1) *PC*: ‘an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual’;¹² (2) *Opioid safety*: prevention, identification and management of aberrant medication taking behaviours (AMTBs), OUD and opioid-related overdoses, (3) *AMTB*: ‘any use of prescription opioids in a manner other than intended by the prescribing physician and pharmaceutical manufacturer’^{23–25} and (4) *OUD*: problematic patterns of opioid use, which result in clinically significant impairment or distress.²⁶

Expert panel and recruitment

The Delphi technique uses a structured, consensus process to engage expert panellists with diverse backgrounds.²¹ Previous studies suggest that there is no added benefit for more than 30 panellists.²⁷ Therefore, we aimed to involve a total of 30 panellists in Canada (n=15) and the USA (n=15), who practised in PC (n=10), pain medicine (n=10) and addiction medicine (n=10). We recruited panellists from these disciplines and countries because of their opioid safety experience within the context of the USA and Canadian opioid crisis. Potential panellists were identified through literature review, professional organisation memberships and steering committee recommendations. Further snowball sampling was used to attain our target sample size.

Experts were eligible if they were fluent in English, had at least 5 years of clinical practice in PC, pain or addiction medicine, and completed at least one of the following opioid safety-related work within the last 7 years: healthcare professional or public education, research, quality improvement, policy development and/or advocacy. All panellists were asked to declare their real, potential or perceived conflicts of interest. We provided each participant with a small incentive (\$15.00 coffee gift card).

Delphi rounds

Our Delphi process contained two Delphi rounds; each round involved online survey distribution using the survey software, Qualtrics. Data were collected between 1 August 2018 and 30 April 2019, with each round lasting 4–6 weeks. Email reminders were sent 2 weeks after the initial distribution of each survey. Both surveys were in English and included information about the study, guiding definitions and ethics. The panellists were informed that they were providing consent to participate in the study by completing the surveys.

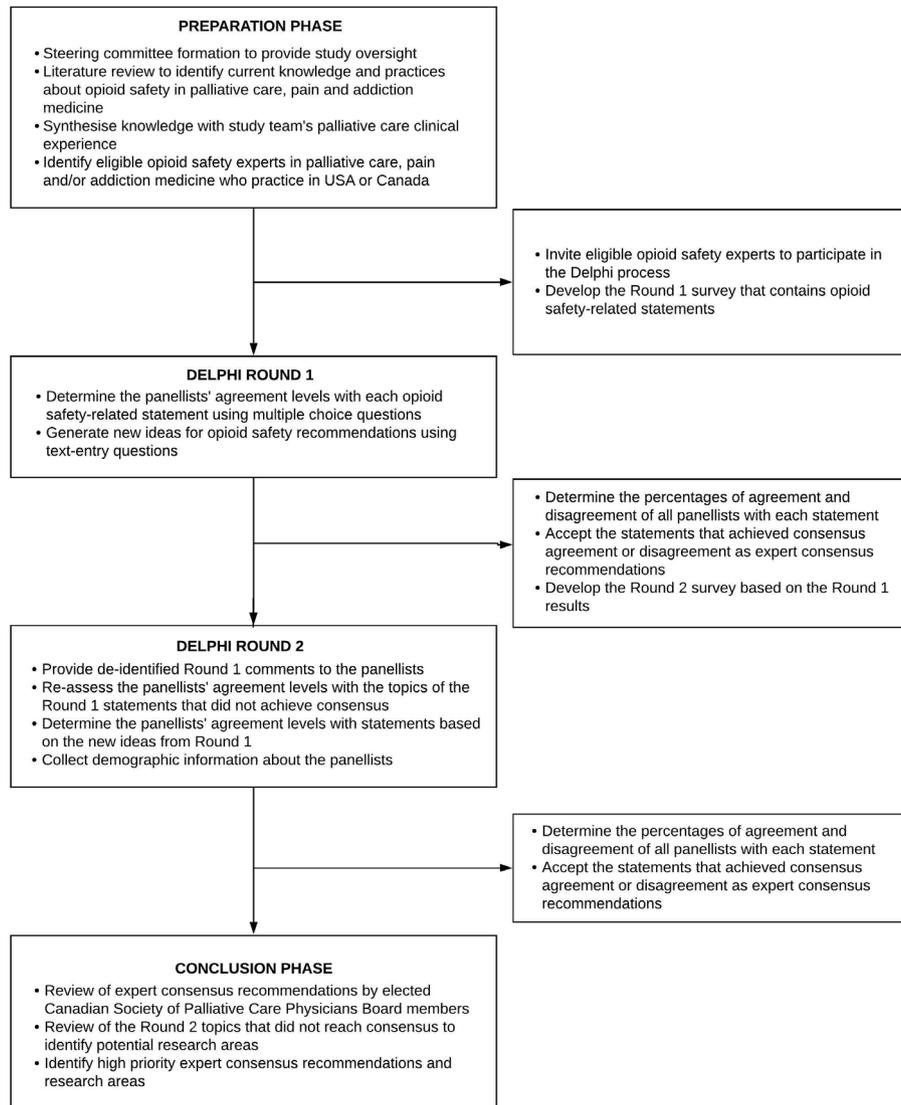


Figure 1 The Delphi process.

The two surveys used three multiple-choice question formats to evaluate the panellists' levels of agreement with opioid safety-related statements and items. The first format instructed the panellists to select their agreement level to a statement or item using a five-point Likert Scale (strongly disagree, disagree, neutral, agree, strongly agree). The second format allowed the panellists to choose multiple options from a list of items. The third format allowed them to choose only one option from a list of possible answers. Based on the panellists' percentages of agreement (or disagreement), we determined whether to accept a statement or item as an expert consensus recommendation.

Delphi Round 1

We conducted a scoping review²⁸ that identified limited evidence regarding opioid safety in PC, pain and addiction medicine; therefore, the study team and steering committee used their clinical experience in PC, pain and addiction medicine to create the Round 1 survey, which contained six domains (figure 2). Domain 1

focused on general principles about opioid prescribing for patients with life-limiting illnesses. The remaining domains focused on key stakeholders who should be engaged to promote and ensure opioid safety: health-care organisations, PC training programmes and PC clinical programmes (Domain 2); healthcare providers (Domains 3, 4, 5), and patients and caregivers (Domain 6). The result was a survey that was used to generate comprehensive recommendations about opioid safety in PC.

The purpose of Round 1 was to determine the panellists' agreement level with statements and items related to each of the six domains and to generate new ideas. Before distribution to the panellists, the survey was reviewed by the steering committee and piloted by five clinicians (PC n=4, addiction medicine n=1). In total, the Round 1 survey contained 122 multiple-choice questions. Open-ended feedback was collected using seven text-entry questions. The online supplemental appendix 1 presents seven tables that contain all the

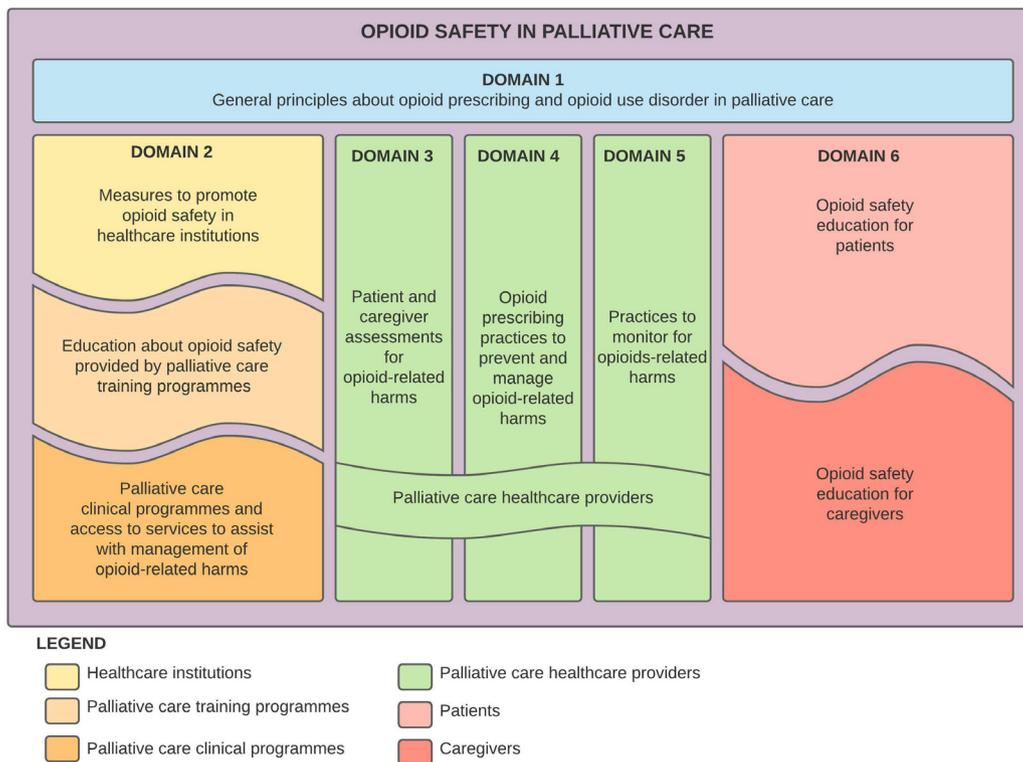


Figure 2 Opioid safety domains and key stakeholders.

multiple-choice question stems and text-entry questions included in the Delphi surveys.

Delphi Round 2

The purpose of Round 2 was to evaluate topics that did not reach consensus or that were newly suggested in the Round 1 comments, and to collect demographic information about the panellists. De-identified verbatim comments from Round 1 were collated and shared with the experts to examine whether group-level feedback would enable them to form consensus. In total, the Round 2 survey contained 86 multiple-choice and 8 text-entry questions (online supplemental appendix 1). Three of the multiple-choice questions evaluated the panellists' agreement ('yes' or 'no') with summaries derived from Round 1 recommendations. The topics of these summaries were: items that should be used to identify patients with life-limiting illnesses who are at high-risk of AMTB (n=20) and opioid-related overdose (n=17); and methods to deliver opioid safety education (n=4).

Conclusion phase

The Canadian Society of Palliative Care Physicians (CSPCP) is a national organisation composed of physicians with special interest in PC (eg, regional programme leads, educators).²⁹ In December 2020, we invited CSPCP to identify high-priority recommendations and areas of research that can be most helpful and impactful for CSPCP members. Five current and formerly elected CSPCP Board Members were asked

to rate how important it is for PC physicians to be aware of each consensus recommendation using a 5-point Likert Scale, where 0 was 'not at all important' and four was 'extremely important'. Using the same scale, they also reviewed the topics that did not reach consensus in Round 2 and rated how important it is for research to be conducted about them.

