Self-Reported Practices in Opioid Management of Chronic Non-Cancer Pain: A Survey of Canadian Family Physicians

by

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DEDICATION

This thesis is dedicated to all the human and non-human animals that endure chronic pain and those who try to relieve their suffering.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Abstract

Chronic non-cancer pain (CNCP) affects approximately 25% of Canadians. Opioids are medications frequently prescribed for management of patients with CNCP. Concern about addiction, misuse, and diversion for illicit use led the Canadian medical regulatory bodies to release a national guideline on the safe and effective use of opioids in CNCP. This thesis used an online survey to determine how closely the self-reported practices of Canadian family physicians matched the recommendations of the Canadian Guideline. We received 710 responses suitable for analysis. Thirteen percent of respondents did not prescribe strong opioids for CNCP. Practice gaps indentified were infrequently using a management agreement and monitoring pain with a scale; incorrect choice of second line opioid for mild to moderate pain; incorrect choice of first, second, and third line opioids for severe pain, and starting fentanyl incorrectly. Findings provide baseline information for future follow-up to compare physicians' adherence to the guideline.

LIST OF ABBREVIATIONS USED

CI	Confidence interval
CIHR	Canadian Institutes of Health Research
CNCP	Chronic non-cancer pain
DDD	Defined daily dose
MEQ	Milligrams morphine equivalent
NOUGG	National Opioid Utilization Guidelines Group
OR	Odds ratio
RCT	Randomized controlled trial
Rxs	Prescriptions
SMD	Standardized mean difference
UDS	Urine drug screening

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CHAPTER 1 INTRODUCTION

Summary and Statement of Need

Chronic non-cancer pain (CNCP) is a major health problem affecting approximately 25% of Canadians.[1] Opioids are medications that are frequently prescribed to decrease pain and improve function in patients with CNCP.[2]

Opioids are sometimes classified into “weak” and “strong” depending on their analgesic properties.[3,4] Opioids regarded as weak include codeine, tramadol, propoxyphene, pentazocine, and meperidine. Opioids regarded as strong include morphine, oxycodone, hydromorphone, oxymorphone, fentanyl, and methadone.

While evidence for long-term efficacy of opioids in treatment of CNCP is weak, over the past several years there has been a trend of increased prescribing of opioids, particularly oxycontin and fentanyl. This trend has been noted in several countries[5-7] including the United States[8] and Canada[9] and has been accompanied by an increase in reported opioid abuse and deaths.[9-12] Addiction, misuse, and diversion for illicit use are also a concern with opioids.

Problems with addiction, misuse, and diversion have in some cases led to disciplinary action being brought against physicians by provincial licensing colleges. Several of these colleges have developed clinical practice guidelines to help address these issues and optimize the use of opioids in chronic non-cancer pain. However these guidelines are of varying quality; some are not referenced, some are outdated, and many do not provide levels of evidence for recommendations.[13-15] In 2007, the Canadian medical regulatory bodies formed the National Opioid Use Guideline Group (NOUGG). NOUGG has developed an evidence-based national “Guideline for the Safe and Effective Use of Opioids for Chronic Non-Cancer Pain” that was released in early 2010.[17] The Canadian Guideline provides a consistent, evidence-based approach to managing CNCP patients with opioids.

However, creating and disseminating a guideline does not ensure that it will improve practice[18] and several studies have shown sub-optimal adherence to guidelines in management of pain.[19-21] The process of putting evidence (such as from a guideline) into practice is known as knowledge translation. According to the Canadian Institute of Health Research, (CIHR) knowledge translation activities should be monitored and evaluated.[22]

In accordance with the CIHR recommendation, NOUGG wanted to determine if release and implementation of its guideline affects physicians' prescribing of opioids in CNCP, necessitating some knowledge of physicians' current practices. Several Canadian and American surveys have found that approximately 30% of family physicians do not prescribe opioids for CNCP.[23-25] Family physicians are more cautious with prescribing strong opioids than weak opioids.[24,26] Factors affecting the likelihood of prescribing opioids include concerns about misuse, dependence, and addiction[1,23,27-29] and to a lesser extent, concerns about regulatory scrutiny.[23,27] There is little data on opioid-prescribing practices of Canadian family physicians, being limited to a total of 219 respondents in 3 studies.[1,23,26] This thesis addresses NOUGG's need by surveying family physicians across the country about their current opioid prescribing practices in CNCP. The survey can be repeated in a few years to see if prescribing practices have changed. Canadian family physicians have expressed a desire for an up-to-date guideline on opioid prescribing[23,27] which supports the approach taken by NOUGG.

The overall objective of the survey, and this thesis, was to determine how closely family physicians' knowledge and practices in prescribing opioids for chronic non-cancer pain are consistent with the Canadian Guideline.

The research questions driving this thesis were:

1. How consistent with the Canadian Guideline are family physicians'
    a. Practices in prescribing opioids for CNCP?
    b. Knowledge about prescribing opioids for CNCP?
2. What factors (e.g., scales to assess pain intensity and function, patient education material) enable family physicians in following the Canadian Guideline?
3. What are the barriers (e.g., lack of time, inadequate knowledge, concern about misuse of opioids) to family physicians following the Canadian Guideline?
4. What are the characteristics (e.g., years in practice, training in pain management, number of patients seen per week) of family physicians whose self-reported practices closely match the recommendations of the Canadian Guideline?

The survey was administered by Opinio, on online questionnaire program made available through Dalhousie University. Regulatory colleges and continuing medical education offices across the country agreed to inform physicians in their areas about the

survey. These organizations distributed information and links to the online survey by fax, postal newsletters, emails, and electronic newsletters. Results were analyzed to determine the relationship between physician characteristics and opioid prescribing practices. For dissemination, I will work with the guideline group to distribute findings to its constituents, present findings at academic meetings, and submit a manuscript for peer-reviewed publication.

National Opioid Utilization Guideline Group (NOUGG)

Chronic non-cancer pain (CNCP) is a major health problem affecting approximately 25% of Canadians.[1] Opioids are medications that are frequently prescribed to decrease pain and improve function in patients with CNCP.[2] Evidence for long-term efficacy of opioids in treatment of CNCP is lacking[3] and addiction, misuse, and diversion for illicit use are a concern with opioids.

Problems with addiction, misuse, and diversion have in some cases led to disciplinary action being brought against physicians by provincial licensing colleges. Several of these colleges have developed clinical practice guidelines to help address these issues and optimize the use opioids in chronic non-cancer pain. However these guidelines are of varying quality; some are not referenced, some are outdated, and many do not provide levels of evidence for recommendations[13-15]. In 2007, the Canadian medical regulatory bodies formed the National Opioid Use Guideline Group. NOUGG developed an evidence-based national "Guideline for the Safe and Effective Use of Opioids for Chronic Non-Cancer Pain" that were released in early 2010.[17] This Canadian guideline provides a consistent, evidence-based approach to managing CNCP patients with opioids.

To produce the guideline NOUGG created a research team that searched the literature, extracted data, and synthesized evidence into proposed practice recommendations. A national advisory panel reviewed the synthesized evidence and developed consensus on the proposed recommendations. A national faculty is developing learning objectives and implementation strategies to promote safe and effective use of opioids for chronic pain.[30]

NOUGG wants to determine if release and implementation of its guideline affects physicians' prescribing of opioids in CNCP which requires some knowledge of physicians' current practices. This thesis addresses NOUGG's need by surveying family physicians across the country about their current opioid prescribing practices in CNCP.

The survey can be repeated in approximately two years to see if prescribing practices have changed. A letter of support from NOUGG is in Appendix A.

Definition, Prevalence, and Burden of Chronic Non-cancer Pain

Chronic pain is difficult to define and definitions vary, but a useful definition comes from the American Society of the Interventional Pain Physicians:[2]

- "Pain that persists beyond the usual course of an acute disease or a reasonable time for any injury to heal that is associated with chronic pathologic processes that cause continuous pain or pain at intervals for months or years.
- Persistent pain that is not amenable to routine pain control methods."

A question then is what constitutes a "reasonable time?" While this may vary from one condition to another, three months[31] and six months[1,24,32] are commonly used in definitions of chronic pain.

Types of non-cancer pain include nociceptive pain (osteoarthritis, rheumatoid arthritis, back pain without radiculopathy) neuropathic pain (diabetic neuropathy, postherpetic neuralgia, phantom limb pain) fibromyalgia,[3] and headache.[2]

Estimates of pain prevalence vary which may reflect differences in methods of data collection (e.g., estimates from physicians or from surveys of the general population) and definitions of chronic pain (e.g., < or ≥ three months or ≥ six months duration). Surveys of the general population will provide more accurate estimates of prevalence than physician estimates of the numbers or percentages of chronic pain patients in their practices. Furthermore, when considering prevalence of a chronic condition, it makes little sense to consider pain lasting less than three months. Therefore, I report studies that collected data from the general population and defined chronic pain as being present for at least three months.

Verhaak et al conducted a systematic review consisting of 15 studies. Considering only the five studies using public surveys and defining chronic pain as lasting ≥ three months, estimates of prevalence of chronic pain ranged from 7% (Britain 1991) to 40% (Sweden 1989).[33]

A World Health Organization study found that the percentage of persons visiting primary care physicians for chronic pain in 14 countries ranged from 5.5% in Nigeria to 33% in

Chile.[34] Patients were assessed with questionnaires and interviews so data collection was rigorous. This study did not differentiate cancer from non-cancer pain and focused on patients visiting primary care clinics rather than the general population. Therefore, these estimates would tend to be higher than the percentage of CNCP in the general population.

A telephone survey of the general population in 15 European countries and Israel also found wide variation in the prevalence of chronic pain (duration ≥ 6 months).[35] The prevalence was lowest in Spain (12%) and highest in Norway (30%). There was some variation within individual countries e.g., in Italy the prevalence was greater than 32% in the north and less than 22% in the south.

A 2000 Danish study using face-to-face interviews of 10,066 persons found 19% had pain lasting at least 6 months. Twelve percent of those with chronic pain took opioids.[36] In Canada, a 2004 telephone survey conducted by Ipsos Reid (N = 1005; response rate 20%) found that 25% of respondents had CNCP lasting at least six months. The rate was lowest in Quebec (16%) and highest in the Atlantic provinces (36%).[1] In Australia, a 1997 telephone survey (N=17,543; response rate 71%) found that 20% of females and 17% of males reported experiencing pain lasting at least three months.[31]

The increased prevalence in females compared to males has been found in other studies (Canada 27% *vs*. 22%[1] and overall in 14 countries 25% *vs*. 16%[34]). The wide variation in chronic pain in various geographic areas in the above studies indicates that culture affects the prevalence of chronic pain.

There are, of course, limitations to telephone surveys. For example, there may be response bias in which those with chronic pain are more likely to respond. Also, telephone surveys exclude the cognitively impaired, nursing home residents, and people not listed in telephone directories. Women are more likely to answer the telephone and more willing to participate in a survey than men. There is a greater likelihood that an older person is at home and uses a landline.[35] Finally, people with chronic pain may be more likely to be at home because of disability or mobility problems.

Summary and Implications for Project

Definitions of chronic pain vary and we considered this when designing the survey. The prevalence of chronic pain varies widely between and within countries including Canada where there is a two-fold difference in the lowest and highest estimates of chronic pain.[1] This variation may lead to different practices in managing chronic pain in different geographic areas. However, due to lack of adequate responses from different jurisdictions, it was not possible to make regional comparisons.

Role of Opioids in Management of CNCP

There are many treatments available for the management of CNCP including physical therapy, massage, anesthetic procedures, group education, cognitive-behavioral psychotherapy, acupuncture, non-prescription drugs such as acetaminophen and non-steroidal anti-inflammatory medications, and prescription drugs such as anti-depressants, anti-epileptics, and finally opioids.[2,35]

The following information about the mechanism of action of opioids is excerpted from Nicholson 2003.[37]

> Opioids mediate their actions by binding and activating endogenous opioid receptors that comprise part of a pain-modulating pathway that descends from the midbrain to the spinal cord dorsal horn. “Opioid receptors and endogenous opioid peptides have also been identified in the peripheral nervous system.”
>
> “Opioid receptors consist of three subtypes: μ (mu), δ (delta) and κ (kappa). Most opioid drugs, for which morphine is the prototype, are relatively selective for μ receptors. These drugs are full agonists” and through their stimulation of μ receptors produce analgesia, “affect mood and rewarding behaviour, and alter respiratory, cardiovascular, gastrointestinal, and neuroendocrine functions.”
>
> “Full agonists have no ceiling to their analgesia. Analgesia increases with increasing dose until adequate pain control is achieved or dose-limiting adverse effects occur. In practice, this requires dose titration to achieve a balance between acceptable analgesia and adverse effects.”

Opioids are sometimes classified into “weak” and “strong” depending on their analgesic properties.[3,4]

- Opioids regarded as weak include codeine, tramadol, propoxyphene, pentazocine, and meperidine.
- Opioids regarded as strong include morphine, oxycodone, hydromorphone, oxymorphone, fentanyl, and methadone.

In the United States, opioids and other drugs are classified by the Drug Enforcement Agency according to their potential for addiction (Table 1).[2] Generally, commonly used weak opioids are Schedule III or IV; commonly used strong opioids are Schedule II. In addition, weak and strong opioids are formulated into short-acting and long-acting or controlled-release preparations. Short-acting preparations, generally effective for four to six hours, are used for episodes of acute pain, and in chronic pain, for exacerbation and breakthrough pain. Long-acting preparations are formulated to provide release of the drug over approximately 12 hours. These preparations are generally more expensive than short-acting preparations.

Most guidelines follow the World Health Organization pain ladder approach to drug therapy for managing chronic pain. Although the pain ladder was developed for cancer pain, it is also applicable to non-cancer pain. The ladder consists of three steps with weak opioids being on step 2 and strong opioids on step 3:[38]

Step 1: nonopioid analgesics (aspirin and acetaminophen)

Step 2: mild opioids

Step 3: strong opioids

At each step additional or “adjuvant” drugs such as anti-depressants or anti-epileptics may be used as appropriate. Non-pharmacological modalities such as physical therapy, massage therapy, exercise, and electro-stimulation are also used as appropriate but are not the subject of this project.

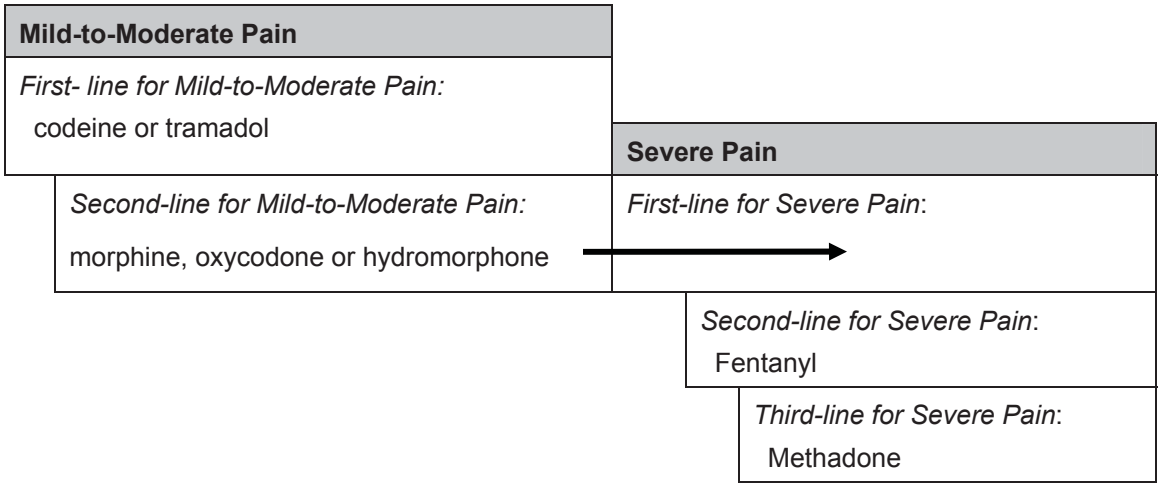
The Canadian Guideline assumes the decision has been made to start treatment with opioids. In mild to moderate pain, codeine or tramadol are recommended as first-line therapy and morphine, oxycodone, or hydromorphone as second-line therapy. For severe pain, morphine, oxycodone, or hydromorphone are recommended as first-line therapy, fentanyl as second-line therapy, and methadone as third-line therapy (Figure 1).[17]

Table 1 Schedule of controlled substances[2]

Schedule	Criteria	Examples
I	No medical use, high addiction potential	Heroin, marijuana, PCP
II	Medical use, high addiction potential	Morphine, oxycodone, methadone, fentanyl, amphetamines
III	Medical use, moderate addiction potential	Hydrocodone, codeine, anabolic steroids
IV	Medical use, low abuse potential	Benzodiazepines, meprobamate, butarophanol, pentazocine, propoxyphene
V	Medical use, low abuse potential *vs.* schedule IV	Buprenex, phenergan with codeine

PCP, phencyclidine.

Figure 1 Summary of First-, Second-, and Third-Line Opioids from Canadian Guideline[17]



The use of opioids in CNCP is generally accepted practice.[2] However, the evidence for long-term benefit of opioids in CNCP is limited. When assessing the evidence for long-term use of opioids in CNCP it is important to consider benefits in terms of pain reduction and improvement in function, and harms in terms of short and long-term adverse effects.

For benefits, it is also important to distinguish between statistically significant improvement and clinically significant improvement. A reduction in pain may be statistically significant but not large enough to be perceived by the patient. For example a study may show a decrease in mean pain score of 2 on a 0 to 10 point scals. If the baseline pain score was 9, the percent improvement would be 2/9 = 22%. If the sample size was large enough, this could be statistically significant but not necessarily clinically signficant. The minimum difference that can be perceived by a patient is called the minimally important clinical difference.

- For pain relief, various visual analog or numerical scales are used and the minimally important clinical difference is a pain relief of 30%.[39]
- For function, the 24-point Roland Disability Questionnaire is a widely used validated tool. The minimally important clinical difference is three to five points.[39]

A recent meta-analysis of the benefits and harms of opioids in treatment of CNCP reviewed 41 randomized controlled trials.[3] The longest trial was 16 weeks. In the opioid groups an average of 33% of subjects withdrew, 15% because of inadequate pain relief and 21% because of side effects. In the control groups 38% of subjects withdrew, 30% because of inadequate pain relief and 10% because of side effects. Compared to placebo, opioids showed benefit in pain relief (standardized mean difference (SMD) -0.60 [95% CI -0.69 to -0.50]) with a lesser benefit in function (SMD -0.31 [95% CI -0.41 to -0.22]).[i] Adverse effects were more common with opioids than placebo with risk differences for the adverse effects being: constipation 16%; nausea 15%; dizziness 8%; drowsiness 9%; vomiting 5%; dry skin 4%.

Compared to other drugs (non-steroidal anti-inflammatories, tricyclic antidepressants) opioids showed no statistically significant benefit in pain relief. A sensitivity analysis found benefit with strong opioids in pain relief (SMD -0.34 [95% CI -0.67 to -0.01]). Other

[i] Standardized mean difference is calculated by dividing the differences in mean values at the end of treatment across treatment groups by the pooled standard deviation. Differences can be categorized as small (SMD = 0.2), moderate (SMD = -0.5), or large (SMD = -0.8).[40]

drugs provided more benefit in function compared to opioids (SMD 0.16 [95% CI 0.03 to 0.30]). This analysis was driven by one large study of propoxyphene (a weak opioid) *vs*. diclofenac[77] but a small study (N=64) showed no difference in controlled release morphine (a strong opioid) compared to nortriptyline.[78] Adverse effects were more common with opioids than other drugs with risk differences for the adverse effects being: nausea 14%; constipation 9%; and drowsiness 6%.[3]

Two Cochrane reviews have confirmed that opioids provide benefit in pain relief compared to placebo for osteoarthritis[40] and low back pain.[39] However, results regarding improved function were inconsistent. There was benefit for osteoarthritis[40] but not for low back pain.[39] No benefit was found in pain relief or function compared to other drugs.[39] Adverse effects such as headache, drowsiness, constipation, and dizziness were more common with use of opioids.[39] Of note, studies in these reviews were of low methodological quality with high dropout rates and lack of intention-to-treat analysis, which may overestimate the treatment effect.

To develop its guideline, NOUGG carried out an updated systematic review and meta-analysis of the efficacy of opioids for CNCP. The systematic review has not yet been published in the peer-reviewed literature but the guidelines provide some key findings.[17] Compared to placebo, the overall effect size for improvement in pain was moderate (0.58 [95% CI 0.48 to 0.67]). The improvement in function was small to moderate (0.34 [95% CI 0.25 to 0.43]). These effect sizes were similar for nociceptive pain and osteoarthritis and for neuropathic pain.

