

CADTH Health Technology Review

Models of Care for Chronic Pain

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Abbreviations

CBT	cognitive behavioural therapy
ECHO	Extension for Community Healthcare Outcomes
ISAEC	Inter-Professional Spine Assessment and Education Clinic
OCM	Oncology Care Model
OT	occupational therapy
PCN	Primary Care Network
TAPMI	Toronto Academic Pain Medicine Institute
VA	Veterans Affairs

Key Messages

- For chronic pain, 1 hub-and-spoke model and 4 stepped care models for the delivery of care in Canada and internationally were identified and described. No information was found on the use of the Oncology Care Model for chronic pain.
- For other medical conditions, 9 stepped care models, 5 hub-and-spoke models, and the Oncology Care Model for the delivery of care in Canada and internationally were identified and described.
- Patient-related outcomes used to evaluate the effectiveness of models of care for chronic pain include pain measures (e.g., intensity, duration), psychosocial outcomes (e.g., anxiety, depression), functional outcomes (e.g., disability, employment status), and health care utilization (e.g., opioid prescriptions, health care visits).
- Various barriers and facilitators to providing care for patients with chronic pain were identified in the consultations and the literature. The most common factors that influenced the care provided to patients with chronic pain pertained to funding, support, and collaboration from the government and locally; having a centralized intake and referral system; and leveraging existing resources.
- There appears to be considerable variation in the models of care used to address the care needs of patients with chronic pain. In Canada, there are provincial, regional, and local models, and local programs; some regions do not have a formalized approach for the provision of care for chronic pain patients.

Abstract

Across Canada, there are efforts underway to identify and implement effective approaches for providing care for patients with chronic pain. There's interest in knowing what models of care are being used in Canada and internationally, what patient-related outcomes have been used with these models of care, what key issues and challenges have been faced when implementing the various models, and what lessons have been learned. Therefore, CADTH conducted an Environmental Scan to gather information on the models of care being used in Canada and other countries to address care needs of people living with chronic pain. This information could be used to help inform the development of models of care for chronic pain in Canada. The scan also includes information on care models for other chronic, non-pain-related medical conditions, which may be useful for implementing models of care for chronic pain.

A limited literature search and focused consultations with select stakeholders were used to inform the report. This report is not intended to be a comprehensive overview of all models of care for pain and other chronic medical conditions.

The literature search identified 38 sources of information and 15 stakeholder consultations were completed.

Three models of care were selected as priority models of interest. These models were hub-and-spoke, the Oncology Care Model, and stepped care. For chronic pain, 1 hub-and-spoke model and 4 stepped care models for the delivery of care in Canada and internationally were identified and described. No information was found on the use of the Oncology Care Model for chronic pain. For other chronic medical conditions, 9 stepped care models, 5

hub-and-spoke models, and the Oncology Care Model for the delivery of care in Canada and internationally were identified and described.

Another area of interest was the patient-related outcomes associated with the models of care for chronic pain. The main patient-related outcomes that were identified fell into 4 categories: pain measures, psychosocial outcomes, functional outcomes, and health care utilization.

Various barriers and facilitators to providing care for patients with chronic pain were identified in the consultations and the literature. The most common factors that influenced the care provided to patients with chronic pain pertained to funding, support, and collaboration from the government and locally; having a centralized intake and referral system; and leveraging existing resources.

In addition to the 3 selected models, this scan identified other approaches to providing care for patients with chronic pain across Canada. The scan identified provincial, regional, and local models, and local programs; some regions do not have a formalized approach for the provision of care for patients with chronic pain.

There appears to be considerable variation in the models of care used to address the care needs of patients with chronic pain. There was no single model that was used in an identical fashion in more than 1 situation. The various models of care were adapted to meet the needs of specific populations. Decision-makers should consider the needs of their patients and the specific needs of their jurisdictions when designing, adopting, or adapting a model of care for chronic pain.

Context

Chronic pain is defined as pain lasting longer than 3 months that is associated with significant emotional distress and/or significant functional disability.¹ People living with chronic pain often experience reduced quality of life, decreased mental health, reduced ability to fully participate in their personal and professional lives, increased fatigue, and increased health care utilization.² Chronic pain is difficult to cure, and management of chronic pain often involves physical, psychological, and pharmacological therapies as part of a multidisciplinary pain management plan.² CADTH has compiled an Evidence Bundle on pain management,³ which includes reports on various treatments of chronic pain (i.e., pharmacological, physical, psychological, multidisciplinary), and has published a previous Environmental Scan on the access and availability of non-pharmacological therapies for chronic non-cancer pain in Canada.⁴ In 2019, it was estimated that approximately 20% of people in Canada were living with chronic pain,⁵ resulting in substantial physical and psychological morbidity, and cost, to the health care system. In the US, the estimated annual costs related to chronic pain are between \$560 and \$600 billion⁶ and, according to Health Canada, in 2019 the total direct and indirect costs of chronic pain were between \$38.2 to \$40.3 billion.⁵

The widespread presence of chronic pain in the population and its associated burden underlies the need for optimal strategies to manage and provide care for this condition. There are ongoing efforts in various Canadian jurisdictions to identify and implement effective approaches within the health care system to tackle the problem of chronic pain, and there is interest across Canada in learning about models of care delivery that could be used for

the provision of care for chronic pain. Notably, in 2019, the federal government established the Canadian Pain Task Force, which is mandated “to provide advice and information to guide government decision-makers toward an improved approach to the prevention and management of chronic pain in this country.”² In October 2020, the Canadian Pain Task Force published a report that identified numerous gaps and challenges in the management of chronic pain in Canada, including a lack of access to primary care physicians, unclear care pathways, lack of publicly funded care, and the current fee structure that favours the treatment of individual symptoms rather than multidisciplinary pain management plans.⁷ This report also identified some of the best and promising practices for care for chronic pain in Canada, including patient-centred care models that adapt care based on the patient’s needs, community-based care, rapid access to care, and clear referral pathways.⁷ The report found that improved coordination and implementation of multi-modal models of care was needed and suggested organizing care using a stepped or tiered-care model with clear referral pathways, patient navigators, and centralized intake and triage hubs.⁷ The report acknowledged that more work is needed to understand which models of care work best for the provision of care for chronic pain.⁷ In January 2021, the Canadian Pain Task Force accelerated its timelines to provide recommendations on priority actions to improve outcomes for people living with chronic pain.⁵ This action plan was developed in parallel to, but independently from, this CADTH Environmental Scan and was published online on May 5, 2021.⁵ The Canadian Pain Task Force action plan outlines more than 100 recommended actions centred around 6 primary goals that address key areas for improving care for people with chronic pain (e.g., enabling collaboration across Canada, improving access, increasing education, improving infrastructure, monitoring quality, and ensuring equity).⁵