Data analysis

The data were de-identified before analysis. We used descriptive statistics (IBM SPSS Statistics V.27) to analyse the quantitative data from the multiple-choice questions. The percentages of agreement and disagreement to each statement and item was calculated based on all the panellists' responses after each round. A priori, *consensus agreement* was defined for the 5-point Likert Scale questions as $\geq 80\%$ of the panellists agreeing ('agree' and 'strongly agree') with a statement.^{21 30 31} For the remaining questions, we defined agreement as $\geq 80\%$ of the panellists selecting 'yes' or a multiple-choice option. *Consensus disagreement* was defined similarly but with $\geq 80\%$ disagreement ('disagree' and 'strongly disagree') with a statement or item. If a statement or item reached consensus agreement or disagreement, it was accepted as a consensus recommendation. Based on the CSPCP ratings of importance, recommendations were deemed as *high priority* if they had average ratings of ≥ 3 , where 3 was 'very important'. Descriptive analysis was also conducted for the

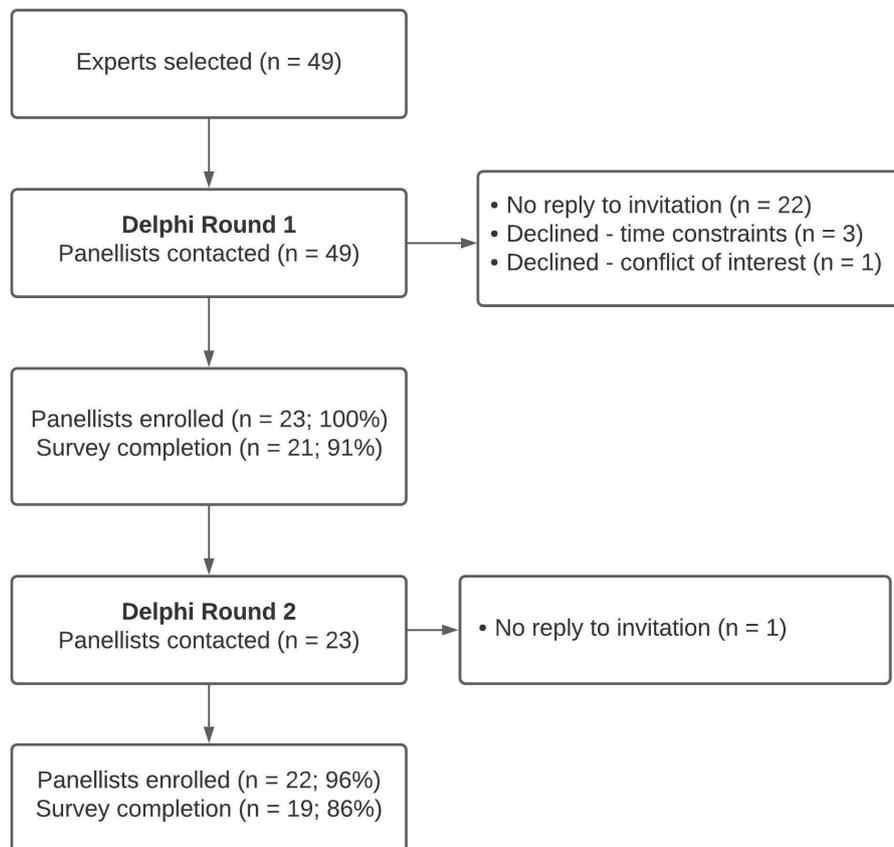


Figure 3 Flow chart of the panelists in the Delphi Study.

panellists' demographic data, whereas content analysis was used to examine the text-entry question responses.

RESULTS

Out of 49 experts who were invited, 23 (47%) were enrolled as panellists (figure 3). One enrolled expert was recommended by another expert. The 23 panellists were primarily from Canada (n=14, 61%) and specialised in PC (n=10, 43%). Additional demographic data were provided by 22 (96%) of the panellists: the majority were from urban settings (n=21, 95%), and were employed as clinicians (n=22, 100%) and educators (n=18, 82%) in academic workplaces (n=16, 73%). They were involved in all types of opioid-safety related work, with the most common being education of healthcare professionals (n=20, 91%) and patients (n=18, 82%) (table 1).

In Round 1, 21 (91%) panellists completed the entire survey, and reached consensus for 103/122 (84%) statements and items. From the 23 panellists in Round 1, 22 (96%) agreed to participate in Round 2 and, of these, 19 (86%) completed the Round 2 survey. Consensus was achieved for an additional 27/86 (31%) statements and items. In total, the Delphi process resulted in 130 expert consensus recommendations (127 individual statements, 3 summaries) about opioid safety for adult

patients receiving PC (online supplemental table and table 2), of which 43 were rated as *high priority* by the CSPCP. From the 59 statements and items that did not achieve consensus in Round 2, CSPCP identified 8 high-priority research topics (table 3).

Domain 1: General principles

Domain 1 focused on general principles to guide opioid prescribing and identification, and management of OUD in PC. The panellists developed a total of 12 recommendations, and 6 were deemed high priority by CSPCP (online supplemental table, #1–#12). The high-priority recommendations were as follows: Opioids should *not* only be prescribed by PC specialists to patients with life-limiting illnesses. Opioid prescribing should be part of the practices of all clinicians caring for patients with life-limiting illnesses, such as family physicians and oncologists. If needed, PC physicians should mentor non-PC physicians on opioid use for individuals with life-limiting illnesses. Further, the importance of identifying whether a patient has OUD does *not* depend on a patient's diagnosis or prognosis. Management of a patient's OUD does *not* depend on their diagnosis. The importance of identifying a caregiver's OUD also does *not* depend on the patient's prognosis.

Table 1 Characteristics of panelists

Characteristic	N (%)
Location	
Canada	14 (61)
USA	9 (39)
Specialty	
Addiction medicine	7 (30)
Pain medicine	6 (26)
Palliative care	10 (43)
Age*	
30–39 years	3 (14)
40–49 years	8 (36)
50–59 years	5 (23)
60–69 years	6 (27)
Sex*	
Male	11 (50)
Female	11 (50)
Setting*	
Rural	1 (5)
Urban	21 (95)
Workplace*	
Academic cancer centre	5 (23)
Academic hospital	11 (50)
Community hospital	2 (9)
Clinic	4 (18)
Current occupation(s)*	
Administrator	10 (45)
Clinician	22 (100)
Educator	18 (82)
Policy advisor	7 (32)
Researcher	12 (55)
Opioid safety-related work in the last 7 years*	
Advocacy	15 (68)
Education, healthcare professional	20 (91)
Education, patients	18 (82)
Policy development	13 (59)
Quality improvement	16 (73)
Research	15 (68)

*22/23 participants responded to the survey demographic questions in Round 2.

Domain 2: Healthcare institutions, PC training and clinical programs

Domain 2 focused on measures that healthcare institutions, PC training programmes and PC clinical programmes can implement to promote opioid safety. The panellists developed a total of 23 recommendations, and 6 were deemed high priority by CSPCP (online supplemental table, #13–#35). The high-priority recommendations were as follows: Healthcare institutions should collect data about opioid-related overdoses of patients receiving PC, and provide access to pharmacological OUD treatments (eg, methadone, buprenorphine-naloxone). PC training programmes should provide mandatory education about specific opioid safety topics—the most important being urine

drug tests (UDTs). Further, PC clinical programmes are highly recommended to have access to addiction medicine, psychiatry and pain medicine for joint management of patients at high risk of AMTB, OUD and opioid-related overdose.

Domain 3: Patient and caregiver assessments

Domain 3 focused on patients and caregiver assessments for opioid-related harms. The panellists developed a total of 54 recommendations, and 7 were deemed high priority by CSPCP (online supplemental table #36–#89). The high-priority recommendations focused on the patient assessments (not caregivers) and were as follows: Before receiving opioid prescriptions, every patient with a life-limiting illness should receive assessments that include asking about their caregiver's substance use history. Ten actions were identified by the panellists as AMTB in individuals with life-limiting illnesses: theft or borrowing of opioids, and route alteration of prescribed opioid are the most important AMTBs that PC clinicians should be aware of. Additionally, PC physicians should know that histories of post-traumatic stress and sexual abuse are two of the identified risk factors for AMTB (table 2). The CAGE questionnaire, Opioid Risk Tool and UDT are recommended tools that can be used to identify patients with life-limiting illnesses who are at high risk of AMTB or OUD. Research to determine which PC patients should have UDT and at what frequency are high priority.

The panellists recommend using clinical assessments, rather than specific tools or tests, to identify patients with life-limiting illnesses who have OUD. Approximately half of the panellists (n=12, 52%) reported using the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) OUD criteria. However, evaluation of use of the DSM-5 OUD criteria and screening tools (eg, ORT) to identify people with life-threatening illnesses who have OUD and/or are at high risk of opioid-related overdose are high-priority research areas. In the interim, the panellists identified a summary of items that can be used to identify patients with life-limiting illnesses who are at high risk of opioid-related overdose (table 2). Notably, PC physicians should be aware that one of the risk factors for opioid-related overdose is when a patient receives opioid prescriptions from two or more physicians.

Domain 4: Clinician opioid prescribing practices

Domain 4 focused on PC clinician prescribing practices that can prevent and manage opioid-related harms. The panellists developed a total of eight recommendations, and five were deemed high priority by CSPCP (online supplemental table #90–#97). The high-priority recommendations were as follows: Physicians should have access to regional prescription monitoring programmes to track previously dispensed

Table 2 Summaries of recommended items used to identify patients with life-threatening illnesses who are at high risk of aberrant opioid medication-taking behaviours and opioid overdose

Summary topic	Strongly recommend assessing for	Consider assessing for	Agreement level n (%)	Total no. of experts
Items to identify patients with life-threatening illnesses who are at high risk of aberrant opioid medication-taking behaviours	Alcoholism using validated tools (ie, CAGE, Alcohol Use Disorders Identification Test/alcohol screening tool)	Young age (18–24 years old)	18 (82)	22
	History of non-medical drug use (ie, cocaine)	Older age (65 years or older)		
	Current non-medical drug use	Alcohol family history		
	History of injection drug use	History of tobacco use		
	Current injection drug use	Current tobacco use		
	Post-traumatic stress	Depression		
	Sexual abuse history	Anxiety		
	Criminal record(s) related to substance use disorders	Personality disorders		
	Somatisation			
	Premorbid chronic pain			
	Unstable housing			
	Financial instability			
Items to identify patients with life-threatening illnesses who are at high risk of opioid overdose	Benzodiazepine use (ie, lorazepam)	Older age (65 years old and greater)	17 (81%)	21
	Alcohol use	Renal impairment		
	History of previous opioid overdose	Liver impairment		
	Receiving opioid prescriptions from two or more physicians	Muscle relaxant use (ie, cyclobenzaprine)		
	History of substance use disorder	Sleep medication/hypnotic use (ie, zopiclone)		
	Active substance use disorder	Methadone use for pain management		
		Methadone use for opioid use disorder management		
		Opioid-naïve patients		
		Untreated psychiatric conditions (ie, schizophrenia)		
		History of obstructive sleep apnoea		
	Filling opioid prescriptions at two or more pharmacies			

prescriptions. If a patient's primary prescriber for their opioids will be away, covering clinicians should have access to detailed pain management plans and documentation. Patients who are at high risk of AMTB, OUD and/or opioid-related overdose should

receive daily to weekly dispensing of their opioids; and, for patients with active AMTB, OUD and/or history of opioid-related overdose, joint management with addiction medicine specialists should be considered. All healthcare facilities that provide PC

Table 3 High-priority palliative care opioid safety research topics

No.	High-priority research topics	CSPCP importance rating*
1	Identify which outpatient palliative care clinic patients should have urine drug tests	3
2	Determine the frequency at which urine drug tests should be done in outpatient palliative care clinics	3
3	Evaluate the use of the Diagnostic Statistical Manual, Fifth Edition opioid use disorder criteria to identify patients with life-limiting illnesses who have opioid use disorders	3.2
4	Evaluate the use of the Diagnostic Statistical Manual, Fifth Edition opioid use disorder criteria to identify patients with life-limiting illnesses who are at high risk of opioid overdose	3
5	Evaluate the use of screening tools to identify patients with life-limiting illnesses who have opioid use disorders (eg, Opioid Risk Tool, Screener and Opioid Assessment for Patients with Pain)	3.4
6	Evaluate the use of screening tools to identify patients with life-limiting illnesses who are at high risk of opioid overdose (eg, Opioid Risk Tool, Screener and Opioid Assessment for Patients with Pain)	3
7	Determine how often should palliative care patients who are at high risk or have aberrant opioid medication-taking behaviours, opioid use disorder or overdose, be monitored	3.5
8	Determine which patients with life-limiting illnesses should receive pill counts	3.3

*The Canadian Society of Palliative Care Physicians (CSPCP) reviewed the 59 topics that did not reach consensus through the Delphi process and used a 5-point Likert Scale to rate the importance of conducting research about each topic. The format of the 5-point Likert Scale was as follows: 0—not at all important, 1—slightly important, 2—moderately important, 3—very important, 4—extremely important.

services are recommended to have access to addiction medicine.