Summary and Implications for Project

There is evidence that opioids provide clinically significant benefits in long-term pain relief and improved function compared to placebo. There is little evidence of benefit from opioids compared to other medications in either pain relief or improved function though strong opioids may provide benefit in pain relief. Adverse effects are more common with opioids than with other drugs. However, it should be noted that there are few studies comparing opioids to other medications. Most studies are placebo-controlled.

These findings, if known by physicians, may make them less likely to prescribe opioids in CNCP. Therefore, we have included questions about evidence for the efficacy of opioids in the survey.

Trends in Opioid Utilization

There has been a general trend towards increase in opioid utilization in many countries. There is also wide variation in geographical areas. Most published data is from the United States.

Braden et al[41] examined opioid utilization from two large databases in the United States – Arkansas Medicaid (N=127,866) and HealthCore, a private health care network that provided data from five states in the US West, Mid West, and South East regions (N=3,768,223). Between 2000 and 2005, the use of Schedule III and Schedule IV opioids (low to moderate addiction potential) was stable at 1500 to 4100 morphine equivalents per patient per year depending on the site of pain and the population. However, use of short acting Schedule II drugs (high addiction potential) increased by about 100% to 285%, again depending on the site of pain and the population.

Franklin et al[42] examined the administrative database of the Washington State Department of Labour and Industry that insures approximately 1.2 million workers. Between 1996 and 2002, prescriptions for Schedule III opioids increased only slightly while those for Schedule IV opioids decreased slightly. However, prescriptions for Schedule II opioids increased 2.5 fold, from 23,000 annually to 57,000 annually. As a percent of all scheduled opioids (II–IV), Schedule II prescriptions doubled from 19% to 37%.

Brixner et al[43] examined opioid expenditures and utilization in Medicaid beneficiaries nationally and in seven US states. Between 1998 and 2003, the number of Medicaid beneficiaries in the US increased 31% while the expenditure on opioids increased almost 300% from $311 million to $1.2 billion. Nationally, the number of prescriptions for morphine derivatives doubled from 10.5 million to 21.5 million and the number of prescriptions for fentanyl tripled from 0.5 million to 1.5 million. There was wide variation in the amount of opioids prescribed among the seven states. For example, in 2003 in California and New York the number of opioid units prescribed per beneficiary per year was 18 and 30 respectively. The corresponding figures for Utah and Tennessee were 67 and 64 units respectively. Of note, California and New York both have state-mandated special prescription programs for opioids.

Zerzan et al[8] examined state-level opioid utilization data for Medicare and Medicaid from all US states between 1996 and 2002. The authors looked at the utilization trends for various opioids compared to a "market-basket" of non-opioid index drugs (albuterol, allopurinol, potassium chloride, levothyroxine, and trimethoprim/sulfamethoxizole). Measurements were given as "defined daily doses" (DDD) per 1000 persons per day. Between 1996 and 2002, the national overall increase in prescribing of all opioids was 309%; controlled release oxycodone was 1615%; methadone was 790%; the market basket of drugs was 170%. There was also remarkable variation in the amount of opioid utilization among states. In 2002, opioid dispensing ranged from 7.1 to 165 DDD/1000 persons/day, a 23-fold difference.

The trend for increasing utilization has also been found in Europe. In a study of five Nordic countries, Hamunen found that between 2002 and 2006 opioid consumption increased in all countries except Sweden. The use of morphine and propoxyphene decreased in all countries while the use of fentanyl and oxycodone increased in all countries.[5] Similar trends were also found in Slovakia[6] and Spain.[7]

Information about the opioid utilization in Canada is not as robust as in other countries.[44] However, there is some evidence that opioid utilization is increasing here too. Between 2000 and 2004, use of prescription opioids increased by 50%.[12] Dhalla reported that in Ontario, opioid prescriptions increased by 29% from 1991 to 2007. During this period, codeine prescribing decreased while oxycodone prescribing increased by over 850%, from 23 prescriptions per 1000 persons to 197 per 1000 persons.[9] The Canadian Rx Atlas[45] provides information on costs of opioids purchased through pharmacies in Canada from 1998 to 2007. During this time, the age-standardized annual increase in costs was 7.0% for Canada and ranged from 4.6% in Nova Scotia and British Columbia to 12% in Saskatchewan. The increases in costs were driven by increased volume of prescribing and selection of more expensive drugs rather than in increase in the price of the drugs. This report does not provide data for individual opioids or classes of opioids. According to the International Narcotics Control Board, Canada was the third largest per capita consumer of opioids in 2007.[46]

There are some limitations when trying to assimilate results of the above studies. Only two studies, Braden[41] and Franklin,[42] addressed opioid utilization in CNCP. Other studies report utilization of opioids generally and sometimes included inpatient as well as outpatient use, acute and chronic use, and use in cancer and non-cancer pain. Also,

comparisons between countries in the above studies should be done with caution since studies use different databases and report different opioids.

Bearing in mind these limitations, there are some consistent observations:

There is wide variation in utilization of opioids in different geographic areas. This is best exemplified by the American studies that examined Medicaid databases from different states.[8,43] Zerzan found a 23-fold difference in opioid dispensing between the lowest prescribing state and the highest prescribing state.[8] A similar study found that in 2002, 0.9% of all outpatient prescriptions were for Schedule II opioids while in Maryland the percentage was 11.4%.[47] This wide variation raises questions about quality of care.[8]

There is increased use and cost of opioids with an increase in strong opioids,[41,42] particularly fentanyl[5-7] and oxycodone[5,8] accounting for much of the increases. Since these drugs offer no clinical benefit over other opioids, the increases may be the result of marketing.[5,7,8] The other driver behind increasing opioid utilization is prescribing for more people.[43,45]

Economically disadvantaged areas show a higher utilization of opioids than wealthy areas.[41] While only one of the above studies reported this finding, it has been found elsewhere.[48]

Implications for Project

Respondents may have a preference for prescribing oxycodone and fentanyl. For fentanyl, prescribing practices may not be in keeping with the Canadian Guideline recommendation that it be reserved for second-line therapy in severe pain.

Misuse of Opioids Associated with Increased Utilization

A concern with the increased availability and utilization of opioids is the potential for misuse and serious adverse events such as overdose and death. Much of the information about this topic comes from the United States.[12] An ecological study examined the relationship between commercial distribution of 10 opioids and drug poisoning deaths from opioids in all 50 American states.[49] There was marked variation in amount of opioids sold ranging from 21,199 to 79,831 morphine equivalents per 100,000

population. There was a high correlation between the total morphine equivalents sold and the drug poisoning mortality rates ($r=0.73$, $p<0.001$) with the correlations being highest for oxycodone ($r=0.68$, $p<0.001$) and methadone ($r=0.66$, $p<0.001$). In Utah, deaths from non-methadone opioids increased from 10 deaths per year (from 1991 to 1998) to 48 per year (1999 to 2003). Interestingly, the death rate was higher in overweight and obese individuals.[50]

Another American study examined the relation between the amounts of opioids distributed at the retail level to the numbers of visits to emergency departments for drug abuse.[51] Between 1997 and 2002 distribution of oxycodone increased by 383% while the number of abuse episodes increased by 345%. The corresponding numbers for fentanyl were 214% and 642% and for hydomorphone were 89% and 342%. While these are large percentage increases, opioids were associated with only 0.2% to 1.9% of drug abuse episodes, much lower than other drugs (cocaine 16%, marijuana 10%, heroin 8%). The authors also point out that while the misuse of opioids is a concern, non-steroidal anti-inflammatory drugs, another form of analgesic, are responsible for 16,500 deaths annually.[51]

As noted above, Dhalla found a marked increase in utilization of opioids, particularly oxycodone, in Ontario between 1991 and 2007.[9] Following the addition of controlled release oxycodone to the provincial formulary in 2000, there was a marked increase in the number of prescriptions and amount of drug per prescription for this agent. Between 1999 and 2004, the number of opioid-related deaths increased by 41% while the percent of oxycodone-related deaths increased by 416%. The reasons for the apparent excess of oxycodone-related deaths are not obvious since it is not known to be more addictive or dangerous than other opioids.[9] Complicating interpretation of these data is the fact that 92% of deaths involved at least one central nervous system depressant, such as benzodiazepines, alcohol, and cyclic anti-depressants.[9]

Summary and Implications for Project

There appears to be an association between increased utilization of opioids and abuse and death. It is less certain if prescribed opioids are solely responsible for the increase in deaths; illicit opioid sources may also contribute. Nevertheless, it is prudent that physicians prescribe opioids judiciously, for conditions that have been shown to respond to these drugs, and with appropriate cautions for patients at risk of abusing them. The Canadian guideline devotes a whole section to managing opioid misuse and addiction. While it is beyond the scope of this thesis to completely address physicians' practices in this area, we did explore some aspects suggested by Dhalla such as urine drug screening, and interaction between opioids and other central nervous system drugs.[9]

Previous Surveys of Family Physicians on Opioid Prescribing

The literarture search revealed 11 recent studies reporting attitudes and practices of family physicians in regard to opioid prescribing for CNCP. Four were Canadian,[1,23,26,27] five were from the United States,[24,25,28,52,53] and two were from the United Kingdom.[29,54] Sample sizes, methods, and response rates varied widely. The largest study had 1912 respondents but this represented only a 27% percent response rate and included physicians other than family physicians (surgeons, rheumatologists, neurologists, general internists, orthopedic surgeons, and rehabilitation specialists). The numbers of each type of physician responding were not reported.[28] The next largest study (family physicians in Ontario) had 658 respondents, a 66% response rate.[27] While current, methodologically sound, and Canadian, this study addressed physicians' attitudes towards using opioids for CNCP but not their practices. The smallest study involved 31 family physicians and 14 nurse practitioners (response rate 85%) and explored their attitudes toward prescribing opioids for US veterans suffering from chronic pain.[52] The lowest response rate was a Canadian telephone survey in which 2545 Family physicians were contacted to obtain 100 respondents (response rate 4%).[1]

A consistent finding in the surveys was that approximately 30% of physicians do not prescribe opioids for patients with CNCP.[23-25,29] Family physicians were more confident in prescribing weak than strong opioids. A telephone survey of 49 family physicians from

Calgary found that 97% of respondents would handle mild opioids like codeine with acetaminophen by themselves. For the strong opioids morphine and oxycodone, 84% said they would handle by themselves while about 7% said they would seek advice from a specialist. For dilaudid and fentanyl, two other strong opioids, 20% and 30% of respondents respectively would seek advice from a specialist.[26] In a study of California primary care physicians, 98% expressed willingness to prescribe low-potency opioids on an as-needed basis, but 35% said they would never prescribe high potency opioids around the clock even after exhaustive evaluation and attempts at treatment.[24]

The most consistently reported barrier to prescribing opioids was concern about addiction.[1,23,27-29] Concerns about misuse and dependence were closely correlated with concerns about addiction and were sometimes considered along with addiction as a single variable.[24,28] In the largest and most recent Canadian study, 71% of respondents were somewhat or very concerned about addiction and misuse when prescribing opioids.[27] Concern over regulatory scrutiny was less of a concern in most studies. A telephone survey of Canadian family physicians found that only 17% were concerned about regulatory scrutiny[23] while a large survey of Ontario family physicians found that 37% were somewhat or very concerned.[27] These same two studies reported that approximately 70% of respondents indicated up-to-date guidelines would help them in their practice.[23,27] The largest and most recent survey found that 72% of family physicians wanted continuing education on opioid prescribing.[27]

Summary and Implications for Project

Several studies indicate that approximately 30% of family physicians do not prescribe opioids for CNCP.[23-25,29] They are more cautious about prescribing strong opioids than weak opioids.[24,26] Since opioids are an accepted treatment for CNCP, a substantial percentage of family physicians are not providing optimal care.

Factors affecting the likelihood of prescribing opioids include concerns about misuse, dependence, and addiction[1,23,27-29] and to a lesser extent, concerns about regulatory scrutiny.[23,27] Therefore we explored the effect of these factors on opioid prescribing practices in this survey. There is little data on opioid prescribing practices of Canadian family physicians, being limited to a total of 219 respondents in three studies, emphasizing the need for a large national survey. The desire for an up-to-date guideline supports the approach being taken by NOUGG.

Implementation of Guidelines and Knowledge Translation

It is one thing to create a guideline. It is quite another to disseminate it widely and have health professionals implement its recommendations.[18] A simplistic way to view guideline implementation is to think that educating health professionals about it will lead to adoption of the recommendations. Several studies have shown physicians' practices are not uniformly consistent with guideline recommendations and that uptake of guidelines involves more than education.[20,21,55]

A study of prescribing of controlled-release versus immediate-release opioids in chronic pain found that 85% percent of prescriptions were for immediate-release preparations compared to 15% for controlled-release.[21] At the time of the study (2003 to 2006) guidelines recommended use of controlled-release formulations. A number of factors besides lack of knowledge of guideline recommendations may have affected prescribing. Ninety percent of immediate-release prescriptions were for combination products for which no controlled-release formulation was available. These combination products include Schedule III and Schedule IV drugs for which there are fewer prescribing regulations than for controlled-release preparations which are Schedule II. Therefore, it is more convenient for physicians to prescribe the combination products. Also, controlled-release formulations are more expensive than immediate-release drugs. Finally, subsequent guidelines (2009) found there was insufficient evidence to recommend controlled-release preparations over immediate-release ones[56] so perhaps physicians were aware of the uncertainty of the recommendation.

Patients in nursing homes may have a high prevalence of musculo-skeletal pain because of their age. Based on chart reviews and interviews with patients, Decker et al found that 33% of nursing home residents who reported daily pain were not receiving any analgesics.[20] Fifteen percent of patients were prescribed propoxyphene which is not recommended for treatment of chronic pain. However, the most commonly prescribed analgesic was acetaminophen (56% of residents) which is the recommended first line treatment for chronic musculoskeletal pain.[20]

A successful example of a guideline introduction comes from treatment of acute dental pain in emergency departments.[19] Opioids are not first line therapy for acute dental pain. After introduction of guideline on management of dental pain, the percent of patients

treated with an opioid decreased from 29.6% (95% CI 28.1% to 31.2%) to 9.5% (95% CI 8.5% to 10.8%). A contributing reason for this improvement is that this was a simple change to make, involving only one short-term uncomplicated clinical condition rather than a complex long-term condition requiring many steps.[57] In contrast, management of CNCP may involve long-term consideration of not only the painful condition but psychosocial factors such as depression, return to work, litigation, and financial hardship.

Barriers to implementing guidelines may include factors such as organizational structure, resources available, policies, and social acceptability. A systematic review[58] of studies that evaluated barriers to physicians' implementation found that the credibility of the authors was the most commonly reported barrier (85% of respondents). However, this came from only one study. The next most frequently perceived barrier was that patients don't appreciate the need for the recommendations (median 70% of respondents). Lack of agreement with interpretation of the evidence in the guideline was a barrier for a median 68% of respondents. Lack of awareness of an existing guideline and lack of knowledge of the contents of the guideline were also among the most common barriers (median 65% and 57% of respondents respectively). Other commonly reported barriers were lack of reminder systems, lack of educational materials, and lack of reimbursement.[58]

The overall process of putting evidence into practice and addressing barriers is often called knowledge translation, defined by the Canadian Institute of Health Research as a "dynamic and iterative process that includes **synthesis, dissemination, exchange,** and **ethically-sound application of knowledge** to improve the health of Canadians, provide more effective health services and products and strengthen the health care system."[22]

Synthesis refers to "contextualization and integration of research findings of individual research studies within the larger body of knowledge on a topic".[22] The Canadian Guideline has accomplished this through a thorough review of the evidence about use of opioids in CNCP combined with extensive consultation with clinical experts to ensure the recommendations developed from the evidence are clinically relevant.

Dissemination includes "identifying the appropriate audience and tailoring the message and medium to the audience. Dissemination activities can include such things as summaries or briefings for stakeholders; educational sessions with patients, practitioners, and/or policy makers; engaging knowledge users in developing and

executing dissemination/implementation plans; creating tools; and engaging the media."[22]

This survey will help identify gaps between the guideline recommendations and physicians' practices so that educational interventions will have appropriate content. While a complete review of the evidence for effectiveness of educational interventions is beyond the scope of this thesis, the Rx for Change database developed by the Canadian Agency for Drugs and Technologies in Health reports that educational outreach, audit and feedback, opinion leaders, and computer aided decision support systems have generally been found effective in changing health professional practice. For others such as distribution of educational materials, reminders, and patient mediated strategies, results are mixed or good evidence is lacking.[59]

Exchange "refers to the interaction between the knowledge user and the researcher, resulting in mutual learning".[22] Usually knowledge users would be those using the guidelines and the researchers would be the Canadian guideline developers. The extent to which this exchange will take place will vary. For instance, there may be a lot of exchange if one of the guideline developers provides an educational event to clinicians who then give their views on the recommendations. There will be limited opportunity for exchange if the educational event is provided by someone not involved in developing the guidelines.

In this project, the knowledge user could be defined as the Canadian guideline developers and I could be defined as the researcher. Exchange between us will inform the development of further surveys and guidelines.

Ethically-sound application of knowledge requires that knowledge translation activities "are consistent with ethical principles and norms, social values, as well as legal and other regulatory frameworks".[22] This is particularly important in opioid prescribing since the medications have the potential for misuse and illegal diversion and are closely monitored in some provinces.

CIHR also specifies that knowledge translation initiatives, processes, and activities should be monitored and evaluated. Not mentioned in the CIHR description of knowledge translation is the need to consider the effect of organizational and system factors. For example, it is little use to recommend urine drug screening if testing is not available. And the presence of a provincial prescription monitoring program may make it

easier for physicians to manage opioid misuse. Finally, a recommendation to prescribe expensive sustained release preparations may be hard to implement for clinicians practicing in areas of low socioeconomic status. These are the types of barriers mentioned above by Cabana.[58]

A factor not mentioned in the previous studies or by CIHR is the possible confusing effect of different guidelines on the same topic. Many provincial colleges have developed recommendations on use of opioids in chronic pain. However, they are of varying quality and recentness. The New Brunswick guideline is not dated and has no references.[16] The Saskatchewan guideline is undated but the most recent reference is 1998.[13] The Ontario guideline is referenced and dated 2004 but focuses on methadone treatment for chronic pain.[14] By bringing together representatives of the provincial colleges, and ensuring an evidence-based approach, the Canadian guideline will provide consistent high-quality recommendations for use across the country.

A Canadian example of guideline implementation that follows the CIHR knowledge translation principles and shows the complexity of knowledge translation is the Canadian Hypertension Education Program.[60,61] The program has evolved over 30 years, now involves over 100 multidisciplinary, hypertension experts and many professional and scientific organizations, and includes most elements of the CIHR knowledge translation process. Synthesis is done by a Cochrane librarian and a central review committee composed of experts in evidence-based medicine. A variety of strategies are used to disseminate messages to family physicians, pharmacists, nurses, exercise physiologists, and specialists. To help address ethical issues such as industry influence, “pharmaceutical company representatives or executives have no input into the literature searches, interpretation of evidence, generation and approval of recommendations, or writing and approval of manuscripts”.[61]

For evaluation, CHEP developed an Outcomes Research Task Force in 2003.[62] It is noteworthy that while the program has evolved over 30 years, it is only within the last six years that this task force was created. This demonstrates the need for sustained effort and continuous improvement that knowledge translation requires. The task force includes members from academia, nongovernmental organizations, provincial governments, the Public Health Agency of Canada, and Statistics Canada. Recognizing the need for objective outcomes, the task force has advocated with Statistics Canada to collect population data on blood pressure levels and developed a protocol to measure

blood pressure for the Canadian Health Measure Survey. The task force has also worked with the Public Health Agency of Canada to analyze data from the National Population Health Survey, a questionnaire that asks respondents if they have been diagnosed with hypertension. Data on prescribing of antihypertensive medications has been obtained by working with IMS Health, Canada, a company that collects prescribing information from pharmacies across Canada. The task force also aims to ensure that recommendations are reaching the appropriate audiences in appropriate forms. For instance, it is developing a needs assessment to help tailor messages and media specifically for nurses, pharmacists, and family physicians, and to assess the usefulness of those products.

Summary and Implications for Project

Uptake of guidelines by physicians may not be optimal for a variety of reasons including lack of knowledge, lack of credibility, and organizational barriers. The experience of Canadian Hypertension Education Program illustrates the complexity of translating knowledge into recommendations and then into practice. The program has developed its processes over 30 years and has addressed most of the knowledge translation elements described by CIHR. In contrast, NOUGG is a newly formed organization that has had time to address only the synthesis element of the CIHR framework. NOUGG is now moving to the dissemination and evaluation elements. This survey provides baseline data on physicians' opioid prescribing practices that will serve two purposes: 1) Identifying gaps in practice and knowledge provides areas where dissemination strategies should be targeted. 2) It may also be possible to use the survey as a needs assessment for dissemination strategies at local levels.