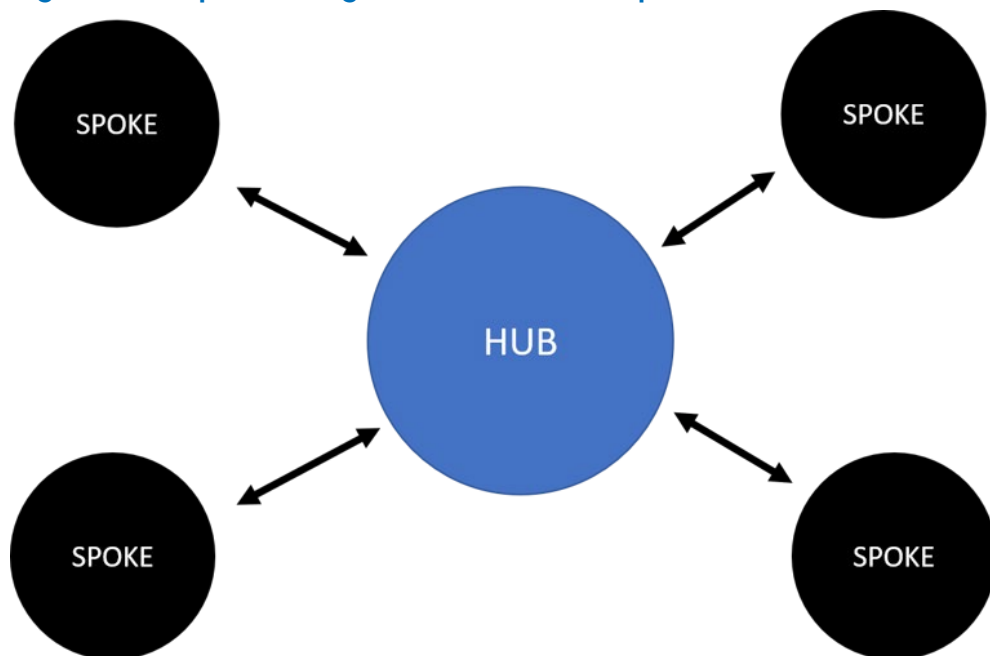
There is no standard and widely accepted definition of the concept of “model of care.”⁸ For the purpose of this Environmental Scan, the definition that served as a guide was, as follows: “a model of care is an overarching design for the provision of a particular type of health care service that is shaped by a theoretical basis, EBP [evidence-based practice] and defined standards. It consists of defined core elements and principles and has a framework that provides the structure for the implementation and subsequent evaluation of care.”⁸ The purpose of this Environmental Scan was to gather information on models of care that are currently used in Canada and other countries to address the care needs of adult and pediatric patients with chronic pain (cancer-related and non-cancer-related).

This scan focuses on 3 selected models of care (i.e., hub-and-spoke, the Oncology Care Model [OCM], and the stepped care model) that were identified as priority models of interest, as they are currently used in Canada and internationally for pain, mental health, and oncology. The hub-and-spoke model involves a network of service providers or health care institutions and usually consists of 1 centralized “hub” that offers specialized services complemented by secondary clinics, the “spokes,” that provide more limited care (see Figure 1).⁹ In this model, patients are routed to the hub for more intensive therapies or to a spoke for routine follow-up.⁹ The OCM of the Centers for Medicare and Medicaid in the US is an alternative payment model for the provision of oncology care; it is based on 6-month episodes of cancer care and combines fee-for-service payments and performance-based payments.¹⁰ Stepped care is a model that consists of interventions organized into a series of steps with progressively increasing intensity, where patients receive the most effective and least intensive therapy first and care is either stepped up or stepped down, as needed (see Figure 2).¹¹

This scan will also include information on the selected models for other chronic, non-pain medical conditions, as information on the programs and services that are offered in the selected models for other health disciplines could be used to inform the implementation

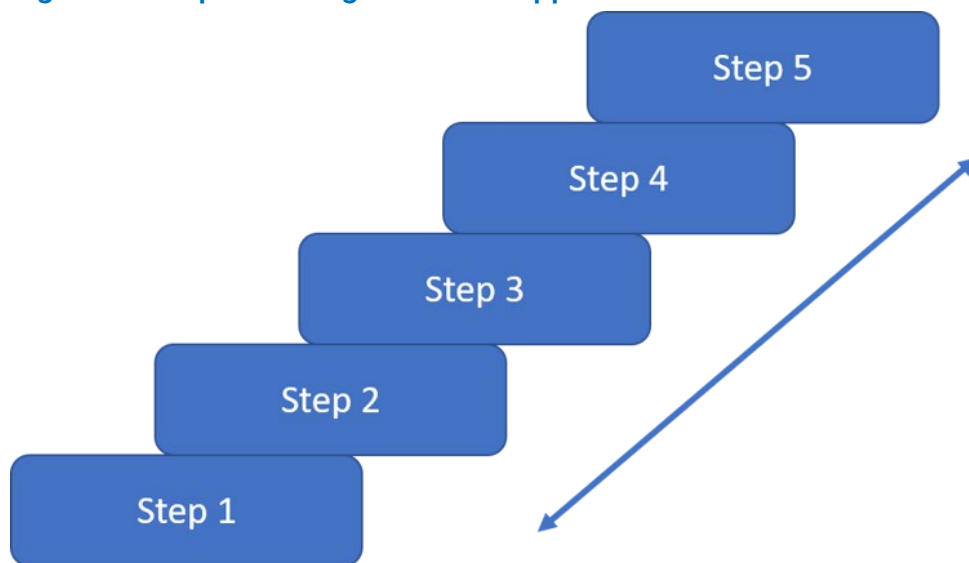
of the 3 named models for populations with chronic pain. This Environmental Scan also identifies other models of care that are being used for chronic pain in Canada and internationally.

Figure 1: Simplified Diagram of a Hub-and-Spoke Model



Note: A centralized “hub” is complemented by secondary clinics, the “spokes.” Patients are routed to the hub for more specialized or intensive therapies, or to a spoke for routine follow-up.⁹

Figure 2: Simplified Diagram of a Stepped Care Model



Note: Interventions are organized into a series of “steps” with progressively increasing intensity. The steps can be based on the facility’s level of care (e.g., primary, secondary, and tertiary care centres) or the type of care provided (e.g., education modules, workshops, individual therapies). Care is either stepped up or stepped down, as needed, and progress through the steps can occur sequentially, or not.¹¹

Objectives

This Environmental Scan was initiated to provide information on existing models of care delivery for chronic pain to inform the development of strategies and programs to respond to the care needs of individuals affected by chronic pain in Canada.

The key objectives of this Environmental Scan are, as follows:

1. Describe the following selected models of care that are used in the delivery of publicly funded care for patients with chronic pain and other chronic medical conditions: hub-and-spoke, Oncology Care Model, and stepped care.
2. Summarize the main patient-related outcomes that are associated with the selected models of care delivery.
3. Summarize key issues, challenges, and lessons learned in implementing the selected models for the delivery of publicly funded care for patients with chronic pain.
4. Identify other models of publicly funded care delivery for chronic pain specifically, including programs and services offered, that are being used in Canada and other countries.

The focus of this Environmental Scan is on how care for patients with chronic pain is organized and it does not include an assessment of the clinical effectiveness or cost-effectiveness of the identified models of care, nor does it include an assessment of how patients experience the identified models of care. Thus, conclusions or recommendations about the value of these models of care, their place in treatment, or to what extent these models meet the needs of individuals with chronic pain are outside the scope of this report. In addition, models of care for non-chronic conditions (e.g., acute pain) were beyond the scope of this report.

Research Questions

The Environmental Scan aimed to address the following research questions:

1. How are selected models of care — i.e., hub-and-spoke, the Oncology Care Model, and stepped care — being implemented in Canada and internationally in delivering publicly funded services for patients with chronic pain and other chronic medical conditions? What are the programs and services offered under these models?
2. What are the main patient-related outcomes associated with the selected models for the delivery of publicly funded care for patients with chronic pain?
3. What are key issues, challenges, and lessons learned related to the selected models for the delivery of publicly funded care for patients with chronic pain?
4. What other models for the delivery of publicly funded care for patients with chronic pain are used in Canada and internationally?

Methods

A limited literature search and focused consultations with select stakeholders were used to inform this report. A description of the methods used for these 2 components follows. Table 1 outlines the criteria for information gathering and selection.