Domain 5: Clinician opioid monitoring practices

Domain 5 focused on practices that can be implemented by PC clinicians to monitor for opioid-related harms. The panellists developed a total of 10 recommendations, and 3 were deemed as high priority by CSPCP (online supplemental table #98–#107). The high-priority recommendations were as follows: Patients receiving PC who are at high risk or have active AMTB, OUD and opioid-related overdose are strongly recommended to be assessed more frequently than low-risk individuals. A high-priority research area is determining how often these high-risk individuals should be monitored. Regarding assessments, PC physicians are recommended to assess for and document the 4 As of universal precautions after initiating or adjusting opioids (Analgesia, Activity level, Adverse effects, AMTB)³² and adherence to instructions. Patients' support networks should be involved to ensure adherence to the opioid prescriptions. Pill counts by nurses were recommended for patients at home and clinics; and determining which patients should receive pill counts was deemed to be a high-priority research topic.

Domain 6: Patient and caregiver education

Domain 6 focused on the content and delivery of opioid safety-related education to patients with life-limiting illnesses and their caregivers. The panellists developed a total of 23 recommendations, and 16 were deemed high priority by CSPCP (online supplemental table #108–#130). The high-priority recommendations were as follows: All patients with life-limiting illnesses who receive prescription opioids should receive education about seven topics: differentiating between physical dependence and OUD, chemical coping with opioids, opioid-related overdose signs and symptoms, safe disposal of opioids, opioid withdrawal symptoms, and driving/operating machinery. It was highly recommended that patients receive this opioid safety education through discussions with their prescriber but formal education sessions and consultations with pharmacists could be considered.

Regarding caregiver education, the high-priority topics are differentiating between physical dependence and OUDs, indications for opioid use, opioid adverse effects, opioid-related overdose signs and symptoms, and safe storage and disposal of opioids. Caregivers are strongly recommended to receive instructions (written and verbal) to return unused medications to pharmacies.

DISCUSSION

Through a Delphi process, USA and Canadian PC, pain and addiction medicine experts tailored knowledge, strategies and tools originally developed in pain

and addiction medicine to formulate 130 opioid safety recommendations for PC. In addition to reviewing these recommendations, the CSPCP reviewed 59 topics that did not achieve consensus in the study. In total, CSPCP identified 43 high-priority recommendations and 8 high-priority research topics.

These consensus recommendations are a necessary paradigm shift from the long-held views that OUD is rare among patients receiving PC.³³ While PC originally focused on end-of-life care for patients with cancer, PC is now increasingly integrated early into the care of people with advanced cancers and life-threatening non-cancer illnesses.^{34–36} Consequently, some patients with life-limiting illnesses are being prescribed long-term, high-dose opioid therapy for symptom management, which likely increases risk of opioid-related harms.³⁷ There is indisputable evidence in chronic non-cancer pain studies that the likelihood of OUD, opioid-related overdose and death increases as the durations and doses of prescription opioids increase.^{38,39} Additionally, as patients with life-limiting illnesses approach the end of their lives, they often require multiple different and increasing doses of opioids.⁴⁰ Approximately 30% of patients with cancer receive more than one opioid prescription in the last 3 months of their lives⁴¹ and mean opioid doses at the end of life reportedly can be as high as 659 mg morphine equivalent daily dose in the last week of life.⁴² These large quantities of opioids can accumulate in households and be used for non-medical purposes, be diverted and/or can contribute to deaths.

Given the limited high-quality evidence about opioid safety in PC, CSPCP identified eight high-priority research topics. Two of the high-priority topics are about UDT, which are available as point-of-care immunoassays or laboratory-processed chromatography/mass spectroscopy tests.⁴³ These non-invasive tests can be used to monitor prescription opioid therapy compliance and detect non-prescribed and illegal drug use. However, widespread adoption of UDT is likely limited by their availability and cost, clinician knowledge about UDT result interpretation, and negative association with use in criminal situations.^{44,45} Further research is highly recommended to determine which patients receiving PC should have UDT and at what frequency, especially in outpatient PC clinics. The other identified high-priority research areas are about use of pill counts and use of screening tools and DSM-5 OUD criteria to identify patients with life-limiting illnesses who have OUD and are at a high risk of opioid-related overdose. Currently there are no studies that have evaluated the efficacy and accuracy of these tools. Validation studies are urgently needed before these tools are adopted widely in PC practice.

Our study has several limitations. First, while we had a rigorous process for identifying qualified experts, only 23 of 49 invited experts agreed to participate, introducing the possibility of a biased sample. Second,

there was significant heterogeneity in practice settings due to variable access and availability of resources, and uniform implementation of certain recommendations may not be possible. Finally, there are many recommendations, which introduces some cognitive burden on potential users. As this was the first study of its kind, our goal was to be as comprehensive as possible and to provide a foundation for further research and practice. The CSPCP review helped address this limitation by identifying high-priority recommendations and research topics.

These expert consensus recommendations, endorsed and reviewed by the CSPCP, provide guidance in an area of ambiguity, and inform clinical practice and future research to generate further evidence. As the COVID-19 pandemic accelerates the opioid crisis in the USA and Canada, many of these recommendations can be immediately adopted to reduce opioid-related harms.

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Competing interests AF developed the Opioid Manager app that is available for sale on iTunes. This app is owned by University Health Network. AF does not receive any profits from the sales of this app.

Patient consent for publication Not required.

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Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information

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Supplementary Table: Palliative Care Opioid Safety Expert Consensus Recommendations

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
Domain 1 <i>General principles related to opioid prescribing and opioid use disorders in palliative care</i>	1	Opioids are essential medications for symptom management	1	20 (87)	23	✗	2.6
	2	Everyone has the right to adequate pain management	1	23 (99)	23	✗	2.6
	3	Opioids should only be prescribed by palliative care specialists	1	0 (0) <i>Disagreement level: 22 (96)</i>	23	✗	2.6
	4	Opioid safety does not need to be addressed for patients with prognoses of days to weeks	1	0 (0) <i>Disagreement level: 23 (100)</i>	23	✗	2
	5	Opioid safety requires interdisciplinary collaboration (i.e., doctors, nurses, pharmacists)	1	23 (100)	23	✗	1.2
	6	Palliative care physicians should mentor non-palliative care physicians on opioid use for	1	21 (91)	23	✓	3

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
		individuals with life-threatening illnesses					
	7	Opioid prescribing should be part of the practices of all clinicians who care for palliative care patients.	2	21 (96)	22	✓	3
	8	The importance of identify whether a patient has an opioid use disorder depends on their diagnosis	2	1 (5) <i>Disagreement level: 21 (95)</i>	22	✓	3.4
	9	The importance of identifying whether a patient has an opioid use disorder depends on their prognosis	2	4 (18) <i>Disagreement level: 18 (82)</i>	22	✓	3.4
	10	The importance of managing a patient's opioid use disorder (not symptom management) depends on their diagnosis	2	0 (0) <i>Disagreement level: 21 (100)</i>	21	✓	3.4
	11	The importance of identifying a caregiver's opioid use disorder depends on the patient's prognosis	2	2 (9) <i>Disagreement level: 20 (91)</i>	22	✓	3.4

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	12	Use of the term “pseudoaddiction” in palliative care ^C	2	4 (14) <i>Disagreement level: 19 (86)</i>	22	✘	2.6
Domain 2	Palliative care training programs should provide mandatory education on the following topics:						
<i>Palliative Care Programs and Opioid Safety</i>	13	Opioid prescribing (i.e., opioid choice, dosing, adverse effects)	1	23 (100)	23	✘	1.8
	14	Chemical coping with opioids	1	23 (100)	23	✘	2.2
	15	Opioid use disorders identification, assessment and treatment	1	23 (100)	23	✘	2.6
	16	Urine drug testing (i.e., result interpretation)	1	23 (100)	23	✓	3
	17	Opioid overdose identification, assessment and treatment	1	22 (96)	23	✘	2.2
	18	Naloxone administration and monitoring	1	23 (100)	23	✘	2.4

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B	
	19	Motivational interviewing to help manage opioid use disorders	1	21 (91)	23	✗	2	
	20	Chronic pain management	1	22 (95)	23	✗	1.4	
	Health care institutions that provide palliative care (inpatients and/or outpatients) should implement and encourage use of the following supportive measures that promote opioid safety:							
	21	Opioid prescription monitoring programs	1	20 (87)	23	✗	2	
	22	Opioid stewardship programs	1	22 (96)	23	✗	2	
	23	Quality improvement programs to reduce opioid-related adverse events	1	23 (100)	23	✗	2.6	
	24	Data collection on emergency department visits related to aberrant opioid medication taking behaviors in patients receiving palliative care	1	22 (96)	23	✗	2.6	
	25	Data collection on emergency department visits related to opioid	1	23 (100)	23	✗	2.8	

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
		use disorders in patients receiving palliative care					
	26	Data collection on in-patient aberrant opioid medication taking behaviors in patients receiving palliative care	1	21 (91)	23	x	2.6
	27	Data collection on in-patient admissions related to opioid use disorders in patients receiving palliative care	1	23 (100)	23	x	2.8
	28	Data collection on opioid overdoses of patients receiving palliative care	1	23 (100)	23	✓	3.4
	29	Access to pharmacologic opioid use disorder treatments (i.e., methadone, buprenorphine-naloxone)	1	22 (96)	23	✓	3.2
	30	Secure medication drop boxes for disposal of unused opioids should be established in hospitals	1	21 (91)	23	x	2

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B	
	31	Recommend the use of medication lock boxes for storage of opioids at home	1	23 (100)	23	✗	2.4	
	32	Patient experiences with symptom management	2	19 (90)	21	✗	2.6	
	Palliative care clinical services (in-patients and out-patients) should include access to the following medical specialties to jointly manage patients who are high-risk of aberrant opioid medication taking behaviors, opioid use disorders and overdose:							
	33	Addiction medicine	1	23 (100)	23	✓	3.8	
	34	Psychiatry	1	21 (91)	23	✓	3	
	35	Pain medicine	1	21 (91)	23	✓	3	
Domain 3	Prior to prescribing opioids for pain or dyspnea management, each patient receiving palliative care should receive an assessment that includes the following:							
<i>Patient and Caregiver Assessments</i>	36	Type of pain (i.e., nociceptive and/or neuropathic pain)	1	23 (100)	23	✗	2.2	

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	37	Etiology of pain or dyspnea	1	23 (100)	23	x	2
	38	History of opioid use and efficacy	1	23 (100)	23	x	2.2
	39	Patient's functional status	1	23 (100)	23	x	2
	40	Dependence on caregivers for medication administration	1	23 (100)	23	x	2.2
	41	Housing instability (i.e., homelessness)	1	23 (100)	23	x	2.6
	42	Young children that reside or visit patient's home	1	22 (91)	23	x	2.2
	43	History of psychiatric condition	1	23 (100)	23	x	2
	44	History of substance use	1	23 (100)	23	x	2