Repeating the survey in a few years will help determine if there are changes in practice following implementation of the Canadian Guideline. This will be only self-reported data and should be triangulated with other data that may be obtained by working with groups such as Statistics Canada, the Public Health Agency of Canada, and IMS Health, Canada.

Objectives

The overall objective of the survey was to determine how closely family physicians' knowledge and practices in prescribing opioids for chronic non-cancer pain are consistent with the Canadian Guideline. There are 24 specific recommendations in the guideline covering five broad topics as follows.

- Deciding to initiate therapy
- Conducting a trial of opioid therapy
- Monitoring long-term opioid therapy
- Treating specific populations with long-term opioid therapy
- Managing opioid misuse and addiction

It was impractical to develop survey questions for every recommendation so I focused on the first three topics. Furthermore, the fourth and fifth topics are large enough they could require separate surveys. The Canadian Guideline recommendations are in Appendix B.

The main research questions of this thesis are:

1. How consistent with the Canadian Guideline are family physicians'
   a. Practices in prescribing opioids for CNCP?
   b. Knowledge about prescribing opioids for CNCP?
2. What are the barriers (e.g., lack of time, inadequate knowledge, concern about misuse of opioids) to family physicians following the Canadian Guideline?
3. What factors (e.g., scales to assess pain intensity and function, patient education material) enable family physicians in following the Canadian Guideline?
4. What are the characteristics (e.g., years in practice, training in pain management, number of patients seen per week) of family physicians whose self-reported practices closely match the recommendations of the Canadian Guideline?

CHAPTER 2 METHODS

Study Population

The study population was family physicians in the College of Family Physicians of Canada and in all the provinces and territories of Canada who manage patients with CNCP. The method of informing physicians about the survey (see data collection below) reached some physicians who were not in clinical practice or who did not see patients with CNCP. Therefore, the invitation and introduction to the survey specified that physicians who do not see such patients should not participate.

Study Design and Data Collection

The study design was an internet-based cross-sectional survey that used a survey program called Opinio hosted by Dalhousie University.[63] Opinio allows creation of various forms of closed-ended questions such as Likert scales, rankings, and matrices. It also allows room for open-ended comments. Given the nature of the physician population, the lack of a discrete sampling frame, and the varied methods employed to contact physicians, a convenience sample was obtained.

The survey is in Appendix C and consists of 29 closed-ended questions, some with opportunities for comments. The survey asked respondents whether they prescribe opioids for CNCP and if so, if they prescribe weak, strong or both types of opioids. The rest of the survey varied according to their responses:

- Those who do not prescribe opioids were asked about factors that influenced their decision not to do so, and some questions about their demographics and location of practice. They received a much shorter version of the survey than other respondents.
- Those who prescribe only weak opioids were asked about factors that influenced their decision to do so and then completed the rest of the survey as described in the next bullet point.
- Those who prescribe weak and strong, or only strong opioids were asked to indicate their practices before starting opioids and while monitoring their patients on opioids. They were also asked to indicate factors that would help them optimize their prescribing of opioids and for their first-, second-, and third-line choices of medication for mild/moderate pain and severe pain. Finally, they were

asked some knowledge questions and questions about their demographics and practice characteristics.

Survey questions that address the Canadian Guideline recommendations for the first three broad topics are summarized in Table 2. The survey was developed in collaboration with Dr Andrea Furlan, physiatrist and pain specialist at University of Toronto who did the evidence-based review for the Canadian guideline, and her resident Dr Oleg Tugalev. It was tested for face and content validity by members of the NOUGG advisory panel, pain specialists, and family physicians. I did not offer an incentive to respondents for completing the survey.

To inform family physicians about the survey, I enlisted the help of regulatory colleges and other organizations across the country. Because policies differ across the country, I did not have a consistent way of informing physicians about the survey. This led to divergent response rates across jurisdictions.

Methods of informing physicians in each jurisdiction are described in Table 3. In addition to the contacts listed in Table 3, most provincial colleges placed a link to the survey and brief description on their website. Emails confirming agreement to disseminate information about the survey are in Appendix D. The survey was accessible from March 30, 2010 to July 10, 2010.

Table 2 Survey questions that address Canadian Guideline recommendations

Cluster 1: Deciding to Initiate Opioid Therapy

No.	Recommendation	Question No
R01	Before initiating opioid therapy for CNCP, ensure documented comprehensive knowledge of the patient's 1) pain condition, 2) general medical condition and psychosocial history, 3) psychiatric status, and 4) substance use history. (Grade B and C).	6A,B,C 8A,B,E,F
R02	Before initiating opioid therapy for CNCP, consider using a screening tool to determine the patient's risk of opioid addiction. (Grade B).	6C, 8A,B
R03	When using urine drug screening (UDS) to establish a baseline measure of risk or to monitor compliance, be aware of benefits and limitations, appropriate test ordering and interpretation, and have a plan to use results. (Grade C).	6E,7D, 8C,D
R04	Before initiating opioid therapy for CNCP, consider the evidence of effectiveness in deciding to use opioids to treat patients with CNCP. (Grade A).	4B,G, 5B,G, 6L, 8G,H,I
R05	Before initiating opioid therapy for CNCP, ensure informed consent: explain the potential benefits, side effects, complications, and risks. (Grade B). A treatment agreement may be helpful, particularly for patients not well known to the physician or at higher risk for opioid misuse. (Grade C).	6F,G,H,J
R06	For CNCP patients on benzodiazepines, consider a trial of tapering, particularly for elderly patients. If a trial of tapering is not indicated or is unsuccessful, opioids should be titrated more slowly and at lower doses. (Grade B and C).	6I

Cluster 2: Conducting an Opioid Trial

R07	During an opioid trial titration, advise patients to avoid driving a motor vehicle: 1) until a stable dose is established and it is certain the opioid does not cause sedation 2) if taking opioids with alcohol, benzodiazepines, or other sedating drugs. (Grade B).	7L
R08	During an opioid trial, select the most appropriate opioid using a stepped-care approach and considering safety. (Grade C).	7E,F,G,H,I 9,10, 11C,D,E,FG,12, 13
R09	When conducting an opioid trial, start with a low dose, increase gradually, and monitor analgesic effectiveness until the optimal dose is attained. (Grade C).	7A,B,H, 11 H,J, 13

No.	Recommendation	Question No
R10	Most CNCP patients can be managed effectively with doses at or below 200 mg of morphine or equivalent per day (Grade A). Consideration of a higher dose requires careful reassessment of the pain problem and risk of misuse, and frequent monitoring with evidence of improved patient outcomes. (Grade C).	12
R11	When initiating an opioid trial for patients at higher risk of opioid misuse: 1) prescribe only for well defined somatic or neuropathic pain conditions 2) start with lower doses, titrate in small-dose increments, and 3) monitor closely for signs of aberrant drug-related behaviors. (Grade A, B and C).	6L, 7C,D

Cluster 3: Monitoring Long-Term Opioid Therapy (LTOT)

R12	In monitoring a patient on LTOT, ask about and observe for analgesic effectiveness, side effects and medical complications, and aberrant drug-related behaviours. (Grade C).	7A,B,C,D,E 8E,F,G
R13	For patients experiencing unacceptable side effects and/or insufficient analgesic effectiveness from one particular opioid, try prescribing a different opioid or discontinuing. (Grade B).	7F,G,H,I,J 8G
R14	In assessing safety to drive for patients on long-term opioid therapy, consider factors that could impair cognition and psychomotor ability, such as consistent severe pain rating, sleep disorder, and concomitant medications that increase sedation. (Grade C).	7L
R15[A]	For patients receiving opioids for a prolonged period who may not have had an appropriate opioid trial, take steps to ensure that LTOT is warranted and that the dose is optimal. (Grade C).	Included in other questions
R16	When referring CNCP patients for consultation, communication and clarification of roles and expectations between primary-care physicians and consultants is essential for continuity of care and effective and safe use of opioids. (Grade C).	

Table 3 Methods of informing family physicians of survey

Jurisdiction	Type of Contact	Organization	Number contacts	Number of family physicians[a]
BC	Quarterly print newsletter	CPSBC	1	5548
	Email via CME	UBC CME	1	
AB	E-bulletin	AMA	2	4395
	E-bulletin	U Calgary CME	1	
SK	E-mail	CPSS	1	1000
MB	Email	U Man CME	2	1053
ON	Email notice	CPSO	1	13741
QC	E-bulletin	CMQ	1	13000
	Print journal	CMQ	1	
NB	Print newsletter	CPSNB	1	930
PE	Email	CPSPE	2	119
NS	Email	CPSNS	2	1267
	Email	Dalhousie CME	1	
NL	Email	CPSNL	2	592
CFPC	E-bulletin	CFPC	2	11,000

a approximate number of family physicians in jurisdiction

CPS College of Physicians and Surgeons e.g., CPSBC, College of Physicians and Surgeons of British Columbia; AMA, Albert Medical Association; CME, Continuing Medical Education Department; CMQ, Collège Des Médecins Du Québec; CFPC, College of Family Physicians of Canada

Research Background on Surveys

The ideal method of conducting data collection by survey is to use the Dillman Total Design Method which calls for the following steps to ensure optimal response rates: 1) elements of personalization; 2) four contacts by regular mail, certified mail, or phone call; 3) a token prepaid financial incentive; and 4) a respondent-friendly questionnaire (short *vs*. long surveys)[64]

Systematic reviews[65,66] of these and other factors with respect to physician surveys indicate that personalized cover letters and/or mail outs lead to increased response rate (OR 1.5, 95% CI: 1.1-2.2). Prepaid financial incentives lead to increased response rate which appears to be independent of the amount of reward (OR 2.1, 95% CI: 1.7-2.6). Cash incentives are better than charity contributions, non-monetary incentives, or being entered in a lottery for cash. Endorsement by professional associations generally led to a better response rate but odds ratios were not given.[65] Shorter questionnaires have better response rates than longer ones (OR 2.0, 95% CI:1.1-3.7). Closed-ended questionnaires led to a 22% better response rate than open-ended ones. The number of contacts has not been studied in randomized trials with physicians.

Internet-based surveys generally have led to lower response rates than postal surveys. Orthopedic trauma surgeons contacted three times either by post or email with link to the survey responded better to a mail survey than an internet survey (58% *vs.* 45%).[67] Lusk et al. made five contacts by postal mail to health care professionals including physicians. Respondents were given the choice of responding to the survey by mail or on the internet. The overall response rate for physicians was 54%, of which 8% responded on the internet. It is noteworthy that respondents had to enter the URL of the survey to respond on the internet since they received all contacts by postal mail. Internet respondents were younger and more likely to be male than those who responded by post.[68] A recent large study of Canadian physicians found only a slight decrease in physicians responding to an internet survey compared to a paper version (30% *vs*. 34%). Both groups had at least five contacts about the survey and the internet group was contacted by email with a link to the survey.[69]

Implications for Project

Variation in contact methods across provinces probably led to different response rates. For example, it was easier for physicians to link to the survey if they received notification by email than by a newsletter. Barriers to achieving a good response rate were lack of an incentive, lack of personalization of the invitations, and in some cases, limited contacts. However, enablers to achieving a good response rate were endorsement from the provincial licensing colleges, a short survey (10 to 12 minutes), closed-ended questions, and in some cases, multiple contacts.

Variables and Data Analysis

A summary of each research question, paired with the relevant survey questions addressed, is in Table 4. Questions on the survey were divided into either outcome or explanatory variables. Most variables were measured as ordinal or nominal and are presented as frequency distributions. Continuous variables such as years in practice and watchful dose of opioids were grouped into appropriate categories and presented as frequency distributions. Open-ended questions were analyzed by content analysis, relating responses to specific questions asked, and grouping them in appropriate categories. Quantitative data were analyzed using PASW Statistics version 18.0.2.[16]

Table 4 Summary of survey questions in relation to research questions

Q#	Question	Explanator	Outcome	Comment	Res Qus	Type of Variable
1	How confident are you prescribing opioids?			Explanatory variable re physician characteristics	4	Ordinal
2	What is your definition of CNCP?			Addresses knowledge, explanator for phys characteristics	1b,4	Nominal
3	Do you prescribe weak or strong opioids for CNCP?			Adresses practices	1a	Nominal
4	How important are factors in deciding not to prescribe opioids?			Addresses barriers	2	Ordinal
5	How important are factors in deciding to prescribe only weak opioids?			Addresses barriers	2	Ordinal
6	How often do you do following before starting opioids?			Outcome variable re practice	1a, 4	Inteval
7	How often do you do following while monitoring opioids?			Outcome variable re practice	1a, 4	Inteval
8	Rate usefulness of factors in optimizing use of opioids.			Addresses enabling factors	3	Ordinal
9	Mild to moderate pain: first and second line - WEAKS			Outcome variable re practice	1a, 4	Ordinal – ranked
10	Severe pain: first and second line - WEAKS			Outcome variable re practice	1a, 4	Ordinal – ranked
11	Mild to moderate pain: first and second line - STRONGS			Outcome variable re practice	1a, 4	Ordinal – ranked
12	Severe pain: first and second line - STRONGS			Outcome variable re practice	1a, 4	Ordinal – ranked
13	Mild to moderate pain: first and second line - BOTH			Outcome variable re practice	1a, 4	Ordinal – ranked
14	Severe pain: first and second line - BOTH			Outcome variable re practice	1a, 4	Ordinal – ranked
15	Agree or disagree or no opinion re statements			Addresses knowledge, explanator for phys characteristics	1b, 4	Nominal
16	What is watchful dose of opioids?			Addresses practices	1a	Continuous
17	What is minimum dose in MEQs before prescribing fentanyl?			Addresses practices	1a	Ordinal
18	How many patients per month do you write scripts for weak opioids?			Explanatory variable re physician characteristics	4	Nominal
19	How many patients per month do you write scripts for strong opioids?			Explanatory variable re physician characteristics	4	Nominal – dichot
20	What type of HCP are you?			We will analyze only FPs		Continuous
21	Sex			Explanatory variable re physician characteristics	4	Nominal – dichot
22	Year started practice?			Explanatory variable re physician characteristics	4	Continuous
23	Advanced training in pain management?			Explanatory variable re physician characteristics	4	Ordinal
24	How many patients per month do you see?			Explanatory variable re physician characteristics	4	Ordinal
25	What is size of community?			Explanatory variable re physician characteristics	4	Ordinal
26	Wait time to see pain specialist?			Explanatory variable re physician characteristics	4	Ordinal
27	Wait time to see addiction specialist?			Explanatory variable re physician characteristics	4	Ordinal
28	Province or terrritory?			Explanatory variable re regions. Aggregate into regions		Nominal
29	First three characters of postal code			Explanatory variable re regions. Aggregate into regions		Nominal

Research Question 1a: How Consistent with the Canadian Guideline are Family Physicians' Practices in Prescribing Opioids for CNCP?

The outcome variables for this question covered a wide range of practices recommended by the Canadian Guideline. Respondents' reporting of whether they prescribe weak or strong opioids for CNCP was reported as frequency distributions and percentages. Responses to questions asking about the frequency of carrying out specified practices before starting and while monitoring opioids were reported as the number and percent (with mean and standard deviation) of respondents carrying out these practices for at least 75% of their patients or always. Responses asking about first, second, and third line therapies for treating mild to moderate, and severe pain, were reported as the percent of respondents acting in a manner consistent with Canadian Guideline recommendations.

The question asking for respondents' impression of the watchful dose was categorized into: no opinion, <50 mg morphine equivalent (MEQ), 50 to 99 mg MEQ, 100 to 199 mg MEQ, 200 mg MEQ, and >200 mg MEQ and reported as frequency distributions and percentages (200 mg MEQ is the Canadian Guideline recommendation). The question asking about the minimum dose in morphine equivalents before prescribing fentanyl was reported as frequency distributions and percentages of responses (no opinion, do not prescribe fentanyl, fentanyl is my first line choice, no minimum dose). Sixty mg MEQ is the Canadian Guideline recommendation.

Research question 1b: How Consistent with the Canadian Guideline is Family Physicians' Knowledge in Prescribing Opioids for CNCP?

The outcome variables for this question ask respondents if they agreed, disagreed, or had no opinion about statements testing their knowledge of CNCP. Statements covered topics such as the evidence for short and long-term efficacy and safety of opioids, comparative efficacy and safety of opioids, and evaluation of the effectiveness of opioids. For each **statement**, the frequency and percentage of respondents with correct answers (agreeing with correct statement, disagreeing with incorrect statement) was reported. For each **respondent**, the number of correct responses was reported, and an overall rate of correct responses was provided for the whole sample (maximum number = 9).

Research Question 2: What are the Barriers to Family Physicians Following the Canadian Guideline?

The outcome variables for this research question came from respondents who indicated they did not prescribe opioids or prescribed only weak opioids. For each of the two groups of respondents a separate question asked them to rate the importance (on a 5-point Likert scale) of various factors in making their prescribing decision about opioids. For each factor, the percent of respondents answering 4 or 5 on the 5-point scale was reported, along with the mean and standard deviation.

Research Question 3: What Factors Enable Family Physicians in Following the Canadian Guideline?

For this question, the outcome variable was derived from a question asking respondents to rate the importance (on a 5-point Likert scale) of various factors that would help them optimize their prescribing of opioids. As with research question 2, for each factor the percent of respondents answering 4 or 5 on the 5-point scale was reported, as well as the mean and standard deviation.

Research Question 4: What Characteristics of Family Physicians are Associated with how Closely Their Self-Reported Practices are Consistent with the Recommendations of the Canadian Guideline?

This question used multiple linear regression and logistic regression to determine the associations between explanatory variables and four outcome measures:

1. Best practices in **starting** opioids were derived from the self-reported performance of recommended practices before starting opioid therapy in more than 75% of patients.

   This outcome measure was analyzed using multiple linear regression. Responses indicating that participants carried out the recommended practices in “More than 75% of patients” and “Always” were coded as 1 and other responses as 0. These variables were labeled as “Best Practice xxxxx”. E.g., the practice of assessing patient’s level of pain intensity using a scale was labeled “BP_AssessPain”. Thus, all best practice variables had a dichotomous

value of 0 or 1. The outcome measure was calculated by summing all the practice variables with a value of 1 for each participant.

Question 6, the basis for measuring best practices in starting opioid therapy, asked about 12 practices. However, two of these were distracters, included to see if participants would automatically indicate they performed all practices frequently. These two distracters were not included when summing values for outcome variable 1. Thus, the maximum score was 10.

2. Best practices in **monitoring** opioids were derived from the self-reported performance of recommended practices when monitoring opioid therapy in more than 75% of patients.

   Analysis was carried out using multiple linear regression as described for the previous outcome measure. Question 7, the basis for measuring best practices in monitoring opioids, asked about 12 practices, none of which were distracters. Thus, the maximum score was 12.

   When performing some calculations such as summing the values as described above, PASW does not include missing values. For example, if a participant responded to only 11 of the 12 practices in question 7 and carried them all out in “More than 75% of patients”, PASW would not sum these responses for an overall score of 11. Instead, the overall score would be reported as missing and the data from this participant would be lost. To overcome this, I coded non-responses to the best practices variables derived from question 6 and question 7 as 0 if any one of the other values had been recoded as 0 (indicating the practice was performed in <75% of patients) or 1 (indicating the practice was performed in >75% of patients).

3. Correct second-line therapy for mild to moderate pain was dichotomized and analyzed using multiple logistic regression.

4. Correct first-line therapy for severe pain was also dichotomized and analyzed using multiple logistic regression.

   These outcome measures of correct prescribing were chosen because 52% and 56% of respondents made the correct choices. Thus, there was substantial variation in correct and incorrect responses, allowing for regression analysis.

   For first-line therapy in mild to moderate pain, 95% of responses were correct, and for second and third line therapy in severe pain, 95% and 94% of

responses were incorrect. For all three of these measures there was too little variation in responses for regression analysis.

For the outcome meaures on prescribing we chose, the correct choices according to the Canadian Guideline were oxycodone, morphine, or hydromorphone all of which are strong opioids. For both measures the correct choices were coded 1 and incorrect choices were coded 0. Thus, all participants who indicated they do not prescribe opioids or only weak opioids were coded 0. As described for outcome measures on best practices, missing values based on non-responses were coded as 0 where appropriate to ensure they were included in analysis.