Literature Search

A literature search was conducted to address the specific research questions related to the objectives of the report. A targeted literature search was conducted by an information specialist on key resources that were deemed most appropriate to this topic, including

Table 1: Criteria for Literature Screening and Information Gathering

	Inclusion	Exclusion
Population	<p>Question 1: Adults and pediatric individuals with chronic pain or other chronic medical conditions</p> <p>Questions 2 to 4: Adults and pediatric individuals with chronic pain</p>	<p>Questions 2 to 4: Adults and pediatric individuals with other chronic (non-pain) conditions</p>
Intervention	<p>Questions 1 to 3: Three models of care delivery used in treatment of chronic pain and other clinical conditions, specifically:</p> <ul style="list-style-type: none"> • hub-and-spoke^a • stepped care^b • Oncology Care Model (Centers for Medicare and Medicaid Services)^c <p>Questions 2 and 3: Hub-and-spoke model, stepped care model, the Oncology Care Model, or other models used in treatment of chronic pain specifically</p> <p>Question 4: Other models of care delivery used in treatment of chronic pain specifically</p>	<p>Question 1: Other models of care</p>
Settings	Publicly funded health care facilities	
Types of Information	<p>Question 1: Identification and description of the selected models of care delivery for chronic pain and other chronic medical conditions</p> <p>Question 2: Description of main patient-related outcomes and outcome measures for the selected models of care delivery</p> <p>Question 3: Identification of key issues, challenges, and lessons learned related to the selected models of care delivery</p> <p>Question 4: Identification of models of care delivery for chronic pain</p>	

Note: The definition that served as a guide for “model of care” states the following:

A model of care is an overarching design for the provision of a particular type of health care service that is shaped by a theoretical basis, EBP [evidence-based practice] and defined standards. It consists of defined core elements and principles and has a framework that provides the structure for the implementation and subsequent evaluation of care.⁸

^aThe hub-and-spoke model involves a network of service providers or health care institutions and usually consists of 1 centralized “hub” that offers specialized services, complemented by secondary clinics, the “spokes,” that provide more limited care.⁹

^bThe stepped care model consists of interventions organized into a series of steps with progressively increasing intensity.¹¹

^cThe Oncology Care Model is based on an alternative payment model for the provision of oncology care and is based on 6-month episodes of cancer care.¹⁰

MEDLINE, Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Cochrane Library, the University of York Centre for Reviews and Dissemination (CRD) databases, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were models of care, Oncology Care Model, Stepped Care Model, Hub and Spoke Care Model, and chronic pain. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English-language documents published between January 01, 2010 and November 02, 2020.

Screening and Study Selection

One author assessed titles and abstracts from the literature search for eligibility. Articles were selected for full-text review and inclusion using the components outlined in Table 1. Articles were excluded if they were published before January 1, 2010 or they were published in a language other than English. Reference lists of selected articles were also scanned for potentially relevant records. Literature sources that were referenced by informants were retrieved and assessed for eligibility (see section titled Consultations). No restrictions were made regarding study design or type of publication.

Data Extraction

Relevant information from the retrieved citations was extracted into tables that were organized by objectives by 1 reviewer. This information was then used to inform the current report. Data that were extracted included information on: the structure, organization, coordination, programs, and services for relevant models of care; main patient-related outcomes for models of care for chronic pain; and the challenges and lessons learned from the selected models of care. Any available information was used to inform the research questions and objectives in a narrative format.

Consultations

Targeted consultations with Canadian stakeholders (i.e., informants) were conducted between December 21, 2020 and March 1, 2021. The purpose of these consultations was to fill knowledge gaps identified following the review of the literature. Consultation contacts were identified by CADTH's Liaison Officer team situated across Canada, through stakeholder suggestions, and other via available networks. Individuals involved in the administration, study, or provision of care for chronic pain in publicly funded health care facilities were eligible to participate in the consultations. A convenience sampling method was used to recruit informants for the consultations, with 1 researcher reaching out to stakeholders via email and interviewing those willing to participate. Pre-planned consultation questions were developed (Appendix 1) and the consultations were conducted in the form of semi-structured 1-on-one interviews using an online video conferencing platform. One team member conducted the consultation interviews. Potential informants were not limited to any particular profession; those involved in the administration, study, or provision of care for people with chronic pain were eligible to participate. Informants were asked for consent to include their responses in aggregate form in the report. Feedback from respondents who gave consent to use their consultation information was included in the report.

Synthesis Approach

Relevant findings from the literature search were grouped thematically according to the objectives of the report. Consultation recordings were subsequently transcribed for analysis and information from the consultations was summarized and sorted into relevant categories based on the objectives of this report and then integrated into the report. For objective 1, data were categorized by type of model and clinical condition. For objective 2, data were categorized by model of care. For objective 3, data were organized thematically by barriers and facilitators to providing care. For objective 4, the data were sorted by country (i.e., Canadian or international models) and the Canadian models were further sorted into 4 categories based on the organizational structure for care for chronic pain used in the jurisdiction (i.e., provincial, regional, or local strategies, or areas with no formalized approach). Within these categories, the data were reported by province or territory (organized alphabetically where needed) and by the target population for care (i.e., adult, or pediatric). Data were presented narratively and in tables, with additional details provided in appendices. References were provided where the source of the information was from the literature search; otherwise, the source was the consultations. Literature sources and online resources that were referenced by informants were retrieved and integrated into the report, where relevant. As chronic pain is a condition that can be difficult to cure, where applicable we used the term “manage” (rather than “treat”) when referring to the provision of care for chronic pain. The term “management” was also preferred by the informants (versus the term “treatment”). For this report, the term “multidisciplinary” describes the provision of care by multiple different disciplines working independently of each other; and the term “interdisciplinary” describes a coordinated approach by multiple different disciplines to provide care.

Stakeholder Feedback

The draft report was posted on the CADTH website and sent to consultation participants to elicit stakeholder feedback. Relevant stakeholder feedback was incorporated into the final version of this report based on input received.

Findings

The findings presented are based on the results of a literature search and targeted video consultations with select stakeholders.

Summary of Information Sources

Literature Search Results

The literature search retrieved 1,051 potentially relevant references and 107 full-text papers were retrieved for further evaluation. In addition, 13 papers were retrieved from the grey literature or other sources. Of the 120 full records screened, 38 were ultimately included in the findings of this Environmental Scan. The 38 sources of information include 14 case reports or descriptive studies, 7 narrative reviews, 5 policy reports, 3 quality improvement reports, 4 websites, 1 randomized controlled trial, 1 survey, 1 study protocol, 1 non-randomized study, and 1 evidence brief.

Consultations

Invitations to participate in the consultations were distributed to 29 contacts in all provinces and territories, except for Nunavut and Yukon, as no potential contacts were identified. Seven contacts declined participation but recommended alternative, more appropriate, contacts. Four contacts did not respond to the invitation and 2 contacts were interested in participating but were unable to attend a consultation. One potential contact declined participation, as they had already participated in numerous provincial and federal consultations without what they perceived to be meaningful improvements and did not want to take more time away from caring for patients.

Findings are therefore based on 15 consultations with 17 informants conducted between December 2020 and March 2021 (1 consultation included 3 representatives from the same institution in Ontario). The consultations included representatives from Alberta (2), British Columbia (1), Ontario (5), Saskatchewan (1), New Brunswick (2), Nova Scotia (1), Newfoundland and Labrador (1), Prince Edward Island (1), Quebec (2), and the Northwest Territories (1). Consultations were not held with informants from the remaining province or territories, which is an acknowledged limitation of this report. Participants were from 12 individual hospitals or clinics (2 pediatric and 10 adult centres), 2 provincial health authorities, and 1 not-for-profit health charity. Informants included representation from the following disciplines: anesthesiologists (5), pain physicians (2), registered nurses (1), psychologists (3), physiotherapists (2), clinic managers (1), pain consultants (1), health consultants (1), and executive directors (1). All of the informants (100%) gave their consent to use their solicited information in the report.

The consultations for this Environmental Scan occurred 9 months after the COVID-19 pandemic was declared. The informants described their model of care for chronic pain based on how care was provided before the pandemic and some informants reported the direct impacts that the COVID-19 pandemic was having on their approach to care. The main body of this report describes these models of care before the pandemic and a summary of the specific changes because of the pandemic are summarized in Appendix 2.