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	45	Active substance use	1	23 (100)	23	✘	2.2
	46	Financial support and stability	1	21 (91)	23	✘	1.8
	47	Renal impairment	1	21 (96)	22	✘	1.8
	48	Liver impairment	1	22 (96)	23	✘	1.6
	49	Cognitive impairment	1	23 (100)	23	✘	2.4
	50	Caregiver history of substance use	1	22 (96)	23	✔	3.4
Each of these actions represent/constitute as aberrant opioid medication taking behaviors in individuals with life-threatening illnesses:							
	51	Receiving twelve or more prescriptions in a year	2	0 (0) <i>Disagreement level: 21 (95)</i>	22	✘	1.6

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	52	Reports of lost or stolen prescriptions	2	22 (100)	22	✘	2.8
	53	Observable intoxication or withdrawal in clinical setting	1	22 (96)	23	✘	2
	54	Insistence on initiation of opioids, higher doses and/or quantities of opioids	2	19 (86)	22	✘	1.8
	55	Observed or reported opioid hoarding	2	19 (86)	22	✘	2
	56	Self-titration of opioids doses without clinical approval	1	19 (83)	23	✘	2.6
	57	Observations or reports of prescription forgery	1	23 (100)	23	✓	3
	58	Resisting changes to opioids despite adverse effects	1	22 (96)	23	✘	2.2
	59	Reported theft or “borrowing” of opioids	1	23 (100)	23	✓	3

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	60	Route alteration of prescribed opioids	1	23 (100)	23	✓	3
The following items should be used to identify patients with life-threatening illnesses who are at high risk of aberrant opioid medication taking behaviors...							
	61	Older age	1	1 (4) <i>Disagreement level: 22 (96)</i>	23	✗	1.4
	62	Alcoholism using validated tools (i.e., CAGE, Alcohol Use Disorders Identification Test)	1	23 (100)	23	✗	2.2
	63	History of cannabis use	1	0 (0) <i>Disagreement level: 23 (100)</i>	23	✗	1.4
	64	Current cannabis use	1	0 (0) <i>Disagreement level: 23 (100)</i>	23	✗	1.4

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	65	History of non-medical drug use (i.e., cocaine)	1	22 (96)	23	x	2
	66	Current non-medical drug use	1	23 (100)	23	x	2
	67	History of injection drug use	1	22 (96)	23	x	2.2
	68	Current injection drug use	1	23 (100)	23	x	2.2
	69	Post-traumatic stress	1	21 (91)	23	✓	3
	70	Sexual abuse history	1	20 (87)	23	✓	3
	71	Criminal record(s) related to substance use disorders	1	23 (100)	23	x	1.8
	72	Past history of use of prescription medications not as prescribed	2	21 (95)	22	x	2.8
	73	Family history of problematic substance use	2	20 (91)	22	x	2.4

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	74	Consider assessing for the following items to identify patients with life-threatening illnesses who are at high risk of aberrant opioid medication taking behaviors:	2	17 (81)	21	x	2.2
		Young age (18 to 24 years old)	Summary of recommended items to be considered for identification of patients with life-threatening illnesses who are at high risk of aberrant opioid medication taking behaviors.				
		Older age (65 years or older)					
		Alcohol family history					
		History of tobacco use					
		Current tobacco use					
		Depression					
		Anxiety					
		Personality disorders					
		Somatization					
		Premorbid chronic pain					
		Unstable housing					

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
		Financial instability					
	75	Patients with life-threatening illnesses who have opioid use disorders are identified through clinical assessment (e.g., history).	1	23 (100)	23	x	2.4
		Opioid overdose is clinically defined as loss of consciousness and respiratory depression. The following items should be used to identify patients with life-threatening illnesses who are at high risk of opioid overdose:					
	76	Benzodiazepine use (i.e., lorazepam)	1	22 (96)	23	x	2.6
	77	Alcohol use	1	22 (96)	23	x	1.8
	78	History of previous opioid overdose	1	22 (96)	23	x	2.0
	79	Receiving opioid prescriptions two or more physicians	1	20 (87)	23	✓	3.2
	80	History of substance use disorder	1	19 (83)	23	x	1.8

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	81	Active substance use disorder	1	22 (96)	23	✘	2.2
	82	Urine drug tests	2	18 (82)	22	✘	2.8
	83	<i>Consider assessment for the following items to identify patients with life-threatening illnesses who are at high risk of opioid overdose:</i>	2	17 (81)	21	✘	1.6
		Older age (65 years old and greater)	Summary of recommended items to be considered for identification of patients with life-threatening illnesses who are at high risk of opioid overdose.				
		Renal impairment					
		Liver impairment					
		Muscle relaxant use (i.e., cyclobenzaprine)					
		Sleep medication/hypnotic use (i.e., zopiclone)					
		Methadone use for pain management					

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B	
		Methadone use for opioid use disorder management						
		Opioid naïve patients						
		Untreated psychiatric conditions (i.e., schizophrenia)						
		History of obstructive sleep apnea						
		Filling opioid prescriptions at two or more pharmacies						
<p>The following screening tools should be used to identify patients with life-threatening illnesses who are at high risk of either aberrant opioid medication taking behaviors or opioid use disorder:</p>								
	84	CAGE alcoholism screen	2	17 (81)	21	x	2.2	
	85	Opioid Risk Tool	2	18 (82)	22	x	2.8	
	86	Urine drug tests	2	80 (16)	22	x	2.6	

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	87	The previously mentioned tools should be used before starting opioid treatment.	2	18 (82)	22	✘	2.8
	88	Caregivers(s) of patients on opioid therapy should be assessed for aberrant opioid medication taking behaviors, opioid use disorder and opioid overdose	2	18 (86)	21	✘	2.8
	89	Taking a comprehensive substance use history is recommended for assessing caregiver(s) for aberrant opioid medication taking behaviors, opioid use disorder and opioid disorder	2	17 (81)	21	✘	2.6
Domain 4 <i>Opioid Prescribing Practices</i>	90	Clinicians should not prescribe opioid doses more than 90mg morphine equivalent daily dose ^D	2	0 (0) <i>Disagreement level: 20 (95)</i>	21	✘	2.2
The following opioid prescribing practices for patients receiving care in outpatient palliative care clinics or home palliative care visits are strongly recommended:							

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	91	Clinicians should provide a maximum of one-month supply of opioids with each prescription	1	21 (91)	23	✗	2.4
	92	Each patient should have only one opioid prescriber	1	20 (87)	23	✗	2.8
	93	Physicians should have access to regional prescription monitoring programs to track previously dispensed prescriptions	1	22 (96)	23	✓	3.2
	94	If the primary prescriber of opioids is absent, detailed pain management plans and documentation should be provided to the covering clinician	1	23 (100)	23	✓	3.4
	95	Patients who are at high-risk aberrant opioid-related behaviors, opioid use disorders and/or overdose should receive daily to weekly dispensing of opioids.	1	19 (83)	23	✓	3.6

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	96	Patients with symptom management concerns and active aberrant opioid-related behaviors, opioid use disorders and/or history of overdose be jointly managed with an addictions medicine specialist	2	17 (91)	21	✓	3
	97	Access to addiction medicine in all health facilities that provide palliative care services	2	18 (86)	21	✓	3
Domain 5	After initiating opioids or dose adjustment for symptom management, the following measures should be assessed and documented to monitor opioid use and safety in palliative care patients:						
<i>Opioid Monitoring Practices</i>	98	Analgesic benefit using a validated scale (i.e., Edmonton Symptom Assessment System)	1	19 (83)	23	✗	1.5
	99	Activity level	1	22 (96)	23	✗	1.5
	100	Adverse effects	1	22 (96)	23	✗	1.5

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	101	Aberrant drug-related behaviors (i.e., requests for early refills; prescription forgery)	1	23 (100)	23	✗	1.8
	102	Adherence to clinician instructions for opioid use for symptom management	1	23 (100)	23	✗	1.8
	103	Involvement of patient's support network to ensure compliance with the opioid prescription regimen	1	21 (91)	23	✗	1.8
	104	Palliative care patients receiving palliative care who are at high-risk or have active aberrant opioid medication taking behaviors should be assessed more frequently than low-risk individuals.	1	23 (100)	23	✓	3.3
	105	Palliative care patients who are at high-risk or have active opioid use disorders should be assessed more frequently than low-risk individuals.	1	23 (100)	23	✓	3.3
	106	Palliative care patients who are at high-risk of opioid overdose should	1	23 (100)	23	✓	3.3

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
		be assessed more frequently than low-risk individuals.					
	107	Nurses should perform pill counts for outpatients in the community (e.g., clinics, home)	2	17 (81)	21	x	2.8
Domain 6	All palliative care patients receiving opioid prescriptions should be educated on the following topics:						
Patient and Caregiver Education	108	Signs and symptoms of substance use disorders	1	19 (86)	22	x	2.5
	109	Difference between physical dependence and opioid use disorders	1	19 (86)	22	✓	3.3
	110	Chemical coping with opioids	1	18 (78)	22	✓	3.5
	111	Indications for opioid use	1	22 (100)	22	x	2
	112	Opioid adverse effects	1	22 (100)	22	x	1.8
	113	Opioid overdose signs and symptoms	1	22 (100)	22	✓	3

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B	
	114	Safe storage of opioids	1	22 (100)	22	✓	3.3	
	115	Safe disposal of opioids	1	22 (100)	22	✓	3.3	
	116	Opioid withdrawal symptoms	1	22 (100)	22	✓	3.5	
	117	Driving/operating machinery	1	22 (100)	22	✓	3	
	Opioid safety education for patients receiving opioid prescriptions should be provided by:							
	118	Written pamphlet	1	19 (86)	22	✗	2.5	
	119	Discussion with opioid prescriber	1	22 (100)	22	✓	3	
	120	Consider using:	2	21 (100)	21	✓	3	
		Formal education session	Summary of recommended education interventions to be considered for delivering opioid safety education for patients.					
		Consultation with pharmacist						

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	121	Patients should receive instructions (written and verbal) to store opioids in locked containers in a secure location.	1	21 (95)	22	✗	2.8
	122	Patients should receive instructions (written and verbal) to return unused medications to pharmacies.	1	19 (86)	22	✗	2.8
All caregivers of patients receiving opioid prescriptions should be educated on the following topics:							
	123	The difference between physical dependence and opioid use disorders	1	19 (86)	22	✓	3
	124	Indications for opioid use	1	21 (95)	22	✓	3
	125	Opioid adverse effects	1	22 (100)	22	✓	3
	126	Opioid overdose signs and symptoms	1	21 (95)	22	✓	3
	127	Safe storage of opioids	1	22 (100)	22	✓	3

Domain	Item no.	Statement	Delphi Round	Agreement level; n (%)	No. of panellists	High-priority recommendation ^A	CSPCP importance rating ^B
	128	Safe disposal of opioids	1	21 (95)	22	✓	3.3
	129	Caregivers should receive instructions (written and verbal) to store opioids in locked containers in a secure location.	1	21 (95)	22	✗	2.8
	130	Caregivers should receive instructions (written and verbal) to return unused medications to pharmacies.	1	19 (86)	22	✓	3

^A: Recommendations are deemed “high-priority” if their Canadian Society of Palliative Care Physician importance rating was ≥ 3 , where 3 was “very important”.

^B: The Canadian Society of Palliative Care Physicians reviewed the 130 recommendations and used a 5-point Likert scale to rate how important it is that palliative care physicians should be aware of each recommendation. The format of the 5-point Likert scale was as follows: 0 - not at all important, 1- slightly important, 2- moderately important, 3- very important, 4- extremely important.

^C: The following reference was provided to the panellists: Kwon J, Tanco 8, Hui D, Reddy A and Bruera E. Chemical coping versus pseudoaddiction in patients with cancer pain. *Palliative and Supportive Care* (2014), 12, 413–417.