There were 12 explanatory variables, classified into two categories, demographics and familiarity with CNCP as outlined in Table 5. For each outcome measure, explanatory variables were first analyzed individually. Then they were entered into models by group, i.e., the four demographic variables, the eight variables examining familiarity with CNCP, and all 12 variables. Finally, bivariate associations significant at the $P< 0.02$ level were entered into a multivariate model termed the “parsimonious model”. Associations were reported at alphas of 0.1, 0.05, and 0.01.[2]

[2] The project was reviewed and approved by the Dalhousie University Research Ethics Board.

Table 5 Variables used in multiple linear and logistic regressions

Variable	Survey question	Variable type	Analysis
Demographic variables			
Sex	17	Dichotomous	1 male 0 female
Years in practice	22	Continuous	Calculated by subtracting value entered by respondent for year started practice from 2010. Six respondents started practice in 2010 and were calculated as zero years in practice.
Community size	25	Ordinal (5 categories)	Analyzed as continuous variable
Patients seen per month	24	Continuous	Analyzed as continuous variable
Familiarity with CNCP variables			
Confidence prescribing opioids for CNCP	1	Ordinal (5 categories)	Analyzed as continuous variable
Definition of CNCP	2	Nominal (3 categories)	Analyzed as dichotomous variable where 1 = correct choice according to guideline (pain lasting at least 6 months) 0 = other choices
Prescriptions per month of weak opioids	18	Ordinal (4 categories)	Dummy variables created and analyzed as categorical variable with 1 to 5 per month as reference
Prescriptions per month of strong opioids	19	Ordinal (4 categories)	Dummy variables created and analyzed as categorical variable with 1 to 5 per month as reference
Advanced training in CNCP	23	Dichotomous	1 yes 0 no
Wait time to see pain specialist	26	Ordinal (5 categories)	Analyzed as dichotomous variable where 1 = 12 months or more 0 = less than 12 months
Wait time to see addiction specialist	27	Ordinal (5 categories)	Analyzed as dichotomous variable where 1 = 12 months or more 0 = less than 12 months
Number of correct responses to knowledge question	15	Interval	Analyzed as continuous variable with values from 0 to 9

CHAPTER 3 RESULTS

Survey Responses

There were 974 responses to the survey, 954 in English and 20 in French. Of these, 618 were complete responses, those in which every question was answered. Many respondents answered only the first three questions (confidence prescribing opioids for CNCP; definition of CNCP; and prescribe weak or strong opioids, both or neither). These respondents were excluded from analysis leaving 710 responses in the final analysis (701 English, 9 French) Three respondents were excluded because they were not primary care physicians (internist, internal medicine resident, and oncologist). Family medicine residents (2) and family physicians with special interests such as emergency medicine, psychotherapy, palliative care, and anesthesia were included in analysis. It is not possible to determine a response rate since this was a convenience sample and there was no formal sampling frame to draw on.

Responses by province were Alberta 26; British Columbia 79; Manitoba 8; New Brunswick 6; Newfoundland and Labrador 24; Nova Scotia 71; Nunavut and Northwest Territories 4; Ontario 367; Prince Edward Island 3; Quebec 7; Saskatchewan 30.

There were 473 comments left by 249 individual respondents. Most comments were left for questions about frequency of practices before starting opioids (151); usefulness of factors in optimizing care of patients on opioids (141); and frequency of practices while monitoring opioids (94).

Many comments confirmed responses to the closed-ended questions; however, I have reported on those that have expanded on closed-ended questions. Sometimes a respondent left a comment that referred to more than one part of a question. For example, for question 6 which asked respondents to indicate the frequency with which they carried out practices before starting patients on opioids, a comment may have referred to several practices. In such cases I reported the parts of the comment that referred to each practice.

Demographic and Background Variables

Of the 619 respondents who gave their gender, 59% were male. Eighty-five percent of respondents indicated they had no advanced training in pain management while 57% had been in practice more than 20 years and 52% practiced in large urban areas of more than 100,000. Based on postal code, 22% of respondents practiced in rural areas and 78% in urban areas.

Sixty-two percent of respondents saw approximately 50 to 150 patients per week (200 to 600 per month) and 58% rated their confidence prescribing opioids as four or five on a 5-point Likert scale. Most respondents wrote 10 or fewer prescriptions for weak and strong opioids per month (62% for weak opioids; 74% for strong opioids).

Fifty-four percent of respondents indicated the wait time for non-urgent referral to a pain or addiction specialist was less than 12 months. However, more respondents did not know the wait time for referral to an addiction specialist (28%) than did not know the wait time for referral to a pain specialist (7%). Data on demographic and background variables are summarized in Table 6.

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Table 6 Demographic and practice characteristics of respondents

	N	Percent Responses[a]
Male	367	59%
Have advanced training in pain management	94	15%
Years in practice		
1 to 5	105	17%
6 to 19	53	9%
11 to 20	111	18%
21 to 30	192	31%
> 30	160	26%
Population of practice community		
< 5000	80	13%
5,000 to 25,000	138	22%
25,000 to 100,000	85	14%
100,000 to 500,000	160	26%
> 500,000	159	26%
Patients seen per month		
< 200	133	23%
200 to 400	197	33%
400 to 600	173	29%
600 to 800	52	9%
>800	37	6%
Rxs written per month for weak opioids		
1 to 5	178	31%
6 to 10	179	31%
11 to 20	126	22%
> 20	95	16%
Rxs written per month for strong opioids		
1 to 5	254	46%
6 to 10	153	28%
11 to 20	78	14%
> 20	63	12%
Confidence prescribing opioids for CNCP[b]		
1 not very confident	23	3%
2	59	8%
3	215	31%
4	303	43%
5 very confident	104	15%

a Percentages based on percent of respondents who replied to question, not percent of total used for analysis (N=710)

b Responses to 5-point Likert scale question anchored by 1 not very confident and 5 very confident

CNCP, chronic non-cancer pain.

Table 6 Demographic and practice characteristics of respondents (continued)

	N	Percent Responses[a]
Wait time for non-urgent referral to pain specialist		
< 1 month	16	3%
1 to 6 months	137	23%
6 to 12 months	173	28%
> 12 months	240	39%
Don't know	43	7%
Wait time for non-urgent referral to addiction specialist		
< 1 month	45	7%
1 to 6 months	162	26%
6 to 12 months	130	21%
> 12 months	111	18%
Don't know	175	28%

a Percentages based on percent of respondents who replied to question, not percent of total used for analysis (N=710)

Research Question 1a: How Consistent with the Canadian Guideline are Family Physicians' Practices In Prescribing Opioids for CNCP?

Eighty-six percent (N=607) of respondents prescribed both weak and strong opioids as recommended by the guideline. Five percent (N=32) did not prescribe opioids, eight percent (N=58) prescribed only weak opioids, and two percent (N=13) prescribed only strong opioids. Results of questions asking about frequency of recommended practices performed before starting opioids and while monitoring opioids are in Table 7 and Table 8.

Questions asked respondents to indicate the percent of CNCP patients for which they performed each practice. They were given six choices: never, <25% of patients, <50% of patients, >50% of patients, >75% of patients, or always. Results in the tables are presented in descending order of practices performed in >75% of patients plus always. Of note, the last two practices listed in Table 7 (refer patient to a colleague for assessment and conduct formal psychological assessment) are not recommended in the guideline. They are distracters to determine if respondents were prone to social acceptability bias, i.e., indicating they frequently perform practices because they think that is the desired response.

The greatest number of comments on an individual question concerned assessing **risk of addiction** using a screening tool before starting opioids. Thirty respondents commented on this question. Eight commented about assessing risk of addiction without a formal screening tool. These physicians took a substance abuse history but did not use a scoring system as provided by an opioid risk tool. Thirteen commented that they individualize their assessment of addiction risk based on their knowledge of their patient or their family. Many of these physicians felt they know their patients well and did not see the need for risk assessment. For some respondents, the patients they dealt with were low risk (e.g., seniors) and for others, they were all high risk and so no formal assessment was deemed necessary. Three respondents commented they would do more risk assessment and three stated they don't have an appropriate tool.

A similar pattern emerged for using a scale when assessing **pain intensity** with five respondents indicating they assessed pain informally and five saying they knew their patients well enough that formal assessment was not necessary. Four respondents indicated they would do more formal assessment of pain intensity and one commented that elderly and illiterate patients have difficulty understanding pain scales. There were

few comments on assessing function, with four respondents indicating they did this informally or knew their patients well enough it wasn't necessary.

Thirteen respondents commented on use of **management agreements**, an oral or written agreement in which the patient agrees to certain conditions such as not asking for early refills, obtaining prescriptions from specified physicians, and having them filled at specified pharmacies. Six respondents stated they used an agreement for patients they considered at high risk or seldom used a management agreement because their patients were at low risk of addiction or abuse. Three indicated they use an informal approach, relying on oral agreements and two respondents stated they didn't use management agreements due to lack of time or low literacy levels of their patients.

Twenty-one respondents left comments about confirming the patient has a condition that has been shown to **benefit from opioids**. Four were unsure about the evidence for efficacy of opioids in specific pain conditions or were skeptical about the evidence. Five mentioned they try to establish a diagnosis or prescribe opioids as a trial to see if the patient responds. Three expressed difficulty in making a firm diagnosis. Eight respondents had difficulty understanding the meaning of the question. The intent of the question was to determine if respondents were aware of conditions in which opioids have been studied for CNCP (e.g., neuropathy, osteoarthritis, and low back pain) and have not been studied (e.g., headache, irritable bowel syndrome, pelvic pain, and temperomandibular joint dysfunction)[17] and if they prescribe opioids only for the former. These respondents were unsure how to confirm that a patient is feeling pain or how to confirm that their particular patient would benefit from opioids. Nevertheless, all these respondents except one responded to the closed-ended portion of the survey.

Twenty-three respondents left comments about **changing therapy** should a patient have adverse effects or poor response to opioids. Most comments concerned increasing the dose (seven responses) and discontinuing opioids (10 responses) if the patient had poor pain relief from opioids. Two said they were reluctant to increase doses of opioids while two confirmed they do increase the dose. The other four said they try adding another modality instead of increasing the dose. Similarly, six respondents said they would add another modality instead of discontinuing opioids while four indicated they would have already tried other modalities before starting opioids.

Eleven respondents left comments about **tapering patients off benzodiazepines**. Three respondents confirmed they would not prescribe opioids to a patient taking

benzodiazepines while three others said they did not try to discontinue them if they were helping the patient. Three others expressed difficulty in tapering patients off benzodiazepines because of long-term use of co-existing anxiety and CNCP.

Five people commented on their lack of providing **written information** about opioids to patients. Four relied on pharmacists to provide the information and one cited poor literacy level of patients.

The most common theme arising from the comments was that respondents individualize their approach and rely on their knowledge of their patients when conducting formal assessments. There were 45 comments on this theme but they came from 16 respondents, with the same persons making comments that applied to several practices.

Table 7 Frequency of practices performed before starting opioids

Recommended practice	>75% Always[a]	Mean[b]	SD	N
Explain potential harms of long-term opioid therapy	87%	5.4	1.0	661
Assess patient's level of function	76%	5.1	1.1	671
Explain potential benefits of long-term opioid therapy	75%	5.0	1.4	665
Confirm patient has a condition shown to benefit from opioids	62%	4.6	1.5	654
Assess patient's level of pain intensity with scale	46%	4.0	1.7	667
If patient is on a benzodiazepine, try to taper them off	44%	4.0	1.5	650
Assess risk of addiction using a screening tool	37%	3.5	1.9	666
Have patient sign treatment agreement	37%	3.5	1.8	665
Give patient written information about opioid therapy	16%	2.5	1.6	659
Do urine drug screening	15%	2.4	1.6	667
Refer to colleague for assessment[c]	11%	2.6	1.3	655
Conduct formal psychological assessment[c]	10%	2.2	1.4	668

a Percent of respondents indicating they perform practices in >75% of their patients or always.

b Mean of six choices: never, <25% of patients, <50% of patients, >50% of patients, >75% of patients, or always.

c Practices not recommended in guideline. These were included in survey as distracters to see if respondents tended to report they always did the listed practices.

SD, standard deviation; N, number of responses.

Table 8 Frequency of practices performed while monitoring opioids

Recommended practice	>75% Always[a]	Mean[b]	SD	N
Observe for aberrant behaviour	93%	5.6	0.8	651
Assess for adverse effects	84%	5.3	1.1	648
Advise caution while driving etc	81%	5.3	1.2	647
Assess level of function	77%	5.1	1.1	652
If patient has adverse events, try different opioid	63%	4.7	1.3	649
If patient has insufficient pain relief, increase dose	53%	4.5	1.0	647
If patient has adverse events, try lower dose	53%	4.4	1.4	645
Assess level of pain with scale	47%	3.9	1.8	652
If patient has insufficient pain relief, try different opioid	40%	4.1	1.3	637
Check compliance with pill count	28%	3.2	1.7	646
If patient has insufficient pain relief, try another modality	27%	3.5	1.4	643
Do urine drug screening	22%	2.7	1.7	653

a Percent of respondents indicating they perform practices in >75% of their patients or always.
b Mean of six choices: never, <25% of patients, <50% of patients, >50% of patients, >75% of patients, or always.
SD, standard deviation; N, number of responses.

Table 9 indicates respondents' first, second, and third line opioid choices in mild to moderate and severe pain. Choices recommended by the Canadian guideline are shown in bold. For mild to moderate pain, 95% of respondents chose a recommended first line opioid (codeine 78%, tramadol 17%). Only 52% chose a recommended second line opioid with the most frequent choice being oxycodone. Thirty-four percent chose tramadol as a second line opioid. The guideline does not make a recommendation for an opioid as third line therapy so no responses followed the recommendations. Eighty percent of respondents chose morphine, hydromorphone, or oxycodone as a third line opioid.

For severe pain, 56% of respondents chose the recommended first-line therapy of morphine, hydromorphone, or oxycodone. Seventy-nine percent chose the same three drugs for second line therapy while only 5% chose fentanyl, the recommended agent. Only 6% chose methadone, the recommended third line agent, while 59% chose morphine, hydromorphone, or oxycodone.

There were seven written comments concerning this question. Two mentioned that their choices were influenced by provincial drug plan policies and one that there are several factors to consider such as drug plan coverage, previous use of opioids, and patient profile. Another respondent expressed difficulty answering the question because patient response to opioids is very individual. Other comments concerned specific drugs.

Two practice gaps identified concerned the watchful dose of opioid, the daily dose at which patients might need to be reassessed or more closely monitored, and initiation of fentanyl. Only 5% (N=10) of respondents correctly identified the watchful dose of opioid. Almost half had no opinion (N=147) and 45% (N=143) underestimated the watchful dose of 200 mg MEQ as recommended by the guideline (Table 10). Thirty-eight percent of respondents (N=211) correctly identified the minimum daily dose of opioid a patient should be taking before receiving the fentanyl patch. Twenty-nine percent (N=158) indicated there is no minimum dose and that the amount varies with the patient's condition (Table 11).

Table 9 First, second, and third line choices in mild to moderate and severe pain: percent responses

	Mild to Moderate Pain			Severe Pain		
	1st line	**2nd line**	**3rd line**	**1st line**	**2nd line**	**3rd line**
Codeine +/- acetaminophen	**78%**	13%	1%	31%	4%	1%
Tramadol +/- acetaminophen	**17%**	34%	8%	12%	10%	1%
Morphine	2%	**12%**	32%	**21%**	29%	20%
Hydromorphone		**5%**	23%	**11%**	27%	29%
Oxycodone	4%	**35%**	25%	**24%**	23%	10%
Fentanyl			5%	1%	**5%**	30%
Methadone			3%			**6%**
Meperidine			3%		1%	3%
Propoxyphene		1%	1%			1%
Pentazocine			1%			1%
Percent correct	95%	52%	0%	56%	5%	6%
Number responses	610	603	560	610	596	560

Choices in bold are those recommended in the guideline. No third-line treatment is recommended in mild to moderate pain

Table 10 Daily dose of opioid at which patients might need to be reassessed or more closely monitored

Category	N	Percent Responses
No opinion	147	48%
<50 mg MEQ	70	25%
50 to 99 mg MEQ	44	12%
100 to 199 mg MEQ	29	8%
200 mg MEQ[a]	**10**	**5%**
>200 mg MEQ	280	2%

a guideline recommendation
mg MEQ, milligrams of morphine equivalent.

Table 11 Minimum daily dose of opioid patient should be taking before prescribing fentanyl patch

Category	N	Percent Responses
No opinion	31	6%
Fentanyl is my first line opioid	4	1%
20 mg MEQ	21	4%
40 mg MEQ	50	9%
60 mg MEQ[a]	**211**	**38%**
No minimum dose, varies with patient condition	158	29%
Do not prescribe fentanyl	77	14%

a guideline recommendation
mg MEQ, milligrams of morphine equivalent.

Research Question 1b: How Consistent with the Canadian Guideline is Family Physicians' Knowledge about Prescribing Opioids for CNCP?

Twenty-three percent of respondents (N=162) defined CNCP in accordance with the Canadian Guideline – pain persisting more than 6 months. Fourteen percent (N=99) defined CNCP as lasting more than 3 months, while 63% (N=447) defined CNCP as pain persisting beyond the time normally associated with healing for a specific condition.

Table 12 shows responses (disagree/agree/no opinion) to knowledge questions with correct answers in bold. Results are presented in descending order of agree responses. Generally, there were marked knowledge gaps in most responses with respondents incorrectly agreeing with the statements. The exceptions concerned randomized controlled trial evidence for short-term effectiveness of opioids in CNCP and pain relief being a more important indicator of opioid effectiveness than restoration of function. Four statements indicated a fairly high degree of uncertainty on the part of respondents since 16% or 17% said they had no opinion:

- There is randomized controlled trial evidence for short-term effectiveness of opioids in CNCP.
- There is randomized controlled trial evidence for long-term effectiveness of opioids in CNCP.
- A 20% reduction in pain intensity is considered clinically significant.
- Patients may be safely switched from a high dose of codeine to a fentanyl patch.

The statement that generated the most comments was that pain relief is a more important indicator of opioid effectiveness than function. Six respondents stated that function is more important (the correct response). Nine expressed the need to consider pain as well as function noting that patients want their pain relieved or that improved function is difficult without pain relief. One respondent noted that it was not possible to take all of a patient's pain away without decreasing function.

Ten respondents left comments about the proposed benefits of controlled release opioids compared to immediate release preparations. Four thought that immediate release were better than controlled release for intermittent pain or exacerbations and therefore thought the response to the question depended on the nature of the pain. Three thought that controlled release preparations were not less addictive. One of the

three recognized the lack of evidence for lower risk of addiction with controlled release preparations but said that most consultants and some guidelines recommend them partly for this reason. Two respondents thought the controlled release preparations were less addictive.

Six respondents commented on the statement that a 20% reduction in pain intensity is considered clinically significant. One thought it may be acceptable to patients over a short period of time and one thought a clinically significant reduction was whatever the patient felt was significant. Three respondents doubted that a 20% reduction was significant for the patient.

Three respondents agreed that patients should not be switched from codeine to fentanyl while two thought it could be done with caution. Eight respondents expressed difficulty answering the questions because they found them too black and white and that their responses would depend on the patient, the type of pain, or the local culture.

Table 12 Percent of respondents disagreeing, agreeing, or having no opinion about statements testing knowledge of chronic non-cancer pain and opioid use

Statement	Disagree	Agree	No opinion	N
There is RCT evidence that opioids are effective in short-term (up to 3 months) relief of CNCP	8%	**75%**	17%	603
Some strong opioids provide better pain relief than others	**21%**	71%	9%	603
There is RCT evidence that opioids are effective in long-term (> 3 months) relief of CNCP	**13%**	69%	17%	603
A 20% reduction in pain intensity is considered clinically significant	**18%**	65%	17%	604
Controlled-release opioids have a lower risk of addiction than immediate release opioids	**30%**	64%	6%	605
Controlled-release opioids are more effective in controlling pain than immediate release opioids	**27%**	63%	10%	602
Some strong opioids are more likely to lead to addiction than others	**28%**	63%	9%	603
Patients may be safely switched from a high dose of codeine to a fentanyl patch	**39%**	46%	16%	598
Pain relief is a more important indicator of opioid effectiveness than functional ability	**81%**	11%	9%	604

Results presented in descending order of agree responses.
Correct answers in bold.
RCT, randomized controlled trial; CNCP, chronic non-cancer pain.

Research Question 2: What are the Barriers to Family Physicians Following the Canadian Guideline?

Data for this question came from survey questions that asked respondents to rate the importance of factors that influenced their decision not to prescribe opioids for CNCP or to prescribe only weak opioids. Few respondents fell into these categories so results are based on limited numbers as shown in Table 13 (N ~30) and Table 14 (N~55).