Objective #1: Describe the following selected models of care that are used in the delivery of publicly funded care for patients with chronic pain and other chronic medical conditions: hub-and-spoke, Oncology Care Model, and stepped care.

This objective was addressed by research question 1, with findings from the literature and the consultations. The findings are presented separately for chronic pain and other chronic medical conditions.

Selected Models of Care for Chronic Pain

Resources identified in the literature search and from 2 consultations provided information on the use of the hub-and-spoke and the stepped care models for chronic pain. No information was identified on the use of the OCM for the delivery of care for chronic pain.

Hub-and-Spoke Model of Care for Chronic Pain

This Environmental Scan identified 1 hub-and-spoke model in Canada for delivering services for chronic pain, the Toronto Academic Pain Medicine Institute (TAPMI). Information on TAPMI was gleaned from the TAPMI website¹² and from 1 informant from the consultation

process – a physician from 1 of the TAPMI spokes. TAPMI is a virtual network of pain management services in Toronto, Ontario, Canada. The network consists of 1 central, virtual, triage “hub” and 5 academic tertiary pain management hospital “spokes.”¹² Services provided through TAPMI are fully funded through public health care. The informant reported that TAPMI is the overarching governing body for care for adults with chronic pain in the region and the model is organized and administered locally. TAPMI is used to streamline referrals for chronic pain services in the region. The informant reported that a goal of the network is to simplify care by reducing the number of pain centres to which patients are referred (i.e., patients are referred to 1 or 2 centres where they receive all pain-related care; then, the patient re-engages with their family doctor for follow-up care). According to the informant, when TAPMI was formed, the hope was that it would become the model for a province-wide chronic pain network that would include hubs and spokes throughout the province.

Patients can be referred to TAPMI via their primary care provider using the online referral form.¹² The central hub receives all of the referrals, which are triaged by nurses. Triage is based on the level of urgency, diagnosis, patient and provider preferences, clinic specialization, and wait times. Once triaged, an individualized care plan is developed based on the patient’s needs and the hub determines which spoke(s) the patient should be referred to. The 5 TAPMI spokes are, as follows: the University Health Network Comprehensive Integrated Pain Program, the Women’s College Hospital self-management and interventional pain management program, the Centre for Addiction and Mental Health chronic pain treatment, the Wasser Pain Management Clinic at Mount Sinai Hospital, and St. Michael’s Hospital interventional pain program.¹² Within a given spoke, individual care plans can include a range of management options, including patient education, medical interventions, medication reviews, social work consultations, and treatment for substance misuse. According to the informant, this initial intake and triage process at the hub requires a lot of work to determine the most appropriate program(s) for the patient. For patients who were previously triaged at the hub and who are receiving services within the TAPMI network but require additional services, a streamlined referral form and system is used to circumvent patients needing to wait in the hub for a second time.

According to the informant, TAPMI provides a wide spectrum of pain services across the 5 spokes in the network. All of the spokes have interdisciplinary teams and composition of the teams is specific and unique to the programs offered at the spokes (for example, the use of psychologists, chiropractors, social worker, occupational therapists, pharmacists, physicians, and nurses).¹² The programs and services offered at the spokes within TAPMI are summarized in Table 2. TAPMI also has an element of stepped care built into the model, with a host of online learning modules covering a variety of topics (such as pain education, goal setting, mental health, physical activity, communication, and alternative therapies, for example) that can be accessed online by anyone.¹³ These online, self-management tools can serve as the first “step” of a stepped care model.

Health care providers within the network communicate across spokes to ensure patients are receiving high-quality care and to maintain the continuity of care. The informant was unsure whether the hub tracks patients after their initial referrals from the hub to a spoke; for instance, if a doctor at a spoke refers patients to another provider, it is unclear whether the hub is tracking these metrics. After receiving services within TAPMI, if a patient’s pain stabilizes, patients are discharged back to their referring physicians for ongoing care with continued support from TAPMI.¹²

Oncology Care Model for Chronic Pain

This Environmental Scan did not find any information on the use of the OCM for the provision of care for patients with chronic pain.

Stepped Care Model for Chronic Pain

This Environmental Scan identified 4 stepped care models that are implemented in Canada and internationally for delivering services for chronic pain. For 3 of the models of care (the US VA [Veterans Affairs] Stepped Care Model for Pain Care,¹⁴⁻¹⁶ the Australian National Pain Strategy,¹⁷ and the South Australia Model of Care for Chronic Pain Management^{18,19}), the “steps” of the models are based on the level of care of the facility (e.g., primary, secondary, and tertiary care centres). In these 3 models, patients progress sequentially through the steps. For the fourth stepped care model – at The Ottawa Hospital Pain Clinic –^{20,21} the “steps” are based on the type of care provided (e.g., education modules, workshops, individual therapies), as all care takes place in a tertiary care hospital. In this model, the steps do not need to be accessed in a sequential manner.

US Veterans Affairs Stepped Care Model for Pain Management

Information on the VA Stepped Care Model for Pain Management was found in the literature.¹⁴⁻¹⁶ This model was established in 2009 and is implemented across Veterans Health Administration facilities in the US. This 3-step model is based on 3 levels of care:

Table 2: Programs and Services Offered at the 5 Spokes of the TAPMI Hub-and-Spoke Model of Care¹²

University Health Network	Women’s College Hospital	The Centre for Addiction and Mental Health	Sinai Health System	St. Michael’s Hospital
<ul style="list-style-type: none"> • Comprehensive Integrated Pain Program • Interventional pain service therapies (e.g., injections, nerve blocks) • Rehabilitation pain services for widespread and neuropathic pain • Transitional pain service (offers support before and after surgery). The program includes medication management, psychotherapy, physiotherapy, and complementary therapies (e.g., yoga, acupuncture) 	Self-management options: <ul style="list-style-type: none"> • pain education • group programs • physiotherapy • group exercise • CBT • mindfulness group Pharmacy consultation Interventional therapy: ultrasound or fluoroscopic-guided nerve blocks, radiofrequency ablation	<ul style="list-style-type: none"> • Pain and addiction recovery clinic • Pain medication reduction services 	Management of wide range of pain: <ul style="list-style-type: none"> • neuropathic • widespread • headache • craniofacial • dental • temporal mandibular joint • musculoskeletal Services include: <ul style="list-style-type: none"> • pre- and post-surgery pain management • opioid management • nerve blocks • CBT • education 	<ul style="list-style-type: none"> • Interventional pain management • Neurostimulation program

CBT = cognitive behavioural therapy; TAPMI = Toronto Academic Pain Medicine Institute.

primary care, consultations with pain specialists, and interdisciplinary pain centres. In this model, treatments are based on individual patient needs and patients progress sequentially through the steps. The “gateway provider,” usually the primary care provider, provides first-line pain therapies and refers patients for more specialized care, as needed. The programs and services offered within the 3-steps of the VA Stepped Care Model for Pain Management are summarized in Table 3.