^D: The following reference was provided to the panellists: Busse, J. W., Craigie, S., Juurlink, D. N., Buckley, D. N., Wang, L., Couban, R. J., ... & Guyatt, G. H. Guideline for opioid therapy and chronic noncancer pain. *CMAJ* (2017), 189 (18), E659-E666.

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Table 1: Delphi Surveys Domain 1 - General Opioid Prescribing Principles in Palliative and End-of-Life Care: Statements and Responses

Statement	Round	Agreement level; n (%)					No. of panellists	Consensus (Yes/No)
		Strongly disagree (or "No")	Disagree	Neutral	Agree	Strongly agree (or "Yes" or selected)		
Statements on prescription opioid use and safety in patients receiving palliative care:								
Opioids are essential medications for symptom management	1	0 (0)	0 (0)	3 (13)	3 (13)	17 (74)	23	Yes
Everyone has the right to adequate pain management	1	0 (0)	0 (0)	0 (0)	4 (17)	19 (82)	23	Yes
Clinicians can choose <u>not</u> to prescribe opioids for any of their patients	1	6 (26)	2 (9)	3 (13)	6 (26)	6 (26)	23	No
Opioids should only be prescribed by palliative care specialists ^A	1	19 (83)	3 (13)	1 (4)	0 (0)	0 (0)	23	Yes (Disagreement)
Opioid safety does <u>not</u> need to be addressed for patients with prognoses of days to weeks	1	12 (52)	11 (48)	0 (0)	0 (0)	0 (0)	23	Yes (Disagreement)
Opioid safety requires interdisciplinary collaboration (i.e., doctors, nurses, pharmacists)	1	0 (0)	0 (0)	0 (0)	6 (26)	17 (74)	23	Yes
Palliative care physicians should mentor non-palliative care physicians on opioid use for individuals with life-threatening illnesses	1	0 (0)	0 (0)	2 (9)	10 (43)	11 (48)	23	Yes
Opioid prescribing should be part of the practices of all clinicians who care for palliative care patients.	2	1 (5)	0 (0)	0 (0)	3 (14)	18 (82)	22	Yes
Statements around opioid use disorder in patients receiving palliative care and their caregivers:								
Does the importance of IDENTIFYING whether a PATIENT has an opioid use disorder depend on their DIAGNOSIS?	2	21 (95)				1 (5)	22	Yes (Disagreement)
Does the importance of IDENTIFYING whether a PATIENT has an opioid use disorder depend on their PROGNOSIS?	2	18 (82)				4 (18)	22	Yes (Disagreement)
Does the importance of MANAGING a PATIENT'S opioid use disorder (not	2	21 (100)				N/A	22	Yes (disagreement)

symptom management) depend on their DIAGNOSIS?								
Does the importance of MANAGING a PATIENT's opioid use disorder depend on their PROGNOSIS?	2	13 (59)				9 (41)	22	No
Does the importance of IDENTIFYING a CAREGIVER(S) opioid use disorder depend on the patient's PROGNOSIS?	2	20 (91)				2 (9)	22	Yes (disagreement)
Use of the term "pseudoaddiction" in palliative care	2	19 (86)				3 (14)	22	Yes (disagreement)

^A: The following definition was provided for the panellists: "Palliative care specialists are healthcare professionals who only provide palliative care to patients.

Table 2: Delphi Surveys Domain 2 - Palliative care programmes and opioid safety: Statements and Responses

Statement	Round	Agreement level; n (%)					No. of panellists	Consensus (Yes/No)
		Strongly disagree (or "No")	Disagree	Neutral	Agree	Strongly agree (or "Yes" or Selected)		
Palliative care training programmes should provide mandatory education on the following topics:								
Opioid prescribing (i.e., opioid choice, dosing, adverse effects)	1	0 (0)	0 (0)	0 (0)	1 (4)	22 (96)	23	Yes
Pseudo-addiction, which is "an iatrogenic syndrome where a patient displays aberrant behavior developing as a result of inadequate pain management" ^A	1	2 (9)	2 (9)	1 (4)	5 (22)	13 (57)	23	No
Concept known as "pseudoaddiction" ^A	2	4 (18)	3 (14)	6 (27)	6 (27)	3 (14)	22	No
Chemical coping with opioids, which is "the use of opioids to cope with emotional distress and is characterized by inappropriate and/or excessive opioid use" ^B	1	0 (0)	0 (0)	0 (0)	4 (17)	19 (83)	23	Yes
Opioid use disorders identification, assessment and treatment	1	0 (0)	0 (0)	0 (0)	1 (4)	22 (96)	23	Yes
Urine drug tests (i.e., result interpretation)	1	0 (0)	0 (0)	0 (0)	7 (30)	16 (70)	23	Yes
Opioid overdose identification, assessment and treatment	1	0 (0)	0 (0)	1 (4)	2 (9)	20 (87)	23	Yes
Naloxone administration and monitoring	1	0 (0)	0 (0)	0 (0)	5 (22)	18 (78)	23	Yes
Motivational interviewing to help manage opioid use disorders	1	0 (0)	0 (0)	2 (9)	4 (17)	17 (74)	23	Yes
Chronic pain management	1	0 (0)	0 (0)	1 (4)	7 (30)	15 (65)	23	Yes
Healthcare institutions that provide palliative care (inpatients and/or outpatients) should implement and encourage use of the following supportive measures that promote opioid safety:								
Opioid prescription monitoring programmes	1	0 (0)	1 (4)	2 (9)	6 (26)	14 (61)	23	Yes
Opioid stewardship programmes "...coordinate interventions designed to improve, monitor and evaluate the use of opioids in order to support and protect human health." ^C	1	0 (0)	0 (0)	1 (4)	7 (30)	15 (65)	23	Yes
Quality improvement programmes to reduce opioid-related adverse events	1	0 (0)	0 (0)	0 (0)	6 (26)	17 (74)	23	Yes
Data collection on emergency department visits related to aberrant opioid medication taking behaviors in patients receiving palliative care	1	0 (0)	0 (0)	1 (4)	9 (39)	13 (57)	23	Yes
Data collection on emergency department visits related to opioid use disorders in patients receiving palliative care	1	0 (0)	0 (0)	0 (0)	8 (35)	15 (65)	23	Yes

Data collection on in-patient aberrant opioid medication taking behaviors in patients receiving palliative care	1	0 (0)	0 (0)	2 (9)	8 (35)	13 (56)	23	Yes
Data collection on in-patient admissions related to opioid use disorders in patients receiving palliative care	1	0 (0)	0 (0)	0 (0)	7 (30)	16 (70)	23	Yes
Data collection on opioid overdoses of patients receiving palliative care	1	0 (0)	0 (0)	0 (0)	5 (22)	18 (78)	23	Yes
Access to pharmacologic opioid use disorder treatments (i.e., methadone, buprenorphine-naloxone)	1	0 (0)	1 (4)	0 (0)	4 (17)	18 (78)	23	Yes
Secure medication drop boxes for disposal of unused opioids should be established in hospitals	1	0 (0)	0 (0)	2 (9)	6 (26)	15 (65)	23	Yes
Recommend the use of medication lock boxes for storage of opioids at home	1	0 (0)	0 (0)	0 (0)	8 (35)	15 (65)	23	Yes
Patient experiences with symptom management	2	0 (0)	0 (0)	2 (10)	19 (90)	0 (0)	22	Yes
Palliative care clinical services (in-patients and out-patients) should include access to the following medical specialties to jointly manage patients who are high-risk of aberrant opioid medication taking behaviors, opioid use disorders and overdose:								
Addiction medicine	1	0 (0)	0 (0)	0 (0)	6 (26)	17 (74)	23	Yes
Psychiatry	1	0 (0)	0 (0)	2 (9)	6 (26)	15 (65)	23	Yes
Pain medicine	1	0 (0)	1 (4)	1 (4)	8 (35)	13 (57)	23	Yes

A: The following reference was provided to the panellists: Kwon J, Tanco B, Hui D, Reddy A and Bruera E. Chemical coping versus pseudoaddiction in patients with cancer pain. *Palliative and Supportive Care* (2014), 12, 413–417.

B: The following reference was provided to the panellists: Kwon J, Hui and Bruera E. A Pilot Study To Define Chemical Coping in Cancer Patients Using the Delphi Method. *Journal of Palliative Medicine*. (2015), 18(8), 703-706.

C: The following reference was provided to the panellists: https://www.ismp-canada.org/opioid_stewardship/

Table 3: Delphi Surveys Domain 3 – Patient and Caregiver Assessments: Statements and Responses

Statement	Round	Agreement level; n (%)					No. of panellists	Consensus (Yes/No)
		Strongly disagree (or "No")	Disagree	Neutral	Agree	Strongly agree (or "Yes" or selected)		
Prior to prescribing opioids for pain or dyspnoea management, each patient receiving palliative care should receive an assessment that includes the following:								
Type of pain (i.e., nociceptive and/or neuropathic pain)	1	0 (0)	0 (0)	0 (0)	1 (4)	22 (96)	23	Yes
Etiology of pain or dyspnoea	1	0 (0)	0 (0)	0 (0)	2 (9)	21 (91)	23	Yes
History of opioid use and efficacy	1	0 (0)	0 (0)	0 (0)	1 (4)	22 (96)	23	Yes
Patient's functional status	1	0 (0)	0 (0)	0 (0)	2 (9)	21 (91)	23	Yes
Dependence on caregivers for medication administration	1	0 (0)	0 (0)	0 (0)	4 (17)	19 (83)	23	Yes
Housing instability (i.e., homelessness)	1	0 (0)	0 (0)	0 (0)	5 (22)	18 (78)	23	Yes
Young children that reside or visit patient's home	1	0 (0)	0 (0)	1 (4)	5 (22)	17 (74)	23	Yes
History of psychiatric condition	1	0 (0)	0 (0)	0 (0)	6 (26)	17 (74)	23	Yes
History of substance use	1	0 (0)	0 (0)	0 (0)	3 (13)	20 (87)	23	Yes
Active substance use	1	0 (0)	0 (0)	0 (0)	1 (4)	22 (96)	23	Yes
Financial support and stability	1	0 (0)	0 (0)	2 (9)	9 (39)	12 (52)	23	Yes
Renal impairment	1	0 (0)	0 (0)	1 (4)	3 (13)	19 (83)	23	Yes
Liver impairment	1	0 (0)	0 (0)	1 (4)	3 (13)	19 (83)	23	Yes
Cognitive impairment	1	0 (0)	0 (0)	0 (0)	2 (9)	21 (91)	23	Yes
Caregiver history of substance use	1	0 (0)	0 (0)	1 (4)	7 (30)	15 (65)	23	Yes
Urine drug tests should be done for all palliative care outpatients receiving opioids at their first visit and subsequent follow-up visits.	1	1 (4)	6 (26)	5 (21)	7 (30)	4 (17)	23	No
If a person is receiving palliative care in an OUTPATIENT CLINIC, urine drug tests should be done for:								
All patients	2					11 (50)	22	No
Patients who are at risk						10 (45)		
No patients						1 (5)		
What frequency should urine drugs be performed in the OUTPATIENT CLINIC setting:^c								
Randomly	2					2 (10)	20	No
Initial consultation and then randomly						10 (50)		
Every 1 to 3 months						0 (0)		
Every time an opioid prescription is written						0 (0)		
As needed based on clinician's discretion						8 (40)		
If a person is receiving palliative care at HOME, urine drug tests should be done for:								
All patients	2					7 (32)	22	No
Patients who are at risk						14 (64)		
No patients						1 (5)		