The most highly rated factor for both not prescribing opioids and for prescribing only weak opioids was concern about long-term adverse events such as addiction and misuse with 88% of respondents rating this as four or five on the 5-point scale. Concern about strong opioids being diverted and abused in the community was also highly rated with 82% of respondents rating this as four or five (Table 14). The importance of other factors was much lower than these two factors with only 65% rating lack of evidence for effectiveness of opioids in CNCP as four or five in their decision not to prescribe opioids (Table 13). Concern about being audited by a regulatory body was not a major factor for deciding not to prescribe opioids (23% rated four or five) or to prescribe only weak opioids (33% rated four or five). Similarly, inadequate knowledge of which opioid to use or the correct doses of opioids was not an important factor.

Nine respondents left comments about their decision not to prescribe opioids for CNCP. Five thought they were ineffective or associated with long-term adverse events. One of these mentioned other modalities such as massage, biofeedback, and physiotherapy and other drugs that may be more effective. Two respondents expressed concern about drug-seeking on the part of patients presenting with CNCP.

Sixteen respondents left comments about their decision to prescribe only weak opioids for CNCP. Six commented on dependence and misuse, citing instances of patients selling prescriptions they had written or other physicians creating dependent patients and then retiring or moving away. Three others commented on the lack of effectiveness of opioids in CNCP, long-term adverse effects like hyperalgesia, or that other treatments were available.

Table 13 Percent of respondents rating importance of factors in affecting their decision not to prescribe opioids for CNCP as four or five

Factor affecting decision	Rated 4 or 5[a]	Mean[b]	SD	N
Concern about long-term adverse effects e.g., addiction or misuse	87%	4.5	1.0	31
Lack of evidence for effectiveness of opioids in CNCP	65%	3.9	1.3	31
Concern that patients complain of pain out of proportion to objective findings	61%	3.8	1.3	32
Type of practice limits follow up e.g., walk-in clinic	41%	3.0	1.8	28
Concern about becoming a target prescriber of opioids	39%	3.2	1.5	30
Concern about audit by regulatory or monitoring body	23%	2.5	1.5	31
Concern about short-term adverse effects e.g., constipation, sedation	19%	2.6	1.3	31
Takes too much time to titrate and monitor	16%	2.1	1.4	31
Inadequate knowledge of dosages	7%	1.7	0.9	31
Inadequate knowledge of which opioids to use	6%	1.7	1.1	30

a Percent of respondents rating importance of factor as 4 or 5 on 5-point Likert scale. Presented in descending order.

b Mean of responses on 5-point Likert scale.

SD, standard deviation; N, number of responses; CNCP, chronic non-cancer pain.

Table 14 Percent of respondents rating importance of factors in affecting their decision not to prescribe strong opioids for CNCP as four or five

Factor affecting decision	Rated 4 or 5[a]	Mean[b]	SD	N
Concern about long-term adverse effects e.g., addiction or misuse	88%	4.6	1.0	56
Strong opioids are commonly diverted and abused in community	82%	4.5	1.0	55
Concern about becoming a target prescriber of opioids	58%	3.7	1.5	54
Lack of evidence for effectiveness of strong opioids in CNCP	47%	3.5	1.2	51
Inadequate knowledge of which strong opioids to use	33%	2.7	1.5	53
Concern about audit by regulatory or monitoring body	33%	2.8	1.6	55
Concern about short-term adverse effects e.g., constipation, sedation	30%	2.9	1.4	54
Inadequate knowledge of dosages of strong opioids	26%	2.4	1.5	50
Takes too much time to titrate and monitor	14%	2.0	1.4	52

a Percent of respondents rating importance of factor as 4 or 5 on 5-point Likert scale. Presented in descending order.

b Mean of responses on 5-point Likert scale.

SD, standard deviation; N, number of responses; CNCP, chronic non-cancer pain.

Research Question 3: What Factors Enable Family Physicians in Following the Canadian Guideline?

Data for this question came from response asking physicians to rate the usefulness of various factors in helping them optimize their management of patients with CNCP on opioids. Data are presented in Table 15.

The highest rated factor was being able to obtain a patient's opioid prescribing history from a provincial monitoring program. The least useful factors were having readily available help such as a physician mentor or 1-800 help line and availability of local urine drug screening. Between these extremes there was no clear separation of the importance of the various factors with six factors being rated four or five by ≥81% of respondents and five factors being rated four or five by 73% to 79% of respondents.

One-hundred and forty respondents left comments to this question. The factor that generated the most comments was improved **access to pain or addiction specialists** (63 comments). Twenty-one respondents complained of excessive wait times for referral to a pain clinic or specialist, in some cases at least two years. Some respondents were extremely frustrated with this situation describing access as "impossible" "non-existent" or "ridiculous". Eighteen other respondents expressed a desire to have better access to consultants and wanted help managing their difficult patients. However, 13 respondents were skeptical about the value of clinics and specialists, most complaining they overprescribe opioids which may lead to decreased function for the patient. Eight respondents indicated they had good access to specialists which they found very useful. One commented that good access to specialists was the reason for having few patients on opioids.

Nineteen respondents left comments about having **access to patients' opioid prescribing history** from a provincial monitoring program. Four respondents from British Columbia, Alberta, and Saskatchewan mentioned they already had access to such a program. Twelve respondents, all from Ontario, were very much in favour of a provincial monitoring program stating that access to their patients' opioid history would be "invaluable," "fantastic," or "most useful." One respondent who had previously worked in a province with a monitoring program described feeling "lost". One respondent had concerns about privacy and one Nova Scotian respondent did not find the monitoring program helpful with a patient diverting opioids.

Sixteen respondents commented on the value of **continuing medical education** with 12 stating they had adequate continuing medical education or would like more. Four had reservations about the value of continuing medical education, concerned that it was influenced by the pharmaceutical industry or the provincial College. Eleven respondents commented on the value of a validated tool to **screen for addiction** with ten comments expressing reservations about the usefulness of such tools because of the time they take or because patients may not answer correctly, or because the respondents know their patients and can identify those at high risk of addiction. There were 11 comments on **urine drug screening** with four respondents stating they already do it, three stating it was available at the local laboratory but it took two weeks to get a report, and two stating it would be helpful to have access to urine screening.

Eleven respondents commented on the value of a **mentor** program. Seven already belonged to a mentor program and found it useful while three others stated a desire to have such a program. There were eight comments about the value of an up to date **guideline** with four respondents expressing a desire for the guideline and four expressing doubts because of pharmaceutical company influence or inconsistency in existing guidelines.

Several respondents left general comments unrelated to any specific factor. Seven were in favour of the approach conveyed by the survey, to identify resources that would help physicians with the difficult problem of chronic pain, with the ultimate goal of making them available. Finally, 13 respondents expressed frustration about how difficult it is to manage patients with CNCP for a host of reasons – drug plan coverage of non-opioid medications, misuse, and diversion, lack of evidence for use of opioids in chronic pain, time required, and uncertainty about diagnosis.

Table 15 Percent of respondents rating usefulness of factors in optimizing use of opioids for CNCP as four or five

Enabling factor	Rated 4 or 5[a]	Mean[b]	SD	N
Patients' opioid prescribing history from provincial monitoring program	87	4.7	0.8	616
Tips in recognizing patients at high risk of addiction	84	4.4	1.0	647
Knowledge of risks and benefits of different opioids	84	4.5	0.9	632
Improved access to pain or addiction specialists	83	4.5	0.9	624
Up to date guideline on use of opioids in CNCP	82	4.4	0.9	631
Validated scale to assess function	81	4.3	1.1	637
Continuing medical education in optimal use of opioids in CNCP	79	4.3	1.0	629
Patient education material	77	4.3	1.0	631
Validated tool to screen patients for risk of addiction	74	4.2	1.2	637
Validated tool to assess pain intensity	74	4.1	1.2	637
Knowledge of practical aspects of urine drug screening	73	4.1	1.2	626
Availability of urine drug screening at local laboratory	64	3.9	1.4	626
Readily available help such as physician mentor or 1-800 help line	61	3.8	1.3	615

a Percent of respondents rating importance of factor as 4 or 5 on 5-point Likert scale. Presented in descending order.
b Mean of responses on 5-point Likert scale.
SD, standard deviation; N, number of responses; CNCP, chronic non-cancer pain.

Research Question 4: What Characteristics of Family Physicians are Associated with how Closely their Self-Reported Practices are Consistent with the Recommendations of the Canadian Guideline?

Outcome measure 1: Self-reported performance of recommended practices before starting opioid therapy in more than 75% of patients or all patients.

The first regression model addressed the characteristics of respondents that were associated with best practices in **starting** opioids. The multiple linear regression model including all explanatory variables is in Table 16.

The explanatory variable with the strongest association with the outcome was confidence in prescribing opioids (standardized beta 0.257, $P<0.001$) indicating that as respondents' confidence increased, so did their likelihood of carrying out the recommended practices. Writing more than 20 prescriptions per month of weak opioids and writing 11 to 20 prescriptions per month of strong opioids were both statistically significant ($P<0.05$) and negatively associated with the outcome measure indicating that respondents writing these numbers of prescriptions were less likely to carry out recommended practices before starting opioid therapy.

Taking advanced training in management of chronic pain and having a wait time for non-urgent referral to addiction specialist longer than 12 months were both statistically significant ($P<0.05$) and positively associated with best practices in starting opioids. This indicates that physicians taking advanced training and having to wait longer than 12 months for referral to an addiction specialist were more likely to carry out recommended practices before starting opioid therapy.

The parsimonious model including explanatory variables that were significant at $P<0.2$ in the bivariate analysis is in Table 17. The significant ($P<0.05$) explanatory variables were confidence in prescribing opioids, writing 11 to 20 prescriptions per month of strong opioids, and having to wait longer than 12 months for referral to an addiction specialist. The strength and direction of association with the outcome measure was similar to the complete model in Table 16.

Table 16 Multiple linear regression model: outcome measure – performance of recommended practices before starting therapy in more than 75% of patients or all patients; explanatory variables – demographic and practice variables

Variable		Unstandardized Beta	Standardized Beta	Significance
Sex		-0.150	-0.032	0.501
Years in practice		0.000	0.017	0.700
Community size		-0.012	-0.065	0.160
Patients seen per month		0.000	0.018	0.695
Confidence in prescribing opioids		0.692	0.257	<0.001[d]
Definition of CNCP		0.154	0.028	0.524
Rxs per month weak opioids[a]	6 – 10/month	-0.017	-0.003	0.949
	11 – 20/month	-0.188	-0.034	0.552
	>20/month	-0.774	-0.128	0.038[c]
Rxs per month strong opioids[a]	6 – 10/month	-0.248	-0.048	0.344
	11 – 20/month	-0.658	-0.102	0.048[c]
	>20/month	0.665	0.093	0.097[b]
Advanced training in CNCP		0.645	0.101	0.032[c]
Wait time for referral to pain specialist >12 mos		-0.202	-0.043	0.360
Wait time for referral to addiction specialist >12 mos		0.553	0.095	0.044[c]
Number correct in knowledge questions		-0.004	-0.003	0.952

N=480, R square=0.125, P<0.001
a reference category 1 – 5 Rxs per month
Significant at P values of: b<0.1, c<0.05, d<0.01
Rxs, prescriptions; CNCP, chronic non-cancer pain.

Table 17 Multiple linear regression model: outcome measure – performance of recommended practices before starting therapy in more than 75% of patients or all patients; explanatory variables – explanatory variables significant at P<0.2 in bivariate analysis

Variable		Unstandardized Beta	Standardized Beta	Significance
Confidence in prescribing opioids		0.630	0.238	<0.001[d]
Rxs per month strong opioids[a]	6 – 10/month	-0.210	-0.042	0.354
	11 – 20/month	-0.811	-0.124	0.005[d]
	>20/month	0.271	0.038	0.399
Advanced training in CNCP		0.673	0.107	0.015[c]
Wait time for referral to addiction specialist >12 mos		0.393	0.069	0.101

N=534, R square=0.106, P<0.0001
a reference category 1 – 5 Rxs per month
Significant at P values of: c<0.05, d<0.01
Rxs, prescriptions; CNCP, chronic non-cancer pain.

Outcome measure 2: Self-reported performance of recommended practices while monitoring opioid therapy in more than 75% of patients or all patients.

The next regression model addressed the characteristics of respondents that were associated with best practices in **monitoring** opioids. The multiple linear regression model including all explanatory variables is in Table 18.

Again, the explanatory variable with the strongest association with the outcome was confidence in prescribing opioids (standardized beta 0.240, P<0.001), indicating that increased confidence was associated with respondents carrying out recommended practices more frequently. Males were statistically significantly less likely than females to carry out the recommended practices while monitoring opioid therapy (P=0.032) as were physicians working in large communities (P=0.001). The number of patients seen per month was positively associated with the outcome (P=0.018) indicating busier physicians were more likely to follow recommended practices while monitoring patients on opioids.

The parsimonious model including explanatory variables that were significant at P<0.2 in the bivariate analysis is in Table 19. Again, the explanatory variable with the strongest association with the outcome was confidence in prescribing opioids (standardized beta 0.217, P<0.001). In this model taking advanced training in management of CNCP was statistically significant (standardized beta 0.114, P=0.008) indicating physicians with such training were more likely to carry out recommended practices while monitoring patients on opioids.

Table 18 Multiple linear regression model: outcome measure – performance of recommended practices while monitoring therapy in more than 75% of patients or all patients; explanatory variables – demographic and practice variables

Variable		Unstandardized Beta	Standardized Beta	Significance
Sex		-0.540	-0.103	0.032 [c]
Years in practice		0.000	-0.005	0.909
Community size		-0.034	-0.161	0.001[d]
Patients seen per month		0.001	0.112	0.018 [c]
Confidence in prescribing opioids		0.725	0.240	<0.001[d]
Definition of CNCP		-0.051	-0.008	0.852
Rxs per month weak opioids[a]	6 – 10/month	-0.151	-0.027	0.617
	11 – 20/month	0.125	0.020	0.726
	>20/month	-0.621	-0.091	0.142
Rxs per month strong opioids[a]	6 – 10/month	-0.179	-0.031	0.543
	11 – 20/month	-0.430	-0.059	0.250
	>20/month	0.501	0.062	0.267
Advanced training in CNCP		0.645	0.090	0.057 [b]
Wait time for referral to pain specialist >12 mos		0.115	0.022	0.645
Wait time for referral to addiction specialist >12 mos		-0.047	-0.007	0.880
Number correct in knowledge questions		-0.051	-0.029	0.514

N=478, R square=0.121, P<0.001
a reference category 1 – 5 Rxs per month
Significant at P values of: b <0.1, c<0.05, d<0.01
Rxs, prescriptions; CNCP, chronic non-cancer pain.

Table 19 Multiple linear regression model: outcome measure – performance of recommended practices while monitoring therapy in more than 75% of patients or all patients; explanatory variables – explanatory variables significant at P<0.2 in bivariate analysis

Variable	Unstandardized Beta	Standardized Beta	Significance
Sex	-0.168	-0.037	0.394
Years in practice	-0.008	-0.045	0.299
Confidence in prescribing opioids	0.564	0.217	<0.001[d]
Advanced training in CNCP	0.724	0.114	0.008[d]

N=573, R square=0.071, P<0.001
Significant at P values of: d<0.01
CNCP, chronic non-cancer pain.

Outcome measure 3: Selecting recommended second-line therapy for mild to moderate pain

For the next outcome, we explored the variables associated with respondents prescribing second-line therapy in accordance with recommendations from the Canadian Guideline. Since the outcome was coded dichotomously, we used logistic regression. The model including all explanatory variables is presented in Table 20. Two explanatory variables were statistically significant ($P<0.05$): number of patients seen per month and waiting time for a non-urgent referral to an addiction specialist of greater than 12 months. Both were negatively associated with the outcome indicating that physicians who see more patients per month and those who having a wait time longer than 12 months for non-urgent referral are less likely to choose the recommended second-line therapy for mild to moderate pain.

The parsimonious model including explanatory variables that were significant at $P<0.2$ is presented in Table 21. Again, the explanatory variable with the strongest association to the outcome was confidence in prescribing opioids OR 1.270 (95% CI: 1.053 to 1.531). The other significant explanatory variable was number of patients seen per month OR 0.999 (95% CI: 0.999 to 1.000).

Outcome measure 4: Selecting recommended first-line therapy for severe pain

The final outcome was whether physicians prescribed recommended first-line therapy for severe pain. The logistic regression model including all explanatory variables is presented in Table 22. The explanatory variable most strongly associated with the outcome was writing more than 20 prescriptions per month of strong opioids OR 3.332 (95% CI: 1.425 to 7.788). This indicates that physicians writing more than 20 prescriptions per month of strong opioids had an increase in the odds of selecting the recommended first-line therapy for severe pain of 3.3, as compared to those who wrote 1 to 5 prescriptions per month. Indeed, there was a trend to increasing association with increasing prescriptions of strong opioids. There was no statistically significant association with prescribing weak opioids.

The number of patients seen per month was also statistically significant OR 0.999 (95% CI: 0.998 to 1.000). Confidence in prescribing opioids OR 1.395 (95% CI: 1.086 to

1.791) was also statistically significant indicating respondents who were confident in prescribing opioids had a greater odds of making correct prescribing choices.

The parsimonious model including explanatory variables that were significant at P<0.2 in the bivariate analysis is in Table 23. There was no substantial difference between this model and the model that includes all demographic and practice variables in terms of ability to explain the outcome measure and identify statistically significant explanatory variables.

Table 24 provides an overview of key independent variables across all four outcomes, highlighting those variables that were significant (P<0.05) in the regression analyses. The most consistent factor was confidence in prescribing opioids, which was significant in nearly all models. Number of patients seen per month was also significant in several models.

Table 20 Logistic regression model: outcome measure – selecting recommended second-line therapy for mild to moderate pain; explanatory variables – demographic and practice variables

Variable		Beta	Standard Error	Wald	Df	P	OR (95% CIs)
Sex		0.336	0.211	2.546	1	0.111	1.399 (0.926 to 2.115)
Years in practice		0.005	0.008	0.336	1	0.562	1.005 (0.989 to 1.021)
Community size		0.001	0.000	3.529	1	0.060	1.001 (1.000 to 1.002)[b]
Patients seen per month		-0.001	0.000	5.770	1	0.016	0.999 (0.998 to 1.000)[c]
Confidence in prescribing opioids		-0.033	0.123	0.072	1	0.788	0.967 (0.760 to 1.231)
Definition of chronic non-cancer pain		-0.078	0.229	0.115	1	0.735	0.925 (0.590 to 1.450)
Rxs per month weak opioids[a]	6 – 10/month	-0.093	0.254	0.134	1	0.714	0.911 (0.554 to 1.498)
	11 – 20/month	0.138	0.302	0.208	1	0.648	1.148 (0.635 to 2.074)
	>20/month	-0.213	0.355	0.358	1	0.550	0.808 (0.403 to 1.623)
Rxs per month strong opioids[a]	6 – 10/month	0.194	0.246	0.624	1	0.429	1.215 (0.750 to 1.967)
	11 – 20/month	0.523	0.316	2.746	1	0.098	1.687 (0.909 to 3.132)[b]
	>20/month	0.751	0.392	3.664	1	0.056	2.118 (0.982 to 4.569)[b]
Advanced training in chronic non-cancer pain		-0.152	0.287	0.279	1	0.597	0.859 (0.489 to 1.508)
Wait time for referral to pain specialist >12 mos		0.132	0.209	0.400	1	0.527	1.141 (0.758 to 1.719)
Wait time for referral to addiction specialist >12 mos		-0.582	0.258	5.084	1	0.024	0.559 (0.337 to 0.927)[c]
Number correct in knowledge questions		0.063	0.066	0.917	1	0.338	1.065 (0.936 to 1.212)

N=476; chi square (16, N=476) = 26.2 P=0.051 Cox and Snell R square = 0.054; Nagelkerke R square =0.072
a reference category 1 – 5 Rxs per month; Significant at P values of: b <0.1, c<0.05;
df, degrees of freedom; OR, odds ratio; CI, confidence interval; Rxs, prescriptions.

Table 21 Logistic regression model: outcome measure – selecting recommended second-line therapy for mild to moderate pain; explanatory variables – explanatory variables significant at P<0.2 in bivariate analysis

Variable	Beta	Standard Error	Wald	Df	P	OR (95% CIs)
Sex	0.218	0.185	1.392	1	0.238	1.244 (0.866 to 1.788)
Years in practice	0.006	0.007	0.643	1	0.422	1.006 (0.992 to 1.020)
Community size	0.001	0.000	2.939	1	0.086	1.001 (1.001 to 1.001)[b]
Patients seen per month	-0.001	0.000	4.432	1	0.035	0.999 (0.999 to 1.000)[c]
Confidence in prescribing opioids	0.239	0.095	6.269	1	0.012	1.270 (1.053 to 1.531)[c]
Wait time for referral to addiction specialist >12 mos	-0.210	0.223	0.885	1	0.347	0.811 (0.523 to 1.255)

N=570; chi square (6, N=570) = 18.8 P<0.002 Cox and Snell R square = 0.032; Nagelkerke R square =0.043
Significant at P values of: b <0.1, c<0.05; df, degrees of freedom; OR, odds ratio; CI, confidence interval.