Australian National Pain Strategy

Information on the Australian National Pain Strategy stepped care model was found in the literature.¹⁷ This model was established in 2011 and is a pain management network in Australia. This 4-step model is based on 4 levels of care: community care, primary care, secondary care, and tertiary care. Interdisciplinary care is offered at all 4 steps. The programs and services offered within these 4 steps are summarized in Table 3. Patients move stepwise through the 4 levels and movement between steps can occur in both directions. Patients can be referred to steps 3 and 4 (i.e., secondary and tertiary care) via their primary care providers, non-pain specialists, or from a primary level pain centre. A standardized triage tool is used to triage patients to the appropriate level of care based on the complexity of their pain. The pain clinics have pre-specified criteria to discharge patients back to community care.¹⁷

South Australia Model of Care for Chronic Pain Management

Information on the South Australia chronic pain model of care was found in the literature.^{18,19} This 3-step stepped care model was developed in 2016 and implemented in South Australia by the state government, and includes population-level prevention and early intervention, as well as 2 tiers of care (i.e., primary health care for low pain severity and secondary/tertiary care for moderate to high pain severity). The third step in this model combines general hospitals with specialist services because of the smaller population of South Australia. The programs and services offered within these 3 steps are summarized in Table 3. Patients progress sequentially through the steps (i.e., patients must receive pain management in primary care before referral to a pain specialist). General practitioners are provided guidelines that include defined pathways for specialist consultations. There is a centralized statewide referral and triaging system to improve access and reduce wait times. This system includes a comprehensive referral form that referring general practitioners must complete. This model also includes predefined clinical pathways for various types of pain.^{18,19}

The Ottawa Hospital Pain Clinic Stepped Care Program

Information on the The Ottawa Hospital Pain Clinic stepped care program was from the literature^{20,21} and from a joint consultation with 3 informants from The Ottawa Hospital Pain Clinic. This pain clinic is housed within The Ottawa Hospital — a tertiary care centre in Ottawa, Ontario, Canada — and the clinic is partially funded through the Ontario Chronic Pain Network via the Ontario Ministry of Health and Long-Term Care. The clinic has an interprofessional team consisting of anesthesiologists, a physiatrist (i.e., a physician who specializes in physical medicine and rehabilitation), pain medicine specialists, nurses, psychologists, a social worker, a physiotherapist, and an occupational therapist.²⁰ One informant reported that the mandate of the clinic is to support primary care providers in caring for their patients with chronic pain.

The development and implementation of the stepped care program was locally driven by clinicians at the pain clinic in 2017 after observing that they could not meet the needs of their patients using the previous approach to care. The stepped care program at The Ottawa Hospital Pain Clinic borrows heavily from a stepped care model for mental health

(i.e., Stepped Care 2.0 for mental health¹¹) and was tailored to meet the needs of patients with chronic pain via collaboration with 1 of the individuals involved in the development of the mental health care model. This stepped care program for chronic pain is an 8-step model that provides access to a variety of interventions and programs across a range of intensities.^{20,21} This program leverages online material, community resources, and in-house programs; a description of the programs and services provided across the 8 steps is provided in Table 3. The steps in this model are not considered sequential and patients can access higher-intensity therapies without needing to complete the lower-intensity steps. As well, multiple interventions from different intensity steps can be combined to meet the needs of the patients.

Patients are referred to the pain clinic by their primary care provider using the online referral form.²¹ The informants reported that the clinic employs a full-time nurse responsible for reviewing the referrals to ensure they meet the eligibility criteria, triaging the patients, and liaising with the referring physicians. Patients are either offered admittance to the pain clinic, an e-consult between their primary care provider and a pain specialist, both options, or neither option. A letter is sent to all referring physicians to inform them of their patient's eligibility for the clinic; this letter also includes pain-related resources that they can share with their patient. This letter leverages resources that can easily be shared with patients, including the "Living Healthy with Chronic Pain" program²² through the Ontario Online Self-Management Program,²³ and resources from other jurisdictions, such as Pain BC²⁴ and TAPMI.¹²

Once admitted to the program, all patients follow the same initial pathway.^{20,21} First, patients attend a 90-minute orientation session that provides basic information on the pain clinic and the stepped care program (e.g., programs available at the clinic and in the community). Patients also complete an intake form and Brief Pain Inventory questionnaire. The clinic runs this orientation session once a week. After completing the orientation session, patients can start accessing various components of the stepped care model (e.g., online resources, workshops). Second, patients attend a 2.5-hour interprofessional group education session, which provides additional information on pain neuroscience and self-management skills. During this session, patients complete a comprehensive set of questionnaires and are asked to start reflecting on their goals for the pain program. Third, patients meet 1-on-one with a physician for additional assessments to develop a care plan that integrates different components of the stepped care model and to determine whether they should be referred to the interprofessional team (i.e., occupational therapy [OT], physiotherapy, psychology, social work, and pain medicine physician) within the pain clinic. Each patient has a "most responsible physician" who tracks their care and progress through the program, but the clinic does not have any case managers.

Selected Models for Other Chronic (Non-Pain) Medical Conditions

Resources identified in the literature search provided information on the use of the hub-and-spoke model, the OCM, and the stepped care model for the delivery of care for other chronic medical conditions (i.e., non-pain indications).

Hub-and-Spoke Model of Care for Other Chronic (Non-Pain) Medical Conditions

This Environmental Scan identified 5 hub-and-spoke models that are implemented in Canada or internationally for delivering services for chronic non-pain indications.²⁶⁻³⁰ These models are for pediatric patients with complex conditions,²⁶ spinal disorders in rural settings,²⁷ cancer,²⁹ and opioid use disorder.^{28,30} The traditional hub-and-spoke model where the hub is a tertiary care centre that is linked with community care centres or regional hospitals (the spokes)

Table 3: Stepped Care Models – Description of Programs and Services Offered at Various Steps

Steps	US VA Stepped Care Model for Pain Management ^{14-16,25}	Australian National Pain Strategy ¹⁷	South Australia Model of Care for Chronic Pain Management ¹⁸	Ottawa Hospital Pain Clinic ²⁰
Step 1	<p>Primary Medical Care</p> <ul style="list-style-type: none"> • Primary care clinicians manage common pain conditions • Routine pain screening • Comprehensive pain assessment • Low-intensity interventions • Self-management strategies (e.g., weight management, exercise, relaxation) • Patient and family education • An integrated pain clinic was introduced in 2012 to facilitate pain assessments and improve interactions between primary care and specialists²⁵ 	<p>Community Care</p> <ul style="list-style-type: none"> • Education about chronic pain • Provision of self-help resources • Support groups 	<p>Population-Level Health</p> <ul style="list-style-type: none"> • Prevention and early intervention • Evidence-based information available to all patients and health care providers • Mass media campaigns 	<p>Educational Modules</p> <ul style="list-style-type: none"> • Self-directed online educational modules • Trusted resources on pain education, mental health, and recovery stories • Presented to patients as needed • Pain clinic website includes links to online resources,²¹ such as websites, book recommendations, and community resources
Step 2	<p>Specialist Consultations</p> <ul style="list-style-type: none"> • Consultation with specialists for complex cases (e.g., physical therapist, chiropractor) • Pain medicine management • Mental health support (e.g., CBT) • Multidisciplinary pain clinics • Substance misuse programs • Referral for virtual pain specialist (as of 2013)¹⁵ 	<p>Primary Care</p> <ul style="list-style-type: none"> • Education and training on chronic pain for all general practitioners • General practitioners with specialty training in chronic pain • Interdisciplinary pain centre (e.g., physiotherapists, OT, psychologists, nurses) with specialty pain training 	<p>Primary Health Care</p> <ul style="list-style-type: none"> • Multidisciplinary teams (e.g., general practitioners, nurses, psychologist, physiotherapist) • Chronic disease management model with appropriate referral pathways 	<p>Peer-Led Self-Management Programs</p> <ul style="list-style-type: none"> • Patients are provided information to access peer-led self-management programs