What frequency should urine drugs be performed in the HOME setting:								
Randomly	2					4 (44)	9	No
Initial consultation and then randomly						5 (56)		
Every 1 to 3 months						0 (0)		
Every time an opioid prescription is written						0 (0)		
As needed based on clinician's discretion						12 (57)		
If a person is receiving palliative care in a PALLIATIVE CARE UNIT (e.g., hospice), urine drug tests should be done for:								
All patients	2					3 (14)	22	No
Patients who are at risk						16 (73)		
No patients						3 (14)		
What frequency should urine drugs be performed in a PALLIATIVE CARE UNIT:								
Randomly	2					4 (21)	19	No
Initial consultation and then randomly						4 (21)		
Every 1 to 3 months						0 (0)		
Every time an opioid prescription is written						0 (0)		
As needed based on clinician's discretion						11 (58)		
Are there additional biochemical investigations that you recommend should be done for palliative care outpatients?	1	13 (57)	N/A	N/A	N/A	10 (43)	23	No
Rate your level of agreement that each of these actions represent/constitute as aberrant opioid medication taking behaviors in individuals with life-threatening illnesses:								
Receiving twelve or more opioid prescriptions in a year	1	8 (35)	10 (43)	4 (17)	1 (4)	0 (0)	23	No
	2	11 (50)	10 (45)	1 (5)	0 (0)	0 (0)	22	Yes (disagreement)
Frequent requests for early refills of opioid prescriptions (i.e., 3 or more requests in a 6-month period)	1	0 (0)	3 (13)	7 (30)	9 (39)	4 (17)	23	No
	2	0 (0)	3 (14)	3 (14)	13 (59)	3 (14)	22	No
Filling opioid prescriptions at multiple (2 or more) pharmacies	1	2 (9)	3 (13)	3 (13)	11 (47)	4 (17)	23	No
	2	2 (9)	2 (9)	5 (23)	11 (50)	2 (9)	22	No
Increasing frequency of hospital visits that result in increases in opioid doses	1	3 (13)	6 (26)	8 (35)	3 (13)	3 (13)	23	No
	2	1 (5)	11 (50)	6 (27)	4 (18)	0 (0)	22	No
High number of outpatient psychiatric visits (2 or more in a year)	1	8 (35)	5 (21)	4 (17)	6 (26)	0 (0)	23	No
	2	4 (18)	11 (50)	4 (18)	3 (14)	0 (0)	22	No
Increasing doses of opioids	1	4 (17)	5 (22)	11 (48)	3 (13)	0 (0)	23	No
	2	1 (5)	13 (59)	5 (23)	3 (14)	0 (0)	22	No
Reports of lost or stolen prescriptions	1	0 (0)	0 (0)	1 (4)	9 (39)	13 (57)	23	Yes
	2	0 (0)	0 (0)	0 (0)	13 (59)	9 (41)	22	Yes
Observable intoxication or withdrawal in clinical setting	1	0 (0)	1 (4)	0 (0)	9 (39)	13 (57)	23	Yes
Insistence on initiation of opioids, higher doses and/or quantities of opioids	1	0 (0)	3 (13)	6 (26)	11 (48)	3 (13)	23	No
	2	0 (0)	2 (9)	1 (5)	15 (68)	4 (18)	22	Yes
	1	4 (17)	11 (48)	7 (30)	1 (4)	0 (0)	23	No

Failure to respond to opioids for pain or dyspnoea management	2	3 (14)	12 (55)	5 (23)	2 (9)	0 (0)	22	No
Observed or reported opioid hoarding	1	0 (0)	2 (9)	3 (13)	13 (57)	5 (22)	23	No
	2	0 (0)	0 (0)	3 (14)	16 (73)	3 (14)	22	Yes
Self-titration of opioids doses without clinical approval	1	0 (0)	1 (4)	3 (13)	13 (57)	6 (26)	23	Yes
Observations or reports of prescription forgery	1	0 (0)	0 (0)	0 (0)	0 (0)	23 (100)	23	Yes
Resisting changes to opioids despite adverse effects	1	1 (4)	0 (0)	0 (0)	16 (70)	6 (26)	23	Yes
Reported theft or "borrowing" of opioids	1	0 (0)	0 (0)	0 (0)	9 (39)	14 (61)	23	Yes
Route alteration of prescribed opioids	1	0 (0)	0 (0)	0 (0)	2 (9)	21 (91)	23	Yes
The following items should be used to identify patients with life threatening illnesses who are at high risk of aberrant opioid medication taking behaviors:								
Young age (18 to 24 years old)	1					13 (57)	23	No
Older age (65 years or older)						1 (4)		Yes (disagreement)
Alcoholism using validated tools (i.e., CAGE, Alcohol Use Disorders Identification Test)						23 (100)		Yes
Alcohol family history						14 (61)		No
History of tobacco use						9 (39)		No
Current tobacco use						13 (57)		No
History of cannabis use						0 (0)		Yes (disagreement)
Current cannabis use						0 (0)		Yes (disagreement)
History of non-medical drug use (i.e., cocaine)						22 (96)		Yes
Current non-medical drug use						23 (100)		Yes
History of injection drug use						22 (96)		Yes
Current injection drug use						23 (100)		Yes
Depression						12 (52)		No
Anxiety						12 (52)		No
Personality disorders						15 (65)		No
Somatization						10 (43)		No
Post-traumatic stress						21 (91)		Yes
Sexual abuse history					20 (87)	Yes		
Physical abuse history					15 (65)	No		
Criminal record(s) related to substance use disorders					23 (100)	Yes		
Premorbid chronic pain					8 (35)	No		
Unstable housing					13 (57)	No		
Financial instability					7 (30)	No		
Morphine equivalent daily dose \geq 90mg	2	6 (27)	5 (23)	7 (32)	4 (18)	0 (0)	22	No

Past history of use of prescription medications not as prescribed	2	0 (0)	0 (0)	1 (5)	15 (68)	6 (27)	22	Yes
Family history of problematic substance use	2	0 (0)	0 (0)	2 (9)	18 (82)	2 (9)	22	Yes
Cannabis use (past or current)	2	1 (5)	5 (23)	4 (18)	10 (45)	2 (9)	22	No
How do you identify patients with life threatening illnesses who have opioid use disorders?								
Clinical assessment (e.g. History)	1					23 (100)	23	Yes
Diagnostic and Statistical Manual Mental Disorders, fifth edition, opioid use disorder criteria						12 (52)		No
Screening tools						15 (65)		No
Opioid overdose is clinically defined as loss of consciousness and respiratory depression. The following items should be used to identify patients with life threatening illnesses who are at high risk of opioid overdose:								
Older age (65 years older and greater)	1					13 (57)	23	No
Renal impairment						18 (78)		No
Liver impairment						14 (61)		No
Benzodiazepine use (i.e. lorazepam)						22 (96)		Yes
Muscle relaxant use (i.e. cyclobenzaprine)						16 (70)		No
Sleep medication/hypnotic use (i.e. zopiclone)						17 (74)		No
Alcohol use						22 (96)		Yes
Methadone use for management of pain ^A						15 (65)		No
Methadone use for management of opioid use disorder						12 (52)		No
Opioid naïve patients						16 (70)		No
Untreated psychiatric conditions (i.e. schizophrenia)						14 (61)		No
History of obstructive sleep apnea						17 (74)		No
History of previous opioid overdose						22 (96)		Yes
Receiving opioid prescriptions two or more physicians						20 (87)		Yes
Filling opioid prescriptions at two or more pharmacies						16 (70)		No
History of substance use disorder						19 (83)		Yes
Active substance use disorder						22 (96)		Yes
Urine drug tests	2	0 (0)	1 (5)	3 (10)	11 (52)	7 (33)	22	Yes
Screening tools	1	17 (77)				6 (26)	23	No
Opioid Risk Tool	2	0 (0)	4 (19)	2 (10)	11 (52)	4 (19)	21	No
CAGE Alcoholism Screen	2	1 (5)	3 (15)	4 (20)	11 (55)	1 (5)	20	No
CAGE-AID Drug Screen	2	0 (0)	4 (20)	7 (35)	8 (40)	1 (5)	20	No
Screeener and Opioid Assessment for Patients with Pain (SOAPP)	2	0 (0)	7 (35)	6 (30)	6 (30)	1 (5)	20	No
Diagnostic Statistical Manual fifth edition, opioid use disorder criteria	2	1 (5)	3 (16)	5 (26)	7 (37)	3 (16)	19	No

Morphine Equivalent Daily Dose 90mg and greater	2	3 (15)	3 (15)	2 (10)	9 (45)	3 (15)	20	No
Is there a difference in risk factors for problematic opioid use between patients with life-threatening illnesses and those with chronic non-cancer pain?	2	17 (77)				5 (23)	22	No
The following SCREENING TOOLS [should] be used to IDENTIFY PATIENTS with life threatening illnesses who are at HIGH RISK of either ABERRANT OPIOID MEDICATION TAKING BEHAVIORS or OPIOID USE DISORDER:^D								
Alcohol Use Disorders Identification Test (AUDIT)	2	0 (0)	2 (10)	11 (55)	3 (15)	4 (20)	20	No
CAGE alcoholism screen	2	0 (0)	3 (14)	1 (5)	14 (67)	3 (14)	21	Yes
CAGE-AID drug screen	2	0 (0)	3 (14)	8 (38)	7 (33)	3 (14)	21	No
Drug Abuse Screening Tool (DAST)	2	0 (0)	4 (19)	10 (48)	4 (19)	3 (14)	21	No
Opioid Risk Tool (ORT)	2	0 (0)	2(9)	2 (9)	12 (55)	6 (27)	22	Yes
Rapid Opioid Dependence Screen (RODS)	2	0 (0)	3 (15)	14 (70)	1 (5)	2 (10)	20	No
Screener and Opioid Assessment for Patients with Pain (SOAPP)	2	0 (0)	6 (30)	9 (45)	3 (15)	2 (10)	20	No
SOAPP-Revised (R)	2	0 (0)	5 (24)	7 (33)	7 (33)	2 (10)	21	No
SOAPP-Short Form (SF)	2	0 (0)	3 (15)	11 (55)	5 (25)	1 (5)	20	No
Urine drug tests	2	0 (0)	1 (5)	3 (15)	7 (35)	9 (45)	20	Yes
When should the previously mentioned tools be used?								
Before starting opioid treatment	2					18(82)	22	Yes
While on opioid therapy						1(5)		No
Only when the physician is concerned						3(14)		No
None of the above						0 (0)		No
The following investigations should be performed for ALL palliative care patients seen in OUTPATIENT CLINIC setting who will be prescribed opioids:								
Sleep studies	2	8 (36)	6 (27)	6 (27)	2 (9)	0 (0)	22	No
Electrocardiogram	2	8 (36)	2 (9)	9 (41)	3 (14)	0 (0)	22	No
Liver function tests (e.g., INR)	2	6 (27)	4 (18)	6 (27)	5 (23)	1 (5)	22	No
Liver enzymes (e.g., AST)	2	4 (18)	4 (18)	7 (32)	6 (27)	1 (5)	22	No
Renal function	2	2 (9)	2 (9)	4 (18)	12 (55)	2 (9)	22	No
Blood alcohol levels	2	5 (23)	5 (23)	9 (41)	2 (9)	1 (5)	22	No
Urine drug tests that include ethyl glucuronide to improve detection of alcohol use	2	4 (18)	5 (23)	5 (23)	6 (27)	2 (9)	22	No
Albumin	2	3 (14)	3 (14)	13 (59)	3 (14)	0 (0)	22	No
Calcium	2	3 (14)	3 (14)	12 (55)	4 (18)	0 (0)	22	No
The following investigations should be performed for ALL palliative care patients seen in INPATIENT setting who will be prescribed opioids:								
Sleep studies	2	9 (41)	3 (14)	8 (36)	2 (9)	0 (0)	22	No
Electrocardiogram	2	8 (36)	3 (14)	7 (32)	4 (18)	0 (0)	22	No
Liver function tests (e.g., INR)	2	8 (36)	3 (14)	5 (23)	5 (23)	1 (5)	22	No
Liver enzymes (e.g., AST)	2	7 (32)	3 (14)	4 (18)	7 (32)	1(5)	22	No
Renal function	2	4(18)	0 (0)	6 (27)	9 (41)	3 (14)	22	No
Blood alcohol levels	2	8 (36)	4 (18)	6 (27)	3 (14)	1 (5)	22	No