Table 22 Logistic regression model: outcome measure – selecting recommended first-line therapy for severe pain; explanatory variables – demographic and practice variables

Variable	Beta	Standard Error	Wald	Df	P	OR (95% CIs)
Sex	0.311	0.216	2.078	1	0.149	1.365 (0.894 to 2.082)
Years in practice	-0.007	0.009	0.610	1	0.435	0.993 (0.977 to 1.010)
Community size	0.000	0.000	0.740	1	0.390	1.000 (1.000 to 1.001)[b]
Patients seen per month	-0.001	0.000	4.855	1	0.028	0.999 (0.998 to 1.000)[c]
Confidence in prescribing opioids	0.333	0.128	6.791	1	0.009	1.395 (1.086 to 1.791)[d]
Definition of chronic non-cancer pain	0.005	0.240	0.000	1	0.983	1.005 (0.628 to 1.609)
Rxs per month weak opioids[a] 6 – 10/month	-0.012	0.257	0.002	1	0.964	0.988 (0.597 to 1.636)
11 – 20/month	0.297	0.312	0.907	1	0.341	1.346 (0.730 to 2.483)
>20/month	-0.250	0.373	0.449	1	0.503	0.779 (0.375 to 1.617)
Rxs per month strong opioids[a] 6 – 10/month	0.055	0.247	0.050	1	0.823	1.057 (0.651 to 1.715)
11 – 20/month	1.146	0.352	10.625	1	0.001	3.146 (1.579 to 6.267)[d]
>20/month	1.204	0.433	7.718	1	0.005	3.332 (1.425 to 7.788)[d]
Advanced training in chronic non-cancer pain	0.210	0.307	0.466	1	0.495	1.233 (0.676 to 2.252)
Wait time for referral to pain specialist >12 mos	0.029	0.215	0.019	1	0.892	1.030 (0.675 to 1.572)
Wait time for referral to addiction specialist >12 mos	0.074	0.268	0.075	1	0.784	0.076 (0.636 to 0.822)[b]
Number correct in knowledge questions	0.008	0.067	0.013	1	0.910	1.008 (0.883 to 1.150)

N=477; chi square (16, N=477) = 47.0 P<0.001 Cox and Snell R square = 0.094; Nagelkerke R square =0.127
a reference category 1 – 5 Rxs per month; Significant at P values of: b <0.1, c<0.05; df, degrees of freedom; OR, odds ratio; CI, confidence interval; Rxs, prescriptions.

Table 23 Logistic regression model: outcome measure – selecting recommended first-line therapy for severe pain; explanatory variables – explanatory variables significant at P<0.2 in bivariate analysis

Variable		Beta	Standard Error	Wald	Df	P	OR (95% CIs)
Sex		0.275	0.204	1.818	1	0.178	1.316 (0.883 to 1.963)
Patients seen per month		-0.001	0.000	6.507	1	0.011	0.999 (0.998 to 1.000)[c]
Confidence in prescribing opioids		0.285	0.124	5.318	1	0.021	1.330 (1.044 to 1.695)[c]
Rxs per month weak opioids[a]	6 – 10/month	-0.012	0.252	0.002	1	0.962	0.988 (0.604 to 1.618)
	11 – 20/month	0.264	0.304	0.755	1	0.385	1.302 (0.718 to 2.360)
	>20/month	-0.260	0.366	0.507	1	0.477	0.771 (0.376 to 1.579)
Rxs per month strong opioids[a]	6 – 10/month	0.089	0.241	0.136	1	0.713	1.093 (0.682 to 1.752)
	11 – 20/month	1.187	0.348	11.638	1	0.001	3.278 (1.657 to 6.485)[d]
	>20/month	1.289	0.428	9.073	1	0.003	3.630 (1.569 to 8.400)[d]
Advanced training in chronic non-cancer pain		0.195	0.298	0.426	1	0.514	1.215 (0.677 to 2.179)
Wait time for referral to addiction specialist >12 mos		0.010	0.250	0.002	1	0.968	1.010 (0.619 to 1.649)

N=491; chi square (11, N=491) = 46.6 P<0.001 Cox and Snell R square = 0.091; Nagelkerke R square =0.122
a reference category 1 – 5 Rxs per month; Significant at P values of: c<0.05; d<0.01; df, degrees of freedom; OR, odds ratio; CI, confidence interval; Rxs, prescriptions.

Table 24 Explanatory variables significant at P<0.05 level in multivariate analysis

	OM 1		OM2		OM3		OM4	
	Explanatory variables		Explanatory variables		Explanatory variables		Explanatory variables	
Variable	**All 12**	**P<0.2**	**All 12**	**P<0.2**	**All 12**	**P<0.2**	**P<0.2**	**P<0.2**
Sex			-0.54					
Years in practice								
Community size			-0.034					
Patients seen per month			0.001		-0.001	-0.001	-0.001	-0.001
Confidence in prescribing opioids	0.69	0.63	0.73	0.56		0.24	0.33	0.29
Definition of chronic non-cancer pain								
Rxs per month weak opioids 6 – 10/month								
11 – 20/month								
>20/month	0.77							
Rxs per month strong opioids 6 – 10/month								
11 – 20/month	-0.66	-0.81					1.15	1.19
>20/month							1.20	1.29
Advanced training in chronic non-cancer pain	0.65	0.67		0.72				
Wait time for referral to pain specialist >12 mos								
Wait time for referral to addiction specialist >12 mos					0.58			
Number correct in knowledge questions								

OM, Outcome measure; All 12, all demographic and practice variables; P<0.02, explanatory variables significant at P<0.02 in bivariate analysis; Numbers = beta; Rxs, prescriptions.

CHAPTER 4 DISCUSSION

To our knowledge, this is the first national online survey on opioid prescribing for CNCP that has tried to elicit responses from family physicians across the country. We attempted to contact family physicians through mass emails sent by provincial regulatory colleges. In provinces where college policy prohibited such mass emails we were able to reach large numbers of physicians by emails sent by university continuing medical education departments. In addition, announcements in the electronic bulletin of the College of Family Physicians of Canada reached approximately 11,000 physicians.

Despite these efforts to contact family physicians and encourage participation the response rate is a concern. While it is impossible to know how many family physicians received notification of the survey to determine a precise response rate, it is obvious that 710 responses represent a very small percentage of the approximately 32,000 family physicians in Canada. However, there are similarities between the demographic and practice responses on this survey and those of the 2007 National Physician Survey which received responses from approximately 10,000 family physicians.[71] (Table 25). While this finding does not guarantee the respondents were representative of the whole family physician population, it is reassuring. In addition, while Rusk found that young male physicians were more likely to respond to internet surveys,[68] this was not the case for our study.

There was marked variability in the how closely respondents' practices matched those recommended by the Canadian Guideline. Notably, only five percent of respondents indicated they did not prescribe opioids. This is much lower than has been found in other surveys though they drew on smaller samples. A 2001 survey of 70 Canadian family physicians found that 35% did not prescribe opioids for CNCP[23] while a survey of 115 English family physicians found that 25% did not.[29] Including those who prescribe only weak opioids and those who prescribe no opioids in our survey, the number indicating they do not prescribe strong opioids rises to 13%. Again this is much lower than the approximately 35% of family physicians who have indicated in other surveys that they would not prescribe strong opioids[24] or long-acting opioids,[25] most of which are strong. It may be that those who responded to our survey were more interested in the topic of pain management and therefore more likely to use a wide range of treatments to help their patients, including opioids. However, our result is close to that of unpublished data from

Table 25 Comparison of responses to opioid survey and 2007 National Physician Survey

Variable	Percent Responses	
	Opioid Survey	2007 National Physician Survey[17]
Male sex	59%	63%
Years in practice		
0 to 10 years	26%	18%
11 to 20 years	18%	25%
21 to 30 years	31%	28%
> 30 years	26%	21%
Patients seen per month		
<200	23%	18%
200 to 400	33%	29%
401 to 600	29%	25%
601 to 800	9%	13%
>800	6%	5%
Community size of practice		
≤25,000	35%	31%[a]
>25,000	65%	63%[b]

a categories were small town, rural, and geographically isolated/remote
b categories were inner city and urban/suburban

the Nova Scotia Prescription Monitoring Program which found that in 2010 only 8% of family physicians did not prescribe opioids for CNCP.

Physicians' concern for patient safety when prescribing opioids was reflected in their commonly conducted practices when starting and monitoring opioid therapy. The most frequently reported practice when starting a patient on opioids was to explain the potential harms of long-term opioid therapy while the most frequently reported activities when monitoring opioid therapy were observing for aberrant drug-related behaviour, assessing adverse effects, and advising the patient to use caution while driving.

Respondents were also conscientious about assessing function, more so than assessing pain intensity. However, their responses may have been influenced by the wording of the questions. Questions about assessing pain intensity asked respondents if they used a scale. Questions about assessing function did not specify use of a scale. Ten respondents wrote in that they assessed pain informally or knew their patients well enough that formal assessment wasn't necessary. Therefore, it is possible that physicians are assessing pain more frequently than indicated by responses, but not using a scale. A similar explanation could apply to the low frequency reported for assessing risk of addiction with a screening tool and for having their patients sign a management agreement. Twenty-one physicians commented that they screen without a tool or know their patients well enough it isn't necessary. Nine stated they use management agreements in patients they consider at high risk or used informal oral agreements.

One of the practices reported being done infrequently was discontinuing opioids and trying another modality. Only 27% of respondents reported doing this in at least 75% of patients or always. The guideline recommends viewing long-term opioid treatment as a therapeutic trial. Physicians should ask their patients to define goals in terms of pain relief and function when starting therapy, and review those goals at subsequent visits. If the goals are not reached despite higher doses, it is reasonable to taper them off the opioids since there may be long-term adverse effects. However, many respondents do not appear to be taking that approach, a substantial practice gap. Similarly, respondents seem somewhat reluctant to try different opioids for inadequate pain relief. Indeed, some physicians reported that for some patients they don't appear to modify opioid treatment. It may be that the opioids are started by another physician such as a pain specialist, and

respondents are reluctant to make changes, but there were no written comments to that effect.

A concern when asking physicians about their practices is the potential for social desirability bias – respondents giving the answer they think is correct or expected. To assess this possibility, we included two distracter questions, those that asked about practices not recommended in the guideline. Encouragingly, physicians reported doing these two practices the least frequently of all practices, indicating social desirability may not be a cause for concern.

There were some practice gaps identified in the choice of first, second and third line opioid for mild to moderate pain and severe pain. Most respondents (95%) correctly selected the weak opioids codeine or tramadol as the first line drug in mild to moderate pain. Only 52% correctly selected morphine, hydromorphone, or oxycodone as second line therapy. However, 34% of respondents chose tramadol as second line. If codeine was selected as first line, it is reasonable to try tramadol as second line before moving on to strong opioids. Similarly, if tramadol was selected as first line, it is reasonable to try codeine as second line before moving on to strong opioids. If codeine and tramadol are considered as reasonable second-line choices, along with morphine, hydromorphone, and oxycodone, then 99% of respondents made an appropriate choice.

A similar picture emerged with choice of second and third-line opioids for severe pain. Fifty-six percent of respondents correctly chose morphine, hydromorphone, or oxycodone as first-line in severe pain. If one of these three drugs fails, it is reasonable to try the other two before moving on to fentanyl and methadone. Using this line of reasoning, 84% and 75% of respondents made an appropriate second-and third-line choice respectively. Meperidine, pentazocine, and propoxyphene, three drugs no longer recommended because of adverse effects and limited efficacy were seldom chosen for either mild to moderate or severe pain. Of note, the guideline recommendations are Grade C consensus, so most respondents are making reasonable choices.

There was much uncertainty among respondents about the “watchful dose” of opioids – the dose below which most CNCP patients can be managed and above which clinicians should carefully reassess pain and the risk for misuse, and frequently monitoring patient outcomes. Forty-eight percent had no opinion which suggests they were not aware of the concept of “watchful dose” an indication that the guideline had not been widely disseminated at the time of the survey. Only 5% responded that 200 mg MEQ was the

recommended watchful dose which may represent educated guesses rather than actual knowldege.Thirty-seven percent thought the watchful dose was below 100 mg MEQ another illustration of the cautious approach physicians take towards prescribing opioids. There are two grades of evidence associated with the watchful dose. The ability of most patients to be managed with dosages ≤ 200 mg MEQ is Grade A although it is noteworthy that another guideline recommends 120 mg MEQ as the watchful dose.[72] The need to carefully asses pain and risk for misuse and frequently monitor patients outcomes is Grade C.

A patient safety issue identified by the survey concerned the minimum daily dose of strong opioids a patient should be taking before prescribing the fentanyl patch. To decrease the potential for overdose from fentanyl, the guideline states that patients should be on a dose of 60 to 90 mg MEQ for two weeks.[17] Twenty-nine percent of respondents thought there is no minimum and another 13% thought the dose was less than 60 mg MEQ. This is an important issue to include in educational programs about the guideline.

Another practice not explicitly recommended in the guideline concerns urine drug testing. The recommendation advises clinicians to be aware of the benefits and limitations of urine drug screening.

> "When using urine drug screening to establish a baseline measure of risk or to monitor compliance, be aware of benefits and limitations, appropriate test ordering and interpretation, and have a plan to use results."

This recommendation is given Grade C, consensus. Urine drug screening is complicated with different types of tests being able to detect different drugs. Therefore, it is not surprising that respondents may not be doing it frequently, a finding consistent with a survey of American physicians.[55] Like many other practices, respondents commented that they individualize their approach to urine drug screening, using it with high risk patients (5 comments).

While the survey identified several practice gaps, it is important to remember that only one recommendation concerning these practices was based on Grade A evidence (watchful dose). The others were Grade B or C, which indicates the uncertainty and lack of evidence about this clinical area.

There were substantial gaps in knowledge including the definition of CNCP. Only 23% of respondents defined CNCP as pain lasting longer than six months. Most respondents (63%) defined CNCP as pain persisting beyond the time normally associated with healing of a specific condition. This definition could lead to patients being diagnosed with chronic pain too early in the course of their health condition and being inappropriately considered for opioid therapy. Conversely, it could lead to a trial of opioid therapy being withheld from some patients in the expectation that their condition may further improve.

Other knowledge gaps have cost implications. Seventy-one percent of respondents thought some strong opioids provide better pain relief than others while 63% thought some strong opioids were more likely than others to lead to addiction. Since there is no consistent evidence to support these differences in efficacy and harms[73] it makes economic sense to start treatment with the cheapest opioid which in Nova Scotia is generic hydromorphone (approximately $25 per month for 60 mg MEQ per day).[74] Similarly, controlled release preparations are much more expensive than immediate release preparations (approximately $64 to $95 per month for 60 mg MEQ per day in Nova Scotia).[74] While they may be more convenient, there is no conclusive evidence they offer benefits in pain relief or potential for addiction.[73] Therefore, physicians should feel confident prescribing cheap preparations if cost is a concern for the patient.

The practice gap identified in switching patients from other opioids to fentanyl was mirrored in the knowledge gap about switching patients from a high dose of codeine to fentanyl. Forty-six percent of respondents considered this a safe practice when in fact it is not recommended because some people do not have the enzyme to convert codeine to its active metabolite (morphine) and would essentially be opioid-naïve, putting them at risk of overdose. This knowledge gap has substantial implications for patient safety.

Sixty-five percent of respondents thought a 20% reduction in pain intensity is considered clinically significant while the Canadian guideline considers the cut off to be 30%. To determine the percent improvement, it is necessary to measure pain intensity with a scale, a practice not frequently done by respondents. Therefore, any educational interventions on this topic should address the possible benefits of using the scale and interpreting changes from therapy. There was no knowledge gap about the importance of evaluating function while monitoring patients' response to therapy which is in keeping with the frequency with which respondents report they do this practice.

The final knowledge gap concerns the long-term evidence for use of opioids in CNCP. Sixty-nine percent thought there was evidence from randomized controlled trials that opioids are effective for long-term (> 3 months) relief of CNCP. In fact, the longest randomized controlled trials for recommended drugs are 13 weeks. Evidence for longer term (approximately 6 months) comes from pre-post case-series studies many of which are un-blinded continuation of randomized controlled trials.[75] This is another illustration of the paucity of evidence in the important clinical area of CNCP and the need to make recommendations based on incomplete evidence.

Information about barriers to care came from respondents who did not prescribe opioids or prescribed only weak opioids, a total of 90 respondents. While this is a limitation, many responses were similar to those of other surveys. The most important barrier listed by both groups was concern about long-term adverse effects such as addiction or misuse which has been found in other surveys from Canada,[1,23,27] the United States,[28] and England.[29] In the largest and most-recent Canadian survey, 71% of respondents were somewhat or very concerned about addiction and misuse when prescribing opioids,[27] which is somewhat lower than the 88% of our respondents who rated these factors as four or five on the five-point scale. In a similar vein, concern about strong opioids being diverted for illicit use, and for being seen as a target prescriber of opioids, were also important barriers. Another important barrier was the concern that patients complain of pain out of proportion to their physical findings. This result disagrees somewhat with a study of Texas physicians in which 59% disagreed that patients who complain of pain out of proportion to its cause are usually drug abusers.[76]

Concern about audit from a regulatory body was not considered an important barrier which is similar to results of other surveys from Canada[23,27] and the United States.[76,28] The time required to titrate and monitor opioids was not reported as a substantial barrier. This may be because physicians recognize the importance of chronic pain and its effects on patients' lives and are willing to take the time to help their patients if they can. Previous Canadian surveys have found that chronic pain was a significant factor in their practice[26] but that pain management was not too time consuming.[23]

Knowledge of which opioids to use and the correct dosages were not cited as substantial barriers, a result similar to that reported by American[53] and Canadian physicians.[1] However, as reported above, our survey showed substantial knowledge gaps with respect to the relative benefits and addictive potential of strong opioids and controlled

release *vs*. immediate release preparations and the safe initiation of fentanyl. It may be that physicians are aware of their uncertainty about their knowledge in these areas since 84% rated knowledge of the risks and benefits of various opioids as four or five on the five-point scale.

There was little separation in the rating of factors that would enable respondents to follow guideline recommendations suggesting they are all important to physicians. The most highly rated factor was being able to obtain patients' opioid prescribing history from a provincial monitoring program. This factor also generated 19 comments all but two of which expressed enthusiasm for this service. A survey of Ontario family physicians had a similar result,[27] which is not surprising considering that 52% of respondents in our survey came from Ontario. This finding, combined with the low concern physicians have for being audited makes a case for implementation of prescription monitoring programs. Such programs now exist in six jurisdictions – British Columbia, Saskatchewan, Alberta, Manitoba, Yukon, and Nova Scotia and it is reasonable to consider making these programs available throughout Canada to track the type and amount of opioids used and to help physicians monitor their patients.

Also highly rated was improved access to pain or addiction specialists, the factor which generated more comments than any other on the survey (63). Generally, respondents wanted easier access to specialists and many were frustrated by the long wait time to see them which was over 12 months for 39% of respondents to see a pain specialist.

However, 13 respondents were skeptical about the value of the clinics, complaining that opioids were over-prescribed sometimes leading to decreased function for the patient. This finding may be a reflection of variation in treatment of CNCP with opioids across the country. Unfortunately, we did not have enough responses from various parts of the country to explore regional differences. Future surveys could try to sample more rigorously and survey pain specialists to determine their opioid prescribing practices. It would not be surprising to find differences considering the wide regional variation in opioid utilization reported elsewhere.[8,43]

While 84% of respondent rated the usefulness of tips to recognize patients at high risk of addiction as four or five, having a validated tool to screen patients for addiction was rated somewhat lower (74% rated as four or five). This difference may reflect many comments made that physicians tend to evaluate addiction risk, pain intensity, and function informally or selectively, believing they have adequate knowledge of their

patients and do not need formal assessment. Therefore, they may prefer the informal approach of having useful tips to the more structured approach of using a validated scale. The value of a validated tool to assess pain intensity was also rated four or five by 74% of respondents which supports this line of reasoning. However, 81% of respondents rated having a validated scale to assess function as four or five so there is some inconsistency.