Steps	US VA Stepped Care Model for Pain Management ^{14-16,25}	Australian National Pain Strategy ¹⁷	South Australia Model of Care for Chronic Pain Management ¹⁸	Ottawa Hospital Pain Clinic ²⁰
Step 3	<p>Tertiary Interdisciplinary Pain Centres</p> <p>For patients with chronic pain who require more involvement with the pain management team</p> <p>Centres have 3 components:</p> <ul style="list-style-type: none"> • Interdisciplinary team (e.g., physician, psychologist, pharmacist, physical therapist) to provide advanced diagnostics and interventions • Chronic pain rehabilitation programs • Capacity to assess and treat those with chronic pain and substance misuse 	<p>Secondary Care</p> <ul style="list-style-type: none"> • Pain medicine specialists work with an interdisciplinary team (structured similarly to the interdisciplinary team in primary care) 	<p>Secondary/Tertiary Care</p> <ul style="list-style-type: none"> • Referral pathways to and from primary care • Multidisciplinary team of pain specialists and allied health professionals (e.g., psychologists, occupational therapists, physiotherapists, pharmacists) • High-intensity pain interventions • Tertiary specialists include: cancer, palliative care, rehabilitation, rheumatology, orthopedics, mental health, substance misuse • Pain management program • Pain education program 	<p>Interactive Workshops</p> <ul style="list-style-type: none"> • Online or in-person group-based workshops led by interprofessional health care providers • Workshops help address the areas impacted by pain • Topics include: how to exercise with chronic pain, ergonomics and body mechanics, CBT boosters, depression and anxiety • Offered 1 to 2 days per week • Patients can attend as many workshops as needed • Informants reported that the clinic offers 15 to 20 different workshops
Step 4	NA	<p>Tertiary Care</p> <ul style="list-style-type: none"> • Interdisciplinary pain centre within a major hospital • Pain medicine specialists working with the interdisciplinary team • Complex pain assessments • Interventional therapies (e.g., nerve blocks, cordotomy) • Centres provide education, training, and research on chronic pain 	NA	<p>Online Therapist-Assisted Self-Directed Therapy</p> <ul style="list-style-type: none"> • Mindfulness-based pain management program • Bi-weekly video-based coaching sessions with a psychologist • Other trusted online resources may be used

Steps	US VA Stepped Care Model for Pain Management ^{14-16,25}	Australian National Pain Strategy ¹⁷	South Australia Model of Care for Chronic Pain Management ¹⁸	Ottawa Hospital Pain Clinic ²⁰
Step 5	NA	NA	NA	<p>Group therapy</p> <ul style="list-style-type: none"> • Informants reported that the clinic offers at least 12 different groups • Online or in person • Discipline-specific • Psychology groups: <ul style="list-style-type: none"> ◦ pelvic pain ◦ mindfulness ◦ CBT for insomnia ◦ depression and anxiety • Physiotherapy groups: <ul style="list-style-type: none"> ◦ aqua therapy ◦ exercise for pelvic pain ◦ qigong ◦ yoga • OT groups: <ul style="list-style-type: none"> ◦ mindfulness-based pain management ◦ pacing • Social work groups: <ul style="list-style-type: none"> ◦ parenting ◦ young adults ◦ family-focused

Steps	US VA Stepped Care Model for Pain Management ^{14-16,25}	Australian National Pain Strategy ¹⁷	South Australia Model of Care for Chronic Pain Management ¹⁸	Ottawa Hospital Pain Clinic ²⁰
Step 6	NA	NA	NA	Interprofessional Chronic Pain Program <ul style="list-style-type: none"> • Low-intensity treatment and education chronic pain management program • Interprofessional rehabilitation program • 8 weekly sessions that include 1 hour each of OT, physiotherapy, and psychology • Includes a consultation with a social worker • Patients can be referred for a further intensive chronic pain management at the rehabilitation centre
Step 7	NA	NA	NA	One-on-one treatment <ul style="list-style-type: none"> • Individual therapies for patients requiring intensive therapy • Each discipline has specific referral criteria • Informant reported that medical interventions include guided injections, infusion therapies, nerve blocks, radiofrequency ablation, and medication management • Consultations for medication management (i.e., provide comprehensive recommendations to the primary care provider who initiates the pain medications with the patient)

Steps	US VA Stepped Care Model for Pain Management ^{14-16,25}	Australian National Pain Strategy ¹⁷	South Australia Model of Care for Chronic Pain Management ¹⁸	Ottawa Hospital Pain Clinic ²⁰
Step 8	NA	NA	NA	Case management <ul style="list-style-type: none"> • Complex case management • Most intensive care for patients with the highest need

CBT = cognitive behavioural therapy; NA = not applicable; OT = occupational therapy; VA = Veterans Affairs.

is used by 2 of the identified models.^{26,29} In these models, the hubs serve as the central coordinator for care. In the hub-and-spoke model for spinal disorders in rural settings, the model shifts the direction of the patient flow through the model, whereby patients receive lower-intensity care at the general hospital “spokes” and are referred to the tertiary care hub for more comprehensive care and follow-up.²⁷ At both hub-and-spoke models for opioid use disorder, multiple agencies or treatment programs serve as hubs, which partner with community health providers that serve as the spokes; the transfer of patients between hubs and spokes is bidirectional.^{28,30} The programs and services offered by 2 of the hub-and-spoke models were not reported in the literature.^{26,27} An overview of the programs and services offered at the other 3 hub-and-spoke models is provided in Appendix 2, Table 6.

Oncology Care Model for Other Chronic (Non-Pain) Medical Conditions

This Environmental Scan identified information in the literature search that indicates that the OCM by the Centers for Medicare and Medicaid is currently used for the provision of care for patients with cancer in the US.^{10,31-33} For cancer care, the OCM is designed to encourage practitioners in physician group practices to provide care that is of higher quality and better coordinated. Participation in an OCM occurs at the medical practice level, whereby the practices commit to providing superior care coordination and navigation, and enhanced treatment for patients receiving chemotherapy for cancer. The model is centred around a 6-month, episode-based payment model in which practices are reimbursed through Medicare at US\$160 per beneficiary, per month, for the provision of monthly enhanced oncology services. This cost covers all care (oncology- and non-oncology-related) provided to the patient during the 6-month period. The 6-month interval was selected to reflect the high initial costs of cancer treatment (i.e., the initial 2 months after chemotherapy initiation) and stabilized costs in months 4 to 6; the 6-month episode begins when patients first receive outpatient non-topical chemotherapy. Patients are eligible for an additional 6-month episode if additional chemotherapy is required after the initial episode. The physician group practices are also eligible to receive performance-based payments through Medicare based on the practices’ quality metrics and their actual expenditures compared to risk-adjusted episode target prices. Practices following the OCM must also commit to the following: ensuring patients have access to providers who have access to the patient’s medical records 24 hours a day, 7 days a week; treating patients following current national guidelines; providing detailed care plans for patients; using certified electronic health records; and using data for continuous quality improvement.^{10,31-33}

Stepped Care Model for Other Chronic (Non-Pain) Medical Conditions

This Environmental Scan identified 9 stepped care models that are implemented in Canada or internationally for delivering services for other chronic medical conditions; 8 of these models are for mental health^{11,34-40} and 1 is for insomnia.⁴¹ For all 9 of these models, the “steps” are based on the type of care provided (e.g., self-help, group therapies, 1-on-one therapies) rather than the level of care of the facility (e.g., primary, secondary, or tertiary care). The number of steps in the models ranges from 4 to 12 steps. Movement through the steps is sequential or based on symptom severity in 4 models,^{34,35,37,41} not-sequential in 2 models,^{11,38} and was not reported in 3 models.^{36,39,40} In general, the lower steps include population-level approaches such as education and websites, followed by self-help resources and group therapies, with progression toward higher-intensity interventions such as cognitive behavioural therapy (CBT) and referrals to specialists. An overview of the steps provided within these models is provided in Appendix 2, Table 7.

Objective #2: Summarize the main patient-related outcomes that are associated with the selected models of care delivery.

This objective was addressed by research question 2, with findings from the literature and consultations.

Patient-Related Outcomes by Model of Care

Patient-related outcomes and outcome measures that were associated with the selected models of care were identified in the literature and from 1 consultation on each of stepped care and hub-and-spoke models. Because no information on the use of the OCM for the provision of care for chronic pain was identified, no patient-related outcomes were identified for the OCM. This Environmental Scan also identified other models of care for chronic pain (Table 4); the patient-related outcomes associated with these other models were informed by the literature and the consultations. The specific outcomes or outcome measures identified in the literature and by the informants for the selected models and the other models are summarized in Table 4. The specific tools to capture the outcomes are reported when they were provided.