Urine drug tests that include ethyl glucuronide to improve detection of alcohol use	2	7 (32)	3 (14)	6 (27)	5 (23)	1 (5)	22	No
Albumin	2	5 (23)	2 (9)	11 (50)	4 (18)	0 (0)	22	No
Calcium	2	4 (18)	2 (9)	11 (50)	5 S(23)	0 (0)	22	No
Caregivers of palliative care patients who are receiving opioids for symptom management should be screened for:								
Potential or active aberrant opioid medication taking behaviors	1	0 (0)	0 (0)	10 (43)	7 (30)	6 (26)	23	No
Opioid use disorders	1	0 (0)	0 (0)	12 (52)	6 (26)	5 (21)	23	No
Risk of opioid overdose	1	0 (0)	1 (4)	12 (52)	8 (34)	2 (9)	23	No
“CAREGIVER(S)” of patients on opioid therapy should be assessed for aberrant opioid medication taking behaviors, opioid use disorder and opioid overdose?	2	0 (0)	0 (0)	3 (14)	13 (62)	5 (24)	21	Yes
Taking a comprehensive substance use history is recommended for assessing caregiver(s) for aberrant opioid medication taking behaviors, opioid use disorder and opioid disorder	2	0 (0)	0 (0)	4 (19)	12(57)	5 (24)	21	Yes

^A: The following reference was provided to the panellists: Baumblatt, J. A. G., Wiedeman, C., Dunn, J. R., Schaffner, W., Paulozzi, L. J., & Jones, T. F. (2014). High-risk use by patients prescribed opioids for pain and its role in overdose deaths. *JAMA internal medicine*, 174(5), 796-801.

Table 4: Delphi Surveys Domain 4: Opioid Prescribing Practices: Statements and Responses

Statement	Round	Agreement level; n (%)					No. of panellists	Consensus (Yes/No)
		Strongly disagree (or "No")	Disagree	Neutral	Agree	Strongly agree (or "Yes" or selected)		
Clinicians should not prescribe opioid doses more than 90mg morphine equivalent daily dose ^A	1	12 (52)	5 (21)	4 (17)	2 (9)	0 (0)	23	No
	2	13 (62)	7 (33)	0 (0)	1 (5)	0 (0)	21	Yes (Disagreement)
Clinicians should provide a maximum of one-month supply of opioids with each prescription	1	0 (0)	1 (4)	1 (4)	14 (61)	7 (30)	23	Yes
All patients should complete written opioid treatment agreements describing their responsibilities with respect to the use of prescribed opioids	1	1 (4)	4 (17)	4 (17)	5 (21)	9 (39)	23	No
	2	1 (5)	4 (19)	1 (5)	11 (52)	4 (19)	21	No
Each patient should have only one opioid prescriber	1	1 (4)	1 (4)	1 (4)	8 (35)	12 (52)	23	Yes
Each patient should have only one pharmacy	1	1 (5)	3 (14)	1 (5)	6 (27)	11 (50)	22	No
	2	0 (0)	1 (5)	4 (19)	13 (62)	3 (14)	21	No
Physicians should preferentially prescribe tamper or abuse resistant medications	1	2 (9)	9 (39)	6 (26)	5 (22)	1 (4)	23	No
	2	1 (5)	11 (52)	5 (24)	4 (19)	0 (0)	21	No
Physicians should have access to electronic medication bottle technology to monitor patients' compliance with prescribed opioid use	1	0 (0)	2 (9)	11 (48)	5 (22)	5 (22)	23	No
	2	0 (0)	2 (10)	11 (52)	8 (38)	0 (0)	21	No
Physicians should have access to regional prescription monitoring programmes to track previously dispensed prescriptions	1	0 (0)	0 (0)	1 (4)	2 (9)	20 (87)	23	Yes
If the primary prescriber of opioids is absent, detailed pain management plans and documentation should be provided to the covering clinician	1	0 (0)	0 (0)	0 (0)	6 (26)	17 (74)	23	Yes
Patients who are at high risk aberrant opioid-related behaviors, opioid use disorders and/or overdose should receive daily to weekly dispensing of opioids	1	0 (0)	0 (0)	4 (17)	6 (26)	13 (57)	23	Yes
Patients with symptom management concerns and active aberrant opioid-related behaviors, opioid use disorders and/or history of overdose be jointly managed with an addictions medicine specialist	1	0 (0)	0 (0)	5 (22)	12 (52)	6 (26)	23	No
	2	0 (0)	1 (5)	3 (14)	14 (67)	3 (14)	21	Yes
Patients with symptom management concerns and active aberrant opioid-related behaviors, opioid use disorders and/or history of overdose should be jointly managed with a psychiatrist	1	0 (0)	2 (9)	13 (57)	6 (26)	2 (9)	23	No
	2	1 (5)	2 (10)	11 (52)	6 (29)	1 (5)	21	No

Access to addiction medicine in all health facilities that provide palliative care services	2	3 (14)				18 (86)	21	Yes
Access to addiction medicine should be available in health facilities as:								
Telemedicine service	2					3 (14)	21	No
Inpatient consultation service						4 (19)		No
Outpatient clinic						6 (29)		No
Inpatient unit						12 (57)		No

A: The following reference was provided to the panellists: Busse, J. W., Craigie, S., Juurlink, D. N., Buckley, D. N., Wang, L., Couban, R. J., ... & Guyatt, G. H. Guideline for opioid therapy and chronic noncancer pain. *CMAJ* (2017), 189 (18), E659-E666.

Table 5: Delphi Surveys Domain 5: Opioid Monitoring Practices: Statements and Responses

Statement	Round	Agreement level; n (%)					No. of panellists	Consensus (Yes/No)
		Strongly disagree (or "No")	Disagree	Neutral	Agree	Strongly agree (or "Yes" or selected)		
After initiating opioids or dose adjustment for symptom management, the following measures should be assessed and documented to monitor opioid use and safety in palliative care patients:								
Analgesic benefit using a validated scale (i.e., Edmonton Symptom Assessment System)	1	0 (0)	1 (4)	3 (13)	6 (26)	13 (57)	23	Yes
Activity level	1	0 (0)	0 (0)	1 (4)	4 (17)	18 (78)	23	Yes
Adverse effects	1	0 (0)	0 (0)	1 (4)	2 (9)	20 (87)	23	Yes
Aberrant drug-related behaviors (i.e. requests for early refills; prescription forgery)	1	0 (0)	0 (0)	0 (0)	3 (13)	20 (87)	23	Yes
Adherence to clinician instructions for opioid use for symptom management	1	0 (0)	0 (0)	0 (0)	6 (26)	17 (74)	23	Yes
Involvement of patient's support network to ensure compliance with the opioid prescription regimen	1	0 (0)	0 (0)	2 (9)	11 (48)	10 (43)	23	Yes
Palliative care patients receiving palliative care who are at high-risk or have active aberrant opioid medication taking behaviors should be assessed more frequently than low-risk individuals.	1	0 (0)	0 (0)	0 (0)	2 (9)	21 (91)	23	Yes
Palliative care patients who are at high-risk or have active opioid use disorders should be assessed more frequently than low-risk individuals.	1	0 (0)	0 (0)	0 (0)	4 (17)	19 (83)	23	Yes
Palliative care patients who are at high-risk of opioid overdose should be assessed more frequently than low-risk individuals.	1	0 (0)	0 (0)	0 (0)	4 (17)	19 (83)	23	Yes
Clinicians should perform regular pill counts to ensure compliance with instructions for opioid use and detect under- or over-use.	1	1 (4)	4 (17)	4 (17)	11 (48)	3 (13)	23	No
Pill counts can be used to ensure compliance with opioid use instructions and detect under- or over-use. Which of the following people should receive pill counts?								
All patients on opioid therapy	2					4 (19)	21	No
People with observed aberrant opioid medication taking behaviors						4 (19)		No
People with active opioid use disorders						1 (5)		No
People with history of opioid use disorders						0 (0)		No
People who have previously overdosed on opioids						0 (0)		No

People who are suspected of diverting their opioids						3 (14)		No
People observed to be diverting their opioids						6 (29)		No
Other						3 (14)		No
How often should pill counts be performed?								
Randomly	2					8 (38)	21	No
With each opioid prescription						4 (19)		No
Clinician discretion						7 (33)		No
Scheduled basis						0 (0)		No
Other						2 (10)		No
Who should perform pill counts for INPATIENTS receiving palliative care in institutions (e.g. acute care, hospice)?								
Physicians	2					2 (10)	21	No
Nurses						10 (48)		No
Caregiver(s)						0 (0)		No
Pharmacist						14 (67)		No
Other						2 (10)		No
Who should perform pill counts for OUTPATIENTS in the community (e.g. clinics, home)?								
Physicians	2					10 (48)	21	No
Nurses						17 (81)		Yes
Caregiver(s)						2 (10)		No
Pharmacist						13 (62)		No
Other						2 (10)		No
How often should we monitor palliative care patients who are at high-risk or have active aberrant opioid medication taking behaviors, opioid use disorder or opioid overdose?								
Every week	2					5 (24)	21	No
Every 2 weeks						3 (14)		No
Every month						0 (0)		No
Based on clinician discretion						13 (62)		No
None of the above						0 (0)		No

Table 6: Delphi Surveys Domain 6: Patient and Caregiver Education: Statements and Responses

Statement	Round	Agreement level; n(%)					No. of panellists	Consensus (Yes/No)
		Strongly disagree (or "No")	Disagree	Neutral	Agree	Strongly agree (or "Yes" or selected)		
Patient Education								
All palliative care patients receiving opioid prescriptions should be educated on the following topics:								
Signs and symptoms of substance use disorders	1	0 (0)	3 (14)	0 (0)	6 (27)	13 (59)	22	Yes
The difference between physical dependence and opioid use disorders	1	0 (0)	0 (0)	3 (14)	7 (32)	12 (55)	22	Yes
Pseudo-addiction, which is "an iatrogenic syndrome where a patient displays aberrant behavior developing as a result of inadequate pain management"	1	4 (18)	4 (18)	4 (18)	4 (18)	6 (27)	22	No
Chemical coping with opioids, which is "the use of opioids to cope with emotional distress and is characterized by inappropriate and/or excessive opioid use"	1	0 (0)	2 (9)	2 (9)	10 (45)	8 (36)	22	Yes
Indications for opioid use	1	0 (0)	0 (0)	0 (0)	5 (23)	17 (77)	22	Yes
Opioid adverse effects	1	0 (0)	0 (0)	0 (0)	3 (14)	19 (86)	22	Yes
Opioid overdose signs and symptoms	1	0 (0)	0 (0)	0 (0)	5 (23)	17 (77)	22	Yes
Naloxone administration	1	0 (0)	3 (14)	4 (18)	5 (23)	10 (45)	22	No
Safe storage of opioids	1	0 (0)	0 (0)	0 (0)	1 (5)	21 (95)	22	Yes
Safe disposal of opioids	1	0 (0)	0 (0)	0 (0)	4 (18)	18 (82)	22	Yes
Opioid withdrawal symptoms	1	0 (0)	1 (5)	1 (5)	5 (23)	15 (68)	22	Yes
Driving/operating machinery	1	0 (0)	0 (0)	0 (0)	4 (18)	18 (82)	22	Yes
Opioid safety education for patients receiving opioid prescriptions should be provided by:								
Formal education session	1					11 (50)	22	No
Consultation with pharmacist						16 (73)		No
Written pamphlet						19 (86)		Yes
Discussion with opioid prescriber						22 (100)		Yes
Patients should receive instructions (written and verbal) to store opioids in locked containers in a secure location.	1	0 (0)	0 (0)	1 (5)	8 (36)	13 (59)	22	Yes
Patients should receive instructions (written and verbal) to return unused medications to pharmacies.	1	1 (5)	1 (5)	1 (5)	3 (14)	16 (73)	22	Yes
All caregivers of patients receiving opioid prescriptions should be educated on the following topics:								
Signs and symptoms of substance use disorders	1	0 (0)	1 (5)	4 (18)	5 (23)	12 (55)	22	No