Educational resources such as a current guideline and continuing medical education in optimal use of opioids were rated four or five by 82% and 79% of physicians respectively, findings that are consistent with those of other Canadian surveys.[23,27] Among the least valued resources concerned urine drug screening, which perhaps is related to the infrequency with which respondents reported performing this practice.

The explanator most consistently associated with all outcomes was confidence in prescribing opioids which was statistically significant ($P<0.05$) in all models. In the regression models for the outcomes of best practices while starting and monitoring opioids, confidence in prescribing opioids uniquely explained approximately 5% of the variance of the outcomes (based on square of part P, data not shown). In the regression models for outcomes of correct choice of second line opioid in mild to moderate pain and correct choice of first line opioid in severe pain the odds ratio was approximately 1.3.

Taking advanced training in management of CNCP was significantly associated with the outcome measures of best practices in starting and monitoring opioids in parsimonious models, but like confidence in prescribing opioids, uniquely explained approximately 5% of the variance of the outcome measures. It is understandable that having advanced training would be associated with increased frequency of carrying out recommended practices, and one would expect this to extend to making the correct first, second and third-line choices for mild to moderate and severe pain. However this association was not found, perhaps because the design of the question allowed respondents to choose only one first line drug when in fact two or three choices would be reasonable as described in more detail on page 75.

The other explanatory variable (in addition to confidence prescribing opioids) that was statistically significantly associated with the outcomes of correct first, second and third-line choices for mild to moderate and severe pain was the number of patients respondents saw per month. This was a negative association suggesting that busier physicians are less likely to make correct drug choices. Overall, the models accounted

for at most approximately 12% of the variance in outcome variables, indicating there are other factors at play that account for the physicians responses.

While this survey provides a snapshot of Canadian family physicians' practices and knowledge about use of opioids in CNCP, it is possible that responders were physicians who have a special interest in use of opioids and pain management. Results may thus represent a best-case situation. It would be helpful to repeat the survey using more rigorous sampling methods (e.g., random sampling with paper and online distribution) to achieve a representative sample. Proper sampling techniques would also allow comparisons across geographic areas to determine regional variation in responses. Rather than relying on self-reported data, actual prescribing choices could be determined from analysis of prescribing data such as that available from prescription monitoring programs (presently in British Columbia, Alberta, Saskatchewan, Manitoba, Nova Scotia, and Yukon) and other provincial databases. Finally, since management of CNCP is a multidisciplinary activity, it would be useful to adapt the questionnaire to survey pharmacists, pain specialists, and nurses involved in pain management. This thesis was planned and executed in collaboration with the National Opioid Utilization Guideline Group which developed the Canadian Guideline. NOUGG has now disbanded and the guideline is housed at the Michael G. DeGroote National Pain Centre, McMaster University. Continued collaboration with the National Pain Centre will increase the likelihood of this further research taking place.

Conclusions

There are a number of knowledge gaps that have implications for patient care and the health care system. Most family physicians considered chronic pain to be pain lasting longer than the normal time required for resolution of the causative condition rather than the current definition as pain lasting at least six months. Patients may therefore be mis-categorized has having or not having CNCP which may affect clinicians' approach to managing them. Furthermore, assessment of normal time required for resolution may not be consistent among clinicians.

Family physicians were also misinformed about the proposed differences in controlled-release preparations versus immediate-release preparations in terms of efficacy and likelihood of causing addiction which could lead to prescribing of more expensive

preparations. They had a similar misunderstanding about differences among strong opioids, with similar cost implications. Finally, they thought there was long-term randomized controlled trial evidence for efficacy of opioids in treating CNCP, while the longest trials lasted only 13 weeks. This knowledge gap may be related to a practice gap in which few respondents said they discontinued opioids for lack of efficacy or adverse effects. If family physicians are aware of the limitations of the evidence, they may be more likely to view starting long-term opioid therapy for CNCP as a trial of therapy that requires diligent follow-up and re-assessment and discontinuation if the patient's predefined goals are not achieved.

Knowledge and practice gaps concerning starting treatment with fentanyl have implications for patient safety. Many family physicians are not aware that patients should be on a dose of 60 mg MEQ of a strong opioid before starting fentanyl and failure to follow this regimen can lead to serious overdose. In contrast, family physicians tended to underestimate the "watchful dose" of opioid which would lead them to adopt a cautious approach to long-term opioid therapy. This cautious approach is also shown by the high frequency with which family physicians report they monitor for aberrant drug-related behaviour and adverse effects.

Several practice gaps may be related to family physicians' perception that they know their patients so well that formal procedures are not required. Use of a management agreement, assessing pain with a scale, and assessing addiction with a tool all fit into this category. To bring about change in these practices will require emphasizing to physicians the difficulty of assessing patients without formal procedures. When considering all these practice gaps, it is essential to remember that few recommendations have Grade A evidence and many are based on consensus.

Information about barriers to optimal use of opioids comes from respondents who did not prescribe opioids or prescribed only weak opioids and again reflects the cautious approach that some physicians have to using opioids. The main barriers were concern about long-term adverse events like addiction and misuse, diversion, and becoming a target prescriber. They were also aware of the lack of high quality evidence for the efficacy of long-term opioid therapy in CNCP.

Information about enablers comes from all respondents who prescribed opioids. With the exception of availability of urine drug screening and readily available help from a mentor or help-line, respondents rated all other factors as being valuable. Among the least

valuable were validated tools to assess pain and addiction risk, which is in keeping with their practice gaps in these areas. The most highly rated factors again concerned addiction and misuse with being able to obtain a patient's opioid history from a monitoring program being the priority.

In summary, this thesis identified several gaps in family physicians knowledge and practice in relation to the newly released Canadian Guideline. These gaps could be addressed by education of family physicians and other health care professionals such as pharmacists. However, educational interventions must include information about the low quality of evidence in this clinical area, and that there are few Grade A recommendations. To help minimize abuse and misuse of opioids, all provinces should have a prescription monitoring program which can help physicians monitor their patients on opioids. Finally, we found no consistent characteristic that identified physicians as being more likely to practice in accordance with the guideline. Therefore, any interventions developed should be directed at all family physicians who prescribe opioids for the management of CNCP.

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24 November 2009

Dr. Michael Allen
Director of Evidence-based Programs
Dalhousie University CME
5849 University Avenue
Halifax NS B3H 4H7

Dear Dr. Allen,

Re: Opioid Prescribing Practices: Survey of Canadian Family Physicians

We are writing on behalf of the National Opioid Use Guideline Group (NOUGG) to show our support for your study, **Opioid Prescribing Practices: Survey of Canadian Family Physicians.**

The National Opioid Use Guideline Group (NOUGG) is a unique collaboration of Medical Regulatory Authorities with the active support and/or representation from all provincial Colleges, the Yukon Medical Council and the government of Nunavut. NOUGG formed in late 2007 when regulators recognized they shared the goal of helping physicians prescribe opioids for chronic non-cancer pain safely and effectively.
The group is working to achieve 3 key goals:

- Develop a national evidence-based guideline – "Safe and Effective Use of Opioids for Chronic Non-cancer Pain",
- Create a national repository of resources to facilitate actively moving the guideline to practice so that it makes a difference to how physicians practice, and,
- Ensure the guideline finds a 'permanent home' within an appropriate academic environment so the evidence supporting the guideline remains current and useful.

NOUGG anticipates finalizing the guideline in December 2009 with an official release and activities to implement the Guideline to practice in 2010.

We believe you have the potential in your study to find evidence about current family physician practice regarding opioid use for chronic non-cancer pain that will be an important baseline to help NOUGG evaluate whether or not the Guideline has made an impact on practice. Information you collect will also be valuable in understanding the barriers and facilitators to using the recommendations of the Guideline and this understanding will help us plan a more effective implementation.

We are pleased to offer you assistance in ensuring that family physicians across the country are encouraged to complete your survey. This assistance will be offered by members of NOUGG, representing the provincial regulatory bodies to the extent possible within the structure and resources of each College.

Sincerely,

Clarence Weppler
Co-Chair
NOUGG

Rhoda Reardon
Co-Chair
NOUGG

SUMMARY of RECOMMENDATIONS

Cluster 1: Deciding to Initiate Opioid Therapy

No.	Recommendation	Keyword
R01	Before initiating opioid therapy, ensure comprehensive documentation of the patient's pain condition, general medical condition and psychosocial history (Grade C), psychiatric status, and substance use history. (Grade B).	*Comprehensive assessment*
R02	Before initiating opioid therapy, consider using a screening tool to determine the patient's risk for opioid addiction. (Grade B).	*Addiction-risk screening*
R03	When using urine drug screening (UDS) to establish a baseline measure of risk or to monitor compliance, be aware of benefits and limitations, appropriate test ordering and interpretation, and have a plan to use results. (Grade C).	*Urine drug screening*
R04	Before initiating opioid therapy, consider the evidence related to effectiveness in patients with chronic non-cancer pain. (Grade A).	*Opioid efficacy*
R05	Before initiating opioid therapy, ensure informed consent by explaining potential benefits, adverse effects, complications and risks (Grade B). A treatment agreement may be helpful, particularly for patients not well known to the physician or at higher risk for opioid misuse. (Grade C).	*Risks, adverse effects, complications*
R06	For patients taking benzodiazepines, particularly for elderly patients, consider a trial of tapering (Grade B). If a trial of tapering is not indicated or is unsuccessful, opioids should be titrated more slowly and at lower doses. (Grade C).	*Benzodiazepine tapering*

Cluster 2: Conducting an Opioid Trial

R07	During dosage titration in a trial of opioid therapy, advise the patient to avoid driving a motor vehicle until a stable dosage is established and it is certain the opioid does not cause sedation (Grade C); and when taking opioids with alcohol, benzodiazepines, or other sedating drugs. (Grade B).	*Titration and driving*
R08	During an opioid trial, select the most appropriate opioid for trial therapy using a stepped approach, and consider safety. (Grade C).	*Stepped opioid selection*
R09	When conducting a trial of opioid therapy, start with a low dosage, increase dosage gradually and monitor opioid effectiveness until optimal dose is attained. (Grade C).	*Optimal dose*
R10	Chronic non-cancer pain can be managed effectively in most patients with dosages at or below 200 mg/day of morphine or equivalent (Grade A). Consideration of a higher dosage requires careful reassessment of the pain and of risk for misuse, and frequent monitoring with evidence of improved patient outcomes. (Grade C).	*Watchful dose*
R11	When initiating a trial of opioid therapy for patients at higher risk for misuse, prescribe only for well-defined somatic or neuropathic pain conditions (Grade A), start with lower doses and titrate in small-dose increments (Grade B), and monitor closely for signs of aberrant drug-related behaviors. (Grade C).	*Risk: opioid misuse*

Cluster 3: Monitoring Long-Term Opioid Therapy (LTOT)

No.	Recommendation	Keyword
R12	When monitoring a patient on long-term therapy, ask about and observe for opioid effectiveness, adverse effects or medical complications, and aberrant drug-related behaviours. (Grade C).	*Monitoring LTOT*
R13	For patients experiencing unacceptable adverse effects or insufficient opioid effectiveness from one particular opioid, try prescribing a different opioid or discontinuing therapy. (Grade B).	*Switching or discontinuing opioids*
R14	When assessing safety to drive in patients on long-term opioid therapy, consider factors that could impair cognition and psychomotor ability, such as a consistently severe pain rating, disordered sleep, and concomitant medications that increase sedation. (Grade C).	*LTOT and driving*
R15	For patients receiving opioids for a prolonged period who may not have had an appropriate trial of therapy, take steps to ensure that long-term therapy is warranted and dose is optimal. (Grade C).	*Revisiting opioid trial steps*
R16	When referring patients for consultation, communicate and clarify roles and expectations between primary-care physicians and consultants for continuity of care and for effective and safe use of opioids. (Grade C).	*Collaborative care*

Cluster 4: Treating Specific Populations with Long-Term Opioid Therapy

R17	Opioid therapy for elderly patients can be safe and effective (Grade B) with appropriate precautions, including lower starting doses, slower titration, longer dosing interval, more frequent monitoring, and tapering of benzodiazepines. (Grade C).	*Elderly patients*
R18	Opioids present hazards for adolescents (Grade B). A trial of opioid therapy may be considered for adolescent patients with well-defined somatic or neuropathic pain conditions when non-opioid alternatives have failed, risk of opioid misuse is assessed as low, close monitoring is available, and consultation, if feasible, is included in the treatment plan. (Grade C).	*Adolescent patients*
R19	Pregnant patients taking long-term opioid therapy should be tapered to the lowest effective dose slowly enough to avoid withdrawal symptoms, and then therapy should be discontinued if possible. (Grade B).	*Pregnant patients*
R20	Patients with a psychiatric diagnosis are at greater risk for adverse effects from opioid treatment. Usually in these patients, opioids should be reserved for well-defined somatic or neuropathic pain conditions. Titrate more slowly and monitor closely; seek consultation where feasible. (Grade B).	*Co-morbid psychiatric diagnoses*

Cluster 5: Managing Opioid Misuse and Addiction in CNCP Patients

No.	Recommendation	Keyword
R21	For patients with chronic non-cancer pain who are addicted to opioids, three treatment options should be considered: methadone or buprenorphine treatment (Grade A), structured opioid therapy (Grade B), or abstinence-based treatment (Grade C). Consultation or shared care, where available, can assist in selecting and implementing the best treatment option. (Grade C).	*Addiction treatment options*
R22	To reduce prescription fraud, physicians should take precautions when issuing prescriptions and work collaboratively with pharmacists. (Grade C).	*Prescription fraud*
R23	Be prepared with an approach for dealing with patients who disagree with their opioid prescription or exhibit unacceptable behaviour. (Grade C).	*Patient unacceptable behaviour*
R24	Acute or urgent health care facilities should develop policies to provide guidance on prescribing opioids for chronic pain to avoid contributing to opioid misuse or diversion. (Grade C).	*Acute care opioid prescribing policy*

Appendix C Survey Questions

Research Study
Family Physicians' Prescribing Practices in Managing Chronic Non-Cancer Pain

You are invited to participate in a research study which is part of an MSc thesis for Dr. Michael Allen. This survey is for family physicians who treat patients with chronic non-cancer pain (CNCP). If you do not fit this category please do not complete the survey.

Results of this survey will help develop educational programs about treatment of CNCP. This project is supported in principle by all the provincial regulatory colleges through the National Opioid Use Guideline Group. There is no pharmaceutical company involvement.

Consent

- There are minimal risks for completing the questionnaire, though you may feel discomfort in disclosing your opinions and experiences.
- Your responses are anonymous and will not be linked to you.
- Data will be aggregated and reported by province, region, and rural/urban categories; your individual data will not be reported.
- Data may be compared with future results if the survey is repeated in a few years.
- If you want results of the survey, please contact Dr. Allen.
- Survey data will be stored on an encrypted USB drive and kept for 7 years. After that the USB drive will be destroyed.
- This project has been reviewed by the Dalhousie Research Ethics Board.
- If you have any questions please contact the principal investigator Dr. Michael Allen, Dalhousie CME, 5849 University Avenue, Halifax NS B3H4H7 (902-494-2173,michael.allen@dal.ca).
- The thesis supervisor is Dr. Mark Asbridge, Dalhousie Department of Community Health and Epidemiology.
- Completion of the survey implies your consent to participate.

Instructions

Completing the full survey takes about 5-15 minutes. You may skip questions you do not wish to answer. (Question 3 asking if you prescribe opioids is the only exception.)

You may leave the survey at any time by closing your web-browser and your data will not be analyzed.

If you are interrupted, and wish to complete the survey at a **later**time, please click the **Save**button and leave your email address. You will be sent a link that takes you to where you left the survey.

Please click on **Start**

	1 Not very confident	2	3	4	5 Very confident
1. Please, rate your confidence in prescribing opioids for Chronic Non-Cancer Pain					

2. Which of the following definitions of chronic non-cancer pain is MOST similar to YOUR definition?

_____ Pain that persists more than 3 MONTHS
_____ Pain that persists more than 6 MONTHS
_____ Pain persisting beyond the time normally associated with healing for a specific illness or injury

For the remainder of the survey, please respond according to the definition of Chronic Non-Cancer Pain YOU use in your practice.

3. Do you prescribe weak or strong opioids for patients with Chronic Non-Cancer Pain (CNCP)?

- Weak opioids - Codeine, Tramadol, Propoxyphene, Meperidine, Pentazocine
- Strong opioids - Morphine, Oxycodone, Hydromorphone, Fentanyl patch, Methadone

_____ I do NOT prescribe opioids for CNCP……..Link to Q4 page 3
_____ I prescribe only WEAK opioids for CNCP……..Link to Q5 page 98
_____ I prescribe only STRONG opioids for CNCP……..Link to Q6 page 5
_____ I prescribe WEAK and STRONG opioids for CNCP……..Link to Q6 page 5

4. Please indicate how important each of the following is in your decision NOT to prescribe opioids for patients with Chronic Non-Cancer Pain.

Factor	1 Not very important	2	3	4	5 Very important	No opinion
A. Takes too much time to titrate and monitor						
B. Inadequate knowledge of which opioids to use						
C. Inadequate knowledge of dosages						
D. Concern about short-term adverse effects like constipation, sedation, and nausea						
E. Concern about long-term adverse effects like addiction and misuse						
F. Concern about audit from regulatory or monitoring body						
G. Concern that patients complain of pain out of proportion to objective findings						
H. Lack of evidence for effectiveness of opioids in CNCP						
I. Type of practice limits follow up, e.g., walk-in clinic						
J. Concern about becoming a "target prescriber" of opioids						

If you would like to mention other factors or make comments, please enter below.

After this question, respondents who don't prescribe opioids link to Q16 Page 107

5. Please indicate how important each of the following is in your decision to prescribe only WEAK opioids for patients with Chronic Non-Cancer Pain.

Factor	1 Not very important	2	3	4	5 Very important	No opinion
A. Takes too much time to titrate and monitor						
B. Inadequate knowledge of which strong opioids to use						
C. Inadequate knowledge of dosages of strong opioids						
D. Concern about short-term adverse effects like constipation, sedation, and nausea						
E. Concern about long-term adverse effects like addiction and misuse						
F. Concern about audit from regulatory or monitoring body						
G. Lack of evidence for effectiveness of strong opioids in CNCP						
H. Strong opioids commonly diverted and abused in community						
I. Concern about becoming a "target prescriber" of opioids						

If you would like to mention other factors or make comments, please enter below.

6. BEFORE STARTING opioid therapy, in what percentage of your patients with Chronic Non-Cancer Pain do you do the following?

Practice	Never	Less than 25% of patients	Less than 50% of patients	More than 50% of patients	More than 75% of patients	Always
A. Assess patient's level of pain intensity using a scale						
B. Assess patient's level of function (e.g., social, recreational, occupational)						
C. Assess risk of addiction using screening tool						
D. Conduct formal psychological screening						
E. Do urine drug screening						
F. Have patient sign a treatment agreement						
G. Explain potential benefits of long-term opioid therapy						
H. Explain potential harms of long-term opioid therapy						
I. If patient is on a benzodiazepine, try to taper them off						
J. Give the patient written information about opioid therapy						
K. Refer to colleague for assessment						
L. Confirm that the patient has a condition that has been shown to benefit from opioids						

If you have any comments please enter them below

7. WHILE MONITORING opioid therapy, in what percentage of your patients with Chronic Non-Cancer Pain do you do the following?

Practice	Never	Less than 25% of patients	Less than 50% of patients	More than 50% of patients	More than 75% of patients	Always
A. Assess patient's level of pain intensity using a scale						
B. Assess patient's level of function (e.g., social, recreational, occupational)						
C. Observe for aberrant drug-related behaviour such as requesting higher doses or accessing opioids from other sources						
D. Do routine or urine drug screening						
E. Assess for specific adverse effects e.g., nausea, constipation, drowsiness, dizziness						
F. If patient has unacceptable side effects, try a different opioid						
G. If patient is having unacceptable side effects, try a lower dose						
H. If patient has insufficient pain relief, increase the dose						
I. If patient has insufficient pain relief, try a different opioid						
J. If patient has insufficient pain relief, taper off opioid and try another modality						
K. Ask patient to bring remaining medication to check compliance with the prescription						
L. Advise the patient to use caution while driving or operating machinery						

If you have any comments please enter them below

8. Please rate how useful or not useful the following factors would be in helping you optimize your management of patients with chronic non-cancer pain on opioids.