Core Outcome Sets for Chronic Pain

During the consultations, 5 informants spoke to the development or use of standardized core outcome sets for chronic pain. These core outcome sets include a standardized battery of questions or tests such that the same outcomes could be measured in the same way for all patients with chronic pain. The outcome sets are intended for provincial or national use and are not specific to a model of care.

One informant indicated that the Chronic Pain Network of Canada is developing a minimal common outcome set for adult and pediatric patients with chronic pain.⁵⁰ At the time of writing, this outcome set was in the process of being finalized. The informant connected the research team for this Environmental Scan with the lead investigator for this outcome set, who provided a list of the current set of domains and subdomains that are included in the minimal outcome set for adults. The patient-related outcomes from this minimal outcome set are: pain-body location, circumstances of the onset of pain, duration of pain condition, frequency of pain symptoms, neuropathic pain component, pain intensity, pain interference, physical functioning, sleep disturbances, depression, anxiety, and current employment status. The specific measurement tool to use for each outcome is identified as part of the outcome set (Pr. Manon Choinière, Research Centre of the Centre hospitalier de l'Université de Montréal, Montreal, Quebec: personal communication, Feb 02, 2021). The informants from the Ottawa Pain Clinic stepped care model reported using this minimal clinical outcome set.

From the pediatric perspective, 1 informant reported that they have collaborated with researchers to help develop a national core outcomes agreement for pediatric chronic pain clinics, so that all clinics are collecting the same outcomes related to children with chronic pain and their families. This outcome set has not yet been published.

One informant from Quebec reported that there has been an effort to standardize pain outcome measures across the province. These outcomes will be aligned with the Quebec Pain Registry,⁵¹ an online administrative and research database with standard outcome data pertaining to patients with chronic pain. The standardized outcomes in this registry are: pain characteristics and impact on activities of daily living, specific pain diagnoses, mental health, pain catastrophizing, health-related quality of life, medical history including pain treatments,

Table 4: Patient-Related Outcomes and Outcome Measures by Model of Care

Outcome category	Model of care		
	Stepped care	Hub-and-spoke	Other models ^a
Pain	<ul style="list-style-type: none"> • Pain intensity (1 informant) <ul style="list-style-type: none"> ◦ rating scale (0 to 10)^{25,42} • Pain scores¹⁵ • Duration of pain condition (1 informant) • Pain interference (1 informant) • Brief Pain Inventory^{16,20} • Pain Catastrophizing Scale²⁰ 	<ul style="list-style-type: none"> • Pain intensity (1 informant) • Pain interference (1 informant) • Pain catastrophizing (1 informant) 	<ul style="list-style-type: none"> • Pain intensity (3 informants) <ul style="list-style-type: none"> ◦ Pain intensity visual analogue scale (integrated care)⁴³ • Pain scores⁴⁴ • Brief Pain Inventory (IMGV,⁴⁵ Whole Person Integrated Care model,⁴⁶ multi-modal care.⁴⁷) (1 informant) • Pain self-efficacy questionnaire (IMGV,⁴⁵ Whole Person Integrated Care Model⁴⁶) (1 informant) • Pain interference <ul style="list-style-type: none"> ◦ Roland-Morris Low Back Pain and Disability Questionnaire (multi-modal care)⁴⁷ • Pain catastrophizing (2 informants) • Risk of chronicity (STarT BACK questionnaire) (1 informant)
Psychosocial	<ul style="list-style-type: none"> • Coping <ul style="list-style-type: none"> ◦ Strategies – catastrophizing scale¹⁶ ◦ GAD-7 generalized anxiety disorder scale²⁰ • Depression (1 informant) <ul style="list-style-type: none"> ◦ PHQ-9 Patient Health Questionnaire-9²⁰ • Anxiety (1 informant) <ul style="list-style-type: none"> ◦ GAD-7 generalized anxiety disorder scale²⁰ • Stages of Change Questionnaire²⁰ • Goals²⁰ • Distress <ul style="list-style-type: none"> ◦ Brief Symptom Inventory 18 (BSI-18)¹⁶ • Fear <ul style="list-style-type: none"> ◦ Scale of kinesiophobia²⁰ • Sleep disturbances (1 informant) <ul style="list-style-type: none"> ◦ Insomnia Severity Index²⁰ 	<ul style="list-style-type: none"> Mental health (1 informant) 	<ul style="list-style-type: none"> • Stress <ul style="list-style-type: none"> ◦ Stress management (IMGV)⁴⁵ ◦ Perceived stress scale (IMGV)⁴⁵ • Depression (IMGV,⁴⁵ multi-modal care⁴⁷) • Anxiety <ul style="list-style-type: none"> ◦ Hospital anxiety and depression (multi-modal care)⁴⁷ ◦ GAD-7 generalized anxiety disorder scale (multi-modal care)⁴⁷ • Distress <ul style="list-style-type: none"> ◦ Kessler Psychological Distress Scale (whole person integrated model of care)⁴⁶ • Sleep (1 informant) <ul style="list-style-type: none"> ◦ Pittsburg Sleep Quality Index (IMGV)⁴⁵ ◦ Satisfaction⁴⁴ • Global treatment satisfaction (multi-modal care)⁴⁷ <ul style="list-style-type: none"> ◦ Patient satisfaction with treatment (multi-modal care)⁴⁷ ◦ Patient satisfaction (3 informants) • Mental health (1 informant)

Outcome category	Model of care		
	Stepped care	Hub-and-spoke	Other models ^a
Function	<ul style="list-style-type: none"> • Functional disability <ul style="list-style-type: none"> ◦ Oswestry Disability Index¹⁶ ◦ Limitations in daily activities scale²⁰ • Physical functioning (1 informant) • Employment status (1 informant) 	Disability index (1 informant)	<ul style="list-style-type: none"> • Disability index (1 informant) • Functional status <ul style="list-style-type: none"> ◦ Roland-Morris Low Back Pain and Disability Questionnaire (integrated care)⁴³ ◦ Functional status (2 informants) • Health-related quality of life <ul style="list-style-type: none"> ◦ EQ-5D-5L (Scottish Service Model)⁴⁸ ◦ Quality of life⁴⁴ (3 informants) • Health status <ul style="list-style-type: none"> ◦ SF-12 (IMGV)⁴⁵ ◦ SF-36 (multi-modal care)⁴⁷ • Work status <ul style="list-style-type: none"> ◦ Sick leave due to pain (integrated care)⁴³ ◦ Return to work⁴⁴ (1 informant)
Health care utilization	<ul style="list-style-type: none"> • Prescription of any opioid^{15,25} • Level of opioid prescription⁴² • Long-term opioid therapy (> 90 consecutive days of prescriptions)^{15,25} • Prescriptions for other medications^{25,42,49} • Frequency of primary care visits²⁵ • Documented referral for specialty health care services^{25,49} • Number of visits to specialty health care services^{25,42} 	Not reported	<ul style="list-style-type: none"> • Opioid prescription (multi-modal care)⁴⁷ • Self-reported pain medication use (IMGV)⁴⁵ • Medication use (1 informant) • Opioid misuse <ul style="list-style-type: none"> ◦ Common opioid misuse measure (IMGV)⁴⁵ • Non-pharmacological treatments for pain (IMGV)⁴⁵ • Hospital visits⁴⁴

EQ-5D-5L = EuroQol 5-Dimensions 5-Levels questionnaire; GAD-7 = Generalized Anxiety Disorder Scale-7; IMGV = integrated medical group visit; SF = Short Form Health Survey.