The difference between physical dependence and opioid use disorders	1	0 (0)	1 (5)	2 (9)	7 (32)	12 (55)	22	Yes
Pseudo-addiction, which is “an iatrogenic syndrome where a patient displays aberrant behavior developing as a result of inadequate pain management” ^A	1	3 (14)	5 (23)	5 (23)	2 (9)	7 (32)	22	No
Chemical coping with opioids, which is “the use of opioids to cope with emotional distress and is characterized by inappropriate and/or excessive opioid use” ^B	1	0 (0)	3 (14)	2 (9)	10 (45)	7 (32)	22	No
Indications for opioid use	1	0 (0)	0 (0)	1 (5)	8 (36)	13 (59)	22	Yes
Opioid adverse effects	1	0 (0)	0 (0)	0 (0)	4 (18)	18 (82)	22	Yes
Opioid overdose signs and symptoms	1	0 (0)	0 (0)	1 (5)	4 (18)	17 (77)	22	Yes
Naloxone administration	1	0 (0)	2 (9)	4 (18)	4 (18)	12 (55)	22	No
Safe storage of opioids	1	0 (0)	0 (0)	0 (0)	3 (14)	19 (86)	22	Yes
Safe disposal of opioids	1	0 (0)	0 (0)	1 (5)	8 (36)	13 (59)	22	Yes
Caregivers should receive instructions (written and verbal) to store opioids in locked containers in a secure location.	1	0 (0)	0 (0)	1 (5)	8 (36)	13 (59)	22	Yes
Caregivers should receive instructions (written and verbal) to return unused medications to pharmacies.	1	1 (5)	1 (5)	1 (5)	6 (27)	13 (59)	22	Yes

^A: The following reference was provided to the panellists: Kwon J, Tanco B, Hui D, Reddy A and Bruera E. Chemical coping versus pseudoaddiction in patients with cancer pain. *Palliative and Supportive Care* (2014), 12, 413–417.

^B: The following reference was provided to the panellists: Kwon J, Hui and Bruera E. A Pilot Study To Define Chemical Coping in Cancer Patients Using the Delphi Method. *Journal of Palliative Medicine*. (2015), 18(8), 703-706.

Table 7: Text-Entry Questions and their corresponding questions, number of panellists and actual responses

Domain	Round	Text-Entry Question	Corresponding question <i>Required response</i>	No. of panellists	Responses (No. of panellists)
1	2	How do you define “pseudoaddiction”?	After reviewing the Delphi Round 1 comments, do you agree that the term “pseudoaddiction” be used in palliative care? <i>Yes</i>	2	<ul style="list-style-type: none"> • Signs of apparent maladaptive opioid use but which is actually undertreatment of pain. • Patient self escalates medications and asks for early refills due to inadequate relief with prescribed doses.
1	2	Do you suggest an alternative term to “pseudoaddiction”?	After reviewing the Delphi Round 1 comments, do you agree that the term “pseudoaddiction” be used in palliative care? <i>No</i>	15	<ul style="list-style-type: none"> • Pain relief seeking behavior (n=1) • Undertreated pain (n=3) • Inadequate analgesia (n=3) • Problematic or high risk use of opioids (n=2) • Apparent problematic (or aberrant) use that resolves or improves with improved pain management (n=1) <p><i>5 panellists recommended the use of a description, rather than an alternative term.</i></p>
3	1	How frequently should urine drug tests be done for palliative care outpatients?	Urine drug tests should be done for all palliative care outpatients receiving opioids at their first visit and subsequent follow up visits <i>Agree or Strongly agree</i>	11	<ul style="list-style-type: none"> • Random (n=4) • Every time a prescription is written (n=1) • At least once (n=1) • Physician discretion based on clinical situation (n=2) • Regularly: first visit (n=1), every 3 months (n=2), every 1 to 3 months (n=1), every 6 months to 1 year for low-risk patients (n=1)
3	1	Please specify.	Are there additional biochemical investigations that you recommend should be done for palliative care outpatients? <i>Yes</i>	9	<ul style="list-style-type: none"> • Sleep studies (n=1) • Electrocardiogram (n=2) • Liver function tests (n=3) • Renal function (n=3) • Alcohol use screens (n=1) • Blood alcohol concentration (n=1) • Urine drug tests (n=3) • Albumin level (n=1) • Calcium level (n=1)
3	1	List the screening tools that you use to identify patients with life-threatening illnesses who are at high risk of aberrant opioid	N/A	23	<ul style="list-style-type: none"> • Clinical judgement (n=1) • Prescription monitoring programmes (n=2) • Urine drug test (n=3) • Previous admissions to hospital to identify any concerns that were raised (n=1) • Collateral history from family (n=1) • CAGE (n=3)

		medication taking behaviors			<ul style="list-style-type: none"> • CAGE-AID (n=3) • Family CAGE (n=1) • SOAPP (n=3) • SOAPP-R (n=1) • ORT (n=14) • AUDIT (n=2) • Drug Abuse Screening Tool • Rapid Opioid Dependence Screen • DSM-5 criteria for OUD and other substances • Patient history (n=1) • Past adherence to treatments (n=1) • History of smoking (n=1) • Previous or current history of substance use disorders (n=2) • History of psychiatric illnesses (n=1) • History of incarceration (n=1) • Family history of substance use (n=1)
3	2	Please specify why.	Based on the Delphi Round 1 questionnaire responses, the following items were recommended to be used to IDENTIFY patients with life threatening illnesses who are at high risk of aberrant opioid medication taking behaviors: <i>See Table 4.</i> Do you agree with the above recommendations? <i>No.</i>	4	<ul style="list-style-type: none"> • Recommend assessing for tobacco use • Change assessment for psychiatric disorders and pre-morbid chronic pain to “strongly recommend” • Some categories overlap [depending on] severity • Do not feel that assessment for criminal record should be a strong recommendation • “...feel age is a strong predictor of risk: addiction is a pediatric illness that extends into adulthood. 90% of all addiction will occur under age of 35 years and 85% under the age of 18 years. I'm not sure why age over 65 years [is] a predictor of aberrancy unless they experiences a substance use disorder in [their] youth.”
3	1	Please list the screening tools that you use to identify patients with life-threatening illnesses who have opioid use disorders	How do you identify patients with life-threatening illnesses who have opioid use disorders? <i>Screening tools</i>	14	<ul style="list-style-type: none"> • Urine drug tests (n=2) • Renal function (n=1) • CAGE (n=3) • CAGE-Adapted to Include Drugs (AID) (n=2) • Screener and Opioid Assessment for Patients with Pain (SOAPP) (n=3) • SOAPP-Revised (R) (n=2) • Opioid Risk Tool (ORT) (n=6) • Alcohol Use Disorders Identification Test (AUDIT) (n=1) • Prescription monitoring programmeme (n=1) • Diagnostic Statistical Manual criteria (n=1) • Family history of substance use disorders (n=1)

3	2	Please specify why.	Based on the Delphi Round 1 questionnaire responses, the following items were recommended to be used to IDENTIFY patients with life threatening illnesses who are at high risk of opioid overdose. See <i>Table 5</i> . Do you agree with the above recommendations? <i>No.</i>	3	<ul style="list-style-type: none"> • “Needs more up to date options/information” • Methadone use for opioid use disorder management should be a strong recommendation • “...with pharmacies are you referring to simultaneous refills? It is often a flag but, if [the patients had to get it filled] at hospital then at a community, then less of a risk if no other risks. If using 2 community pharmacies, more of a concern especially if other risks.” • "I believe that ALL Hypnotics-Sedatives should be listed as a category ([benzodiazepine], Gabapentin, Zopicone) in the high risk category. Renal and liver insufficiency change the effectiveness, tolerance and clearance of many medications regardless of how long they have been used contributing to sedation and confusion. Methadone is more likely to be diverted in the [chronic non-cancer pain] population when they have an unrecognized active addiction putting the patient at risk for sedation when they are admitted to hospital. The biggest risk of overdose is concurrent Hypnotic-sedative use and alcohol use. All other mentioned risks are important but I do not feel they should be in the high risk category. Clinicians need to focus in on how they dispense and provide oversight when those factors are present."
3	1	How should we screen caregivers who are at risk or actively conducting aberrant opioid medication taking behaviors?	Rate your level of agreement at caregivers of palliative care patients should be screened for potential or active aberrant opioid medication taking behaviors. <i>Agree or Strongly agree</i>	12	<ul style="list-style-type: none"> • Conversation with caregivers about opioid-related risks (n=2) • Conversations with family physicians • Comprehensive history taking with caregiver involvement (n=6) • Make sure caregivers attend appointments with patients • Collateral history from other caregivers and patient (n=1) • Screening tools if willing (n=1) • Opioid risk tool (n=1)
3	1	How should we screen caregivers who are at risk of opioid overdose?	Rate your level of agreement at caregivers of palliative care patients should be screened for opioid overdose. <i>Agree or Strongly agree</i>	10	<ul style="list-style-type: none"> • Know your patients and caregivers well (n=2) • Comprehensive history, including history of overdose, past or current history of substance use disorders (n=3) • Screen for presence of current or past substance use disorder (n=1)

					<ul style="list-style-type: none"> • Home care involvement (n=1) • Not certain (n=1)
3	2	What questions would you ask caregiver(s) when taking this comprehensive history?	Taking a comprehensive substance use history is recommended for assessing caregiver(s) for aberrant opioid medication taking behaviors, opioid use disorder and opioid overdose. Rate your level of agreement with this statement. <i>Agree or Strongly agree</i>	0	0
4	2	Please specify why.	Based on the Delphi Round 1 questionnaire responses, the following opioid prescribing practices for patients receiving care in outpatient palliative care clinics or home palliative care visits were recommended: <i>See Table 6</i> . Do you agree with the above recommendations? <i>No.</i>	3	<ul style="list-style-type: none"> • Not sure about the maximum one month supply. Low risk stable patients could receive longer prescriptions • "High risk" for aberrant opioid behaviors defines a wide range of individuals. Some of these individuals may be able to handle monthly prescriptions. • Groups practice together and need to have shared prescribing responsibilities. They can't see stable patients once a month, and don't need to.
5	1	How often should pill counts be performed?	Clinicians should perform regular pill counts to ensure compliance with instructions for opioid use and detect under- or over- use. <i>Agree or Strongly agree</i>	14	<ul style="list-style-type: none"> • Random (n=3) • Depends on patient (n=1), situation (n=2) • Regularly: Every visit (n=3), weekly (n=1), every two weeks (n=1), monthly (n=1), before new prescriptions (n=1)
6	2	Please specify.	Based on the Delphi Round 1 questionnaire responses, the following strategies were recommended for opioid safety education for patients receiving opioid prescription: <i>See Table 3, Items 114-118</i> . Do you agree with the above recommendations? <i>No.</i>	0	0