Factor	1 Not very useful	2	3	4	5 Very useful	No opinion
A. Validated screening tool to screen patients for risk of addictIon						
B. Tips in recognizing patients at high risk of addiction						
C. Availability of urine drug screening at local lab						
D. Knowledge of practical aspects of urine drug screening e.g., collecting sample, interpreting results						
E. Validated scale to assess pain intensity						
F. Validated scale to assess function e.g., social, recreational, functional						
G. Knowledge of risks and benefits of different opioids						
H. Up to date guideline on use of opioids in CNCP						
I. CME in optimal use of opioids in CNCP						
J. Readily available help, such as physician mentor or 1-800-help line						
K. Access to patients' opioid prescription history from provincial monitoring program						
L. Patient education material						
M. Improved access to consultants who are experts in pain or addiction						

If you have any comments please enter them below

Questions on this page are for respondents who prescribe only WEAK opioids.

9. For this question please consider that on a scale of 0 to 10
MILD pain is rated 1 to 3
MODERATE pain is rated 4 to 7

You have indicated that you prescribe only WEAK opioids. Assuming you have decided to prescribe an opioid, please indicate your usual first, second, and third line opioid for patients with MILD to MODERATE Chronic Non-Cancer Pain.

Generic name	**Example of brand name**	**First Line** When you start opioid therapy in mild to moderate CNCP which opioid is your first-line preference?	**Second Line** If the first drug is unsatisfactory what would you most likely prescribe next?	**Third Line** If the second drug is unsatisfactory what would you most likely prescribe next?
Codeine with or without acetaminophen	Tylenol #1, 2, 3, Codeine Contin			
Tramadol with or without acetaminophen	Ralivia, Zytram, Tridural, Tramacet			
Propoxyphene	Darvon-N			
Meperidine	Demerol			
Pentazocine	Talwin			

10. For this question please consider that on a scale of 0 to 10
SEVERE pain is rated 8 to 10

You have indicated that you prescribe only WEAK opioids. Assuming you have decided to prescribe an opioid, please indicate your usual first, second, and third line opioid for patients with SEVERE Chronic Non-Cancer Pain.

Generic name	**Example of brand name**	**First Line** When you start opioid therapy in mild to moderate CNCP which opioid is your first-line preference?	**Second Line** If the first drug is unsatisfactory what would you most likely prescribe next?	**Third Line** If the second drug is unsatisfactory what would you most likely prescribe next?
Codeine with or without acetaminophen	Tylenol #1, 2, 3, Codeine Contin			
Tramadol with or without acetaminophen	Ralivia, Zytram, Tridural, Tramacet			
Propoxyphene	Darvon-N			
Meperidine	Demerol			
Pentazocine	Talwin			

Questions on this page are for respondents who prescribe only STRONG opioids.

11.For this question please consider that on a scale of 0 to 10
MILD pain is rated 1 to 3
MODERATE pain is rated 4 to 7

You have indicated that you prescribe only STRONG opioids. Assuming you have decided to prescribe an opioid, please indicate your usual first, second, and third line opioid for patients with MILD to MODERATE Chronic Non-Cancer Pain.

Generic name	**Example of brand name**	**First Line** When you start opioid therapy in mild to moderate CNCP which opioid is your first-line preference?	**Second Line** If the first drug is unsatisfactory what would you most likely prescribe next?	**Third Line** If the second drug is unsatisfactory what would you most likely prescribe next?
Oxycodone with or without acetaminophen	Percocet, Endocet, Oxycontin, Percodan, Endodan			
Morphine	Morphine IR, Statex, MS Contin			
Methadone	Metadol			
Fentanyl patch	Duragesic			
Hydromorphone	Dilaudid, Hydromorph Contin			

12.For this question please consider that on a scale of 0 to 10
SEVERE pain is rated 8 to 10

You have indicated that you prescribe only STRONG opioids. Assuming you have decided to prescribe an opioid, please indicate your usual first, second, and third line opioid for patients with SEVERE Chronic Non-Cancer Pain.

Generic name	**Example of brand name**	**First Line** When you start opioid therapy in mild to moderate CNCP which opioid is your first-line preference?	**Second Line** If the first drug is unsatisfactory what would you most likely prescribe next?	**Third Line** If the second drug is unsatisfactory what would you most likely prescribe next?
Oxycodone with or without acetaminophen	Percocet, Endocet, Oxycontin, Percodan, Endodan			
Morphine	Morphine IR, Statex, MS Contin			
Methadone	Metadol			
Fentanyl patch	Duragesic			
Hydromorphone	Dilaudid, Hydromorph Contin			

Question on this page are for respondents who prescribe WEAK AND STRONG opioids.

13.For this question please consider that on a scale of 0 to 10
MILD pain is rated 1 to 3
MODERATE pain is rated 4 to 7

Assuming you have decided to prescribe an opioid, please indicate your usual first, second, and third line opioid for patients with MILD to MODERATE Chronic Non-Cancer Pain.

Generic name	**Example of brand name**	**First Line** When you start opioid therapy in mild to moderate CNCP which opioid is your first-line preference?	**Second Line** If the first drug is unsatisfactory what would you most likely prescribe next?	**Third Line** If the second drug is unsatisfactory what would you most likely prescribe next?
Codeine with or without acetaminophen	Tylenol #1, 2, 3, Codeine Contin			
Oxycodone with or without acetaminophen	Percocet, Endocet, Oxycontin, Percodan, Endodan			
Morphine	Morphine IR, Statex, MS Contin			
Tramadol with or without acetaminophen	Ralivia, Zytram, Tridural, Tramacet			
Propoxyphene	Darvon-N			
Fentanyl patch	Duragesic			
Meperidine	Demerol			
Pentazocine	Talwin			
Hydromorphone	Dilaudid, Hydromorph Contin			

Question on this page is for respondents who prescribe WEAK AND STRONG opioids.

14.For this question please consider that on a scale of 0 to 10
SEVERE pain is rated 8 to 10

Assuming you have decided to prescribe an opioid, please indicate your usual first, second, and third line opioid for patients with SEVERE Chronic Non-Cancer Pain.

Generic name	**Example of brand name**	**First Line** When you start opioid therapy in mild to moderate CNCP which opioid is your first-line preference?	**Second Line** If the first drug is unsatisfactory what would you most likely prescribe next?	**Third Line** If the second drug is unsatisfactory what would you most likely prescribe next?
Codeine with or without acetaminophen	Tylenol #1, 2, 3, Codeine Contin			
Oxycodone with or without acetaminophen	Percocet, Endocet, Oxycontin, Percodan, Endodan			
Morphine	Morphine IR, Statex, MS Contin			
Tramadol with or without acetaminophen	Ralivia, Zytram, Tridural, Tramacet			
Propoxyphene	Darvon-N			
Fentanyl patch	Duragesic			
Meperidine	Demerol			
Pentazocine	Talwin			
Hydromorphone	Dilaudid, Hydromorph Contin			

15. Please indicate whether you agree or disagree with the following statements.

	Disagree	Agree	No opinion
A. There is evidence from randomized controlled trials that opioids are effective in short-term (up to 3 months) relief of CNCP			
B. There is evidence from randomized controlled trials that opioids are effective in long-term (over 3 months) relief of CNCP			
C. Some strong opioids provide greater pain relief than others			
D. Some strong opioids are more likely to lead to addiction than others			
E. Patients may safely be switched from a high dose of codeine to a fentanyl patch			
F. Controlled-release opioids have a lower risk of addiction than immediate-release opioids			
G. Controlled-release opioids are more effective in controlling pain than immediate-release opioids			
H. A 20% reduction in pain intensity is considered clinically significant			
I. Pain relief is a more important indicator of opioid effectiveness than functional ability			

If you have any comments please enter them below.

16. At what daily dose of morphine or equivalent do you consider that patients might need to be reassessed or more closely monitored?

_____ mg of morphine or equivalent per day

_____ No opinion

17. What is the MINIMUM daily dose of opioid in morphine equivalents that your patient would be taking before you would prescribe FENTANYL patch?

_____ Fentanyl is my first line opioid

_____ 20 morphine equivalents

_____ 40 morphine equivalents

_____ 60 morphine equivalents

_____ No minimum dose, varies with patient condition

_____ No opinion

18. For approximately how many patients per month do you write prescriptions for WEAK opioids for Chronic Non-Cancer Pain?

- Weak opioids are Codeine, Tramadol, Propoxyphene, Meperidine, Pentazocine

_____ 1 to 5 patients per month

_____ 6 to 10 patients per month

_____ 11 to 20 patients per month

_____ more than 20 patients per month

19. For approximately how many patients per month do you write prescriptions for STRONG opioids for Chronic Non-Cancer Pain?

- Strong opioids are Morphine, Oxycodone, Hydromorphone, Fentanyl patch, Methadone

_____ 1 to 5 patients per month

_____ 6 to 10 patients per month

_____ 11 to 20 patients per month

_____ more than 20 patients per month

20. What type of health care professional are you?

_____ Family physician

_____ Specialist physician – Please specify_____

_____ Other health care professional – Please specify_____

21. What is your gender

_____ Female

_____ Male

22. What year did you start practicing as a family physician? _____

23. Have you had any advanced training in pain management such as a diploma course or clinical traineeship?

_____ Yes

_____ No

24. We would like to know how busy your practice is. Approximately how many patients in TOTAL do you see in your office or outpatient clinic per month?

_____ patients per month

25. What is the size of the community in which you practice?

_____ Under 5,000 people

_____ 5,000 to 25,000 people

_____ 25,000 to 100,000 people

_____ 100,000 to 500,000 people

_____ More than 500,000 people

26. What is the waiting time for your patients to see a PAIN specialist for a NON-URGENT referral?

_____ Less than 1 month
_____ 1 to 6 months
_____ 6 to 12 months
_____ More than 12 months
_____ I don't know

27. What is the waiting time for your patients to see an ADDICTION specialist for a NON-URGENT referral?

_____ Less than 1 month
_____ 1 to 6 months
_____ 6 to 12 months
_____ More than 12 months
_____ I don't know

28. In what province do you spend most of your time practicing?

Respondents will be able to choose from list of provinces.

29. The first three characters of your postal code at work indicate whether you practice in a rural or urban setting. Is the second character of your postal code a zero?

_____ Yes
_____ No

Your responses have been submitted.
Thank you for taking our survey.
If you have any questions or comments please contact Dr Michael Allen
michael.allen@dal.ca

Appendix D
Emails of Agreement to Disseminate Information About Survey

British Columbia

Robbert Vroom
Registrar
College of Physicians and Surgeons of British Columbia
November 18, 2009

Hi Mike , Sorry for the delay . I've been trying to get the exact number of GP's practicing in BC and IT now tells me that it is 8127 . Since we transitioned to a new act the codes for our registrants' work type have changed and created some technical challenges , hence the delay .

The deadline for the Jan Quarterly newsletter is this Friday . Did you have a website address yet ?

Bob

Gisèle Bourgeois-Law MD, MEd
Associate Dean Professional Development
Faculty of Medicine UBC
Royal Jubilee Hospital,Coronation Annex Room 107
1952 Bay Street
Victoria, BC V8R 1J8
November 20, 2009

Hi Mike,

Normally, we would not distribute emails for other groups to our audience, but in this case, given the topic and the concerns of the BC College regarding opioid prescribing, we would be happy to do so. Could you send us the one-page summary of the project that you were mentioning? Thanks!

Hope you are enjoying your sabbatical. You are smart to take the time off to do your thesis; it took me 4 years to finish mine trying to fit it around 60-hour work weeks.

Warm regards,

Gisele

++

Alberta

Clarence Weppler
Manager - Physician Prescribing Practices
College of Physicians & Surgeons of Alberta
2700, 10020 – 100 street NW
Edmonton, AB
T5J 0N3
December 11, 2009

Mike,
This is my follow up to our discussion about planning for your survey of family physicians. I apologize for the delay in my response. Numbers used below relate to the questions that you and I spoke about (I sent you the summary file previously), where I agreed to investigate more details.

I am copying Candy Holland on this message, to provide your respective email addresses and establish a means of your connecting with her directly. Candy is the Manager, Website and Publications for the Alberta Medical Association (AMA). I provided her with some limited background about your study plans and reviewed some of your questions with her. She can advise you about possibilities for communicating with Alberta physicians through the electronic communication vehicles of the AMA. Candy and I spoke today by telephone particularly about e-MD Scope, which is released twice monthly during most of the year.

1) Mechanisms for distribution to physicians
/"|· AMA – e-MD scope (electronic twice monthly as noted above) – 2010 deadlines for submission: Jan 7, Jan 21, Feb 4, Feb 18 (Candy can provide dates later than these)
· CPSA – Messenger (paper) - 2010 deadlines for submission: Jan 12 (mailed Feb 16), Feb 23 (mailed Mar 30), Apr 6 (mailed May 11) – I can provide dates later than these if you need them

++

Saskatchewan

Karen Shaw
Deputy Registrar
College of Physicians and Surgeons of Saskatchewan
February 8, 2010

Hi Dr. Allen:
Dr. Kendel has responded and feels that we can use the email addresses that were provided to us to send out your survey. Dr Kendel is the Registrar.

I am awaiting confirmation on numbers of family physicians/number of family physician in active practice in the province and also the email addresses that we have for those individuals.

Once your survey is ready to go please advise and hopefully all the other pieces have fallen into place.

Karen

++

Manitoba

William D. B. Pope, MD LL.B. FRCPC
Registrar/CEO, College of Physicians & Surgeons of Manitoba
1000-1661 Portage Avenue
Winnipeg, MB R3J 3T7
CANADA
October 15, 2009

Hi Michael

I'm forwarding your email to Dr. Anna Ziomek, Asst. Registrar who has been involved with me as the CPSM individuals on NOUGG. I am away until next Wednesday. She also will be with me on Friday and I will let her know about your request and encourage her to contact your further.

Regards,

W. pope

I was not able to arrange notification of the survey though the CPSM but was able to do so through the Office of Continuing Medical Education at the University of Manitoba (see below).

José François, MD CCFP MMedEd
Associate Dean - Continuing Medical Education
Acting Head - Department of Medical Education
Faculty of Medicine - University of Manitoba
February 17, 2010

Hi Micheal,
I would be happy to help disseminate the information. We have a pretty good email list of family MDs in MB.
Our CME privacy policy does allow us to use the email list for research purposes.
I would mind seeing the summary of your project.
The issue of opioid prescribing is a hot issue here in MB (as in other jurisdictions across the country) and we are becoming quite involved in providing CME. We are putting on a prescribing course and a methadone course for the next academic year.

++

Ontario

Rhoda Reardon
Manager Research and Evaluation (Acting)
College of Physicians and Surgeons of Ontario
80 College St
Toronto ON M5G 2E2
November 10, 2009

Hi Mike:
There are few things I wanted to be in touch about:

1. I've attached a draft letter of support from NOUGG so you can see it and let me know if this is what you had in mind – once I hear back from you, I'll finalize it and it will come to you on FMRAC letterhead.

2. **Re: CPSO's assistance** - I can't recall if I responded to your question about 'bounce-back emails' but I wanted to let you know that we do get a report of this from the service we use to do large batch emails; I've put things in motion here to ensure all the required permissions are in place – everything looks OK so far

Thanks Mike
Rhoda

++

Quebec

Letter of support at end of this document.
++

New Brunswick

Dr Ed Schollenberg
Registrar, College of Physicians and Surgeons of New Brunswick
February 4, 2010

Ed Schollenberg CPSNB/CMCNB wrote:
> > Is the survey available in French? Yes it is
> > In any case we should be able to make mention of this. Anything we
> > have towards the end of March will be fine. We sometimes have space
> > limits which might affect how much we can squeeze in.
++

Prince Edward Island

Melissa MacDonald
For Dr Cyril Moyse
Registrar, College of Physicians and Surgeons of PEI
December 3, 2009

HI Mike
We have taken this to Council and they will endorse this. I mailed a letter to our membership and anyone who is interested will email me back, can you send me an email of what exactly you want me to send them.

Thanks
melissa
++

Newfoundland and Labrador

Robert W. Young, MD, FRCPC
Registrar
College of Physicians and Surgeons of Newfoundland and Labrador
139 Water Street, Suite 603
St. John's, NL A1C 1B2
February 12, 2010

Mike

The CPSNL supports your project and will assist in distributing information regarding the project to the general practitioner members.

Bob Young
++

Nova Scotia

Bruce Thorne
Manager, Policy and Communications
College of Physicians and Surgeons of Nova Scotia
Suite 5005 - 7071 Bayers Road
Halifax, Nova Scotia
B3L 2C2
October 27, 2009

Dr. Allen: (cc. Dr. Little) (Dr Cameron Little is the registrar)

I have the following three changes to suggest to your notes. Otherwise they look fine. I just included the relevant change.

Best,
Bruce

Q4: How many contacts (e.g., reminders) about survey can we make?

- 1) advance notice in late-Jan newsletter if timing is right; 2) survey e-mail itself; 3) one follow-up e-mail reminder post-survey.
++

College of Family Physicians of Canada

Bernard A Marlow MD CCFP FCFP FACME
Director of Continuing Professional Development
Directeur, développement professionnel continu
College of Family Physicians of Canada
2630 Skymark Avenue, Mississauga, ON L4W 5A4
October 20, 2009

Good news Michael. I was able to get quick approval to distribute a request for participants in the needs assessment through e-news which goes to over 11,000 members. Please send your text to Sarah who is copied above for distribution in November's e-news.

Best regards
Bernard
++

DEC 2 2 2009

COLLÈGE DES MÉDECINS
DU QUÉBEC

December 17, 2009

Doctor Michael Allen
Associate Professor
Director of Evidence-Based Programs
Faculty of Medicine
Dalhousy University
Halifax (Nova Scotia) B3H 4R2

Subject: Opioid Research Practices: Survey of Canadian Family Physicians

Doctor:

At its meeting held on November, 18, 2009, the Executive committee of the Collège des médecins du Québec has taken note of your request to support a study of the Dalhousie University.

Considering that the project study will be presented to the ethics committee of Dalhousie University and the research team will not be asking any identifying information, keeping responses anonymous, the committee resolved to give its support to the study on usage of narcotics for chronic non-cancer pain by family physicians.

It was also resolved to inform you that the Collège des médecins du Québec will invite its members to answer to the survey available on the website of the Dalhousie University.

Hoping everything to your satisfaction,

Yves Robert, M.D.
Secretary

YR/db

2170, boulevard René-Lévesque Ouest, Montréal (Québec) H3H 2T8 | 514 933 4441 | 1 888 MÉDECIN | 514 933 3112 | www.cmq.org

APR 08 2010

Appendix E Approval Letter from Dalhousie Research Ethics Board

DALHOUSIE UNIVERSITY
Inspiring Minds

Health Sciences Human Research Ethics Board
Letter of Approval

Date: March 8,2010.

To: Michael Allen , Continuing Medical Education
Dr. Mark Asbridge , Department of Community Health and Epidemiology

The Health Sciences Research Ethics Board has examined the following application for research involving human subjects:

Project # 2010-2154 (version 2)

Title: Self-Reported Practices in Management of Chronic Non-Cancer Pain: A Survey of Canadian Family Physicians

and found the proposed research involving human subjects to be in accordance with Dalhousie Guidelines and the Tricouncil Policy Statement on *Ethical Conduct in Research Using Human Subjects.* This approval will be in effect for 12 months from the date indicated below and is subject to the following conditions:

1. Prior to the expiry date of this approval an annual report must be submitted and approved.
2. Any significant changes to either the research methodology, or the consent form used, must be submitted for ethics review and approval *prior to their implementation.*
3. You must also notify Research Ethics when the project is completed or terminated, at which time a final report should be completed.
4. Any adverse events involving study participants are reported immediately to the REB

Effective Date: March 8,2010.
Expiry Date: March 8,2011.

signed:
Jeannette McGlone (Chair HSHREB)

IMPORTANT FUNDING INFORMATION - *Do not ignore*

To ensure that funding for this project is available for use, you must provide the following information and FAX this page to RESEARCH SERVICES at 494-1595

Name of grant /contract holder _____ Dept. _____
Signature of grant / contract holder _____
Funding agency _____
Award Number _____ Dal Account # (if known) _____

Dalhousie Research Services • Research Ethics • 5248 Morris Street • Halifax, NS, Canada • B3J 1B4
Tel: 902-494-1462 • Fax: 902-494-1595 • Email: Patricia.Lindley@dal.ca • www.dal.ca/~research

Appendix F

Emails Granting Permission to Use Table 1 and Figure 1

Email Granting Permission to Use Table 1

March 11, 2011

Permission granted. acknowledgment is appropriate.

Regards,

Holly Long
Editorial Coordinator
Pain Physician journal
American Society of Interventional Pain Physicians
hlong@asipp.org
270-554-9412 ext 230
fax: 270-554-5394

Email Granting Permission to Use Figure 1

Hi Mike - Clarence is away so I'll answer for us - referencing the Guideline is fine,
r

Rhoda Reardon
Manager Research and Evaluation
College of Physicians and Surgeons of Ontario
80 College St
Toronto ON M5G 2E2
Tel: 416-967-2600 ext 767