^aFor the other models of care identified in the literature, if the outcome was associated with a specific model(s), then the name(s) of the model(s) is provided in parentheses after the outcome.

patient expectations, patient global impression of change, and socio-demographics.⁵¹ The standardized tools for measuring these outcomes were not published in the Quebec Pain Registry.⁵¹

One informant from Alberta reported that there is a working group with the Alberta Pain Strategy that is developing a core outcome set for adult pain services. The outcomes include: health status, depression, life satisfaction, fatigue, brief pain inventory, pain disability index, pain catastrophizing, and pain self-efficacy.

Objective #3: Summarize key issues, challenges, and lessons learned in implementing the selected models for the delivery of publicly funded care for patients with chronic pain.

This objective was addressed by research question 3, with findings from the literature and consultations.

Barriers and Facilitators

This Environmental Scan identified numerous barriers and facilitators to implementing models of care for chronic pain, many of which were common across jurisdictions. This information was mainly gathered through the consultations with stakeholders (via non-leading questions; see Appendix 1), with some additional information found in the literature. Several the factors that were identified exist on a continuum where the presence of the factor can serve as a facilitator (e.g., adequate government support), while the absence of the factor is a barrier to providing care (e.g., inadequate government support). These factors include support and collaboration, building capacity, having a formalized intake and triage system, tracking program metrics, and the approach to care. Additional barriers that influence the provision of care for patients with chronic pain include: consideration for which discipline has ownership over chronic pain, inadequate funding, lack of health care providers, lack of clarity regarding where chronic pain therapy should be provided and by whom, challenges in managing patient and provider expectations of care, a gap in the transition from pediatric to adult care, a gap in the transition from acute to chronic pain, and inequitable provision of care or challenges related to diversity in care (e.g., language barriers). The use of flexible, iterative models was also identified as a facilitator to providing care for patients with chronic pain. The following describes the individual barriers and facilitators in more detail.

Which Discipline Has Ownership of Care for Patients With Chronic Pain

The question of which medical discipline should be responsible for the care of patients with chronic pain was raised by 4 informants. One informant reported that providing care for patients with chronic pain is complicated, as it requires knowledge of all the other health care disciplines – which is why a multidisciplinary approach to care is needed. An informant from 1 jurisdiction reported that it is harder to implement solutions for chronic pain given that care for patients with chronic pain is not the sole responsibility of 1 medical specialty. In another jurisdiction, care for patients with chronic pain was placed under the primary care service; the informant did not believe this was appropriate given the need for hospital-based clinic space for some pain specialists (e.g., anesthesiologists) and procedures (e.g., nerve blocks), which is not available under primary care.

Support and Collaboration

A need for better collaboration and support between providers, disciplines, departments of health, and regional and provincial governments was identified by informants from 5 jurisdictions.

Government Support

A lack of collaboration between provincial and regional governments was perceived to have resulted in the absence of a province-wide model for chronic pain in some provinces and unequal access to services within and across provinces. Informants reported contributing to multiple discussions to develop provincial strategies, but that this has yet to result in any meaningful changes. It was reported that there is a need for better direction from provincial governments to drive a standardized approach, and for coordinated system-wide efforts to

improve care for patients with chronic pain. One informant reported that, in their jurisdiction, some targeted efforts had been made to tackle individual problems without considering the system-wide impacts of these tactics. In some cases, this piecemeal approach was perceived to have resulted in reduced access to some services (e.g., accreditation of facilities is perceived by some to have reduced access to some interventional therapies for pain).

In contrast, 1 informant credited the support and guidance from the provincial government for the successful development and implementation of their model. It was reported that the government paid for 1 coordinator per health region to help establish the programs and services within the model to reflect the local characteristics and needs of the region, and allowed for the flexibility to build capacity based on their needs.

Local Collaboration

A lack of coordination between local providers and administrators was reported to contribute to challenges implementing system changes. One informant reported that the development of secondary-level pain programs in their jurisdiction was left to the local leadership and, as a result, this informant felt that some programs drifted away from the intended model, causing some variability in the programs and services offered across the jurisdiction. This was reported to create a problem for the tertiary centre, as there was no longer consistent messaging across all levels of care and the tertiary centre was then required to offer certain types of secondary care that was otherwise missing at some of the local pain programs. The informant described challenges to gaining support for new programs and to implement them without the full support from a local health care system, particularly for new programs that alter the traditional approach to health care. One informant reported that this lack of support may have caused some reluctance to adopt and accept a new process that was implemented in their jurisdiction. It was also reported that staff turnover, especially in leadership roles, can create difficulties in ensuring that programs or models of care continue to be implemented.

In contrast, informants from 9 jurisdictions credited local collaborations and local champions as contributing factors to the successful implementation of their models or programs. It was reported that having a good relationship and buy-in from the local hospital was important for establishing models of care and staffing pain programs. Support from both management and people in leadership positions at the hospital were also important for implementing new approaches to care. In addition, networking with people in the jurisdiction and developing open communication and trust across providers was valuable for developing and implementing new models of care. One informant reported that close relationships between primary care providers and specialists at the leadership level and the clinician level were important for establishing their model of care. These close relationships allow the providers to be supportive of the changes while being sensitive to the demands the others were experiencing (e.g., long wait lists for specialist consultations). It was reported that some physicians experienced success at increasing care for patients with chronic pain in their jurisdictions by making local connections and taking ownership of the changes (e.g., via community outreach, finding online programs, increasing local capacity) rather than continuing to wait for guidance from the provincial government. In addition, strong teams that are open to innovation and that are willing to work together to solve problems were also reported as being important for successful programs and models. Informants described their successful teams as being high-functioning, enthusiastic, passionate, and dedicated.

Funding

Program Funding

A lack of funding and resources for chronic pain programs and services was highlighted by 8 informants from across Canada. Underfunding was perceived in some cases to contribute to programs being understaffed and thus struggling to meet the needs of their patients (e.g., could not afford to hire a patient coordinator to assist patients in accessing services), as well as a lack of physical space, which was seen to restrict the availability of certain procedures (e.g., fluoroscopy). A lack of adequate funding was also reported as a contributing factor to jurisdictions not being able to use their preferred model of or approach to care, such as having a collaborative multidisciplinary team or conducting interdisciplinary patient assessments. Funding support for information technology infrastructure was also noted as something that was lacking in some jurisdictions, limiting the ability to appropriately track and analyze program metrics. Informants also noted that there was a lack of resources to fund self-management programs and a lack of administrative support and office space for providers. In provinces with multiple health regions, different funding models were seen to contribute to regional disparities and substantial variation in the programs and services offered for chronic pain across those provinces. Two informants emphasized that large portions (e.g., up to half) of the funding for their pain programs came from philanthropic donations or private foundations, which was felt as placing their programs in precarious positions, as the funding is not guaranteed. A lack of stable funding for the US VA Stepped Care Model for Pain Management was also identified in the literature as a barrier to providing the stepped care model for chronic pain.⁵²

One informant reported that the creative funding strategy used by a program in their jurisdiction could be viewed as both a strength and a weakness of their model. This funding model combines funding from various sources (e.g., borrowed time from other departments) rather than operational funding from 1 stream. This was described as a weakness, as the other departments could stop letting the program borrow time if they could no longer spare the resources, but it was also described as a strength as there is no single funding body that can revoke all the funding from the program. The informant suggested that variations of this funding model could be used to build capacity for care for patients with chronic pain without needing to fund expensive tertiary pain clinics.

Publicly Funded Allied Health Professionals

A lack of access to publicly funded allied health professionals within the community and in secondary and tertiary hospitals was perceived as a barrier to providing good-quality care for patients with chronic pain by 6 informants. Services provided by allied health professionals are often recommended as part of chronic pain therapy (e.g., dietetics, counselling, psychology, supervised exercise therapy, massage therapy, OT, chiropractic) and in some areas these professionals are either not publicly funded (i.e., only private providers are available in that jurisdiction), or there are very long wait lists (e.g., 6 to 12 months) to see the publicly funded professionals because of small numbers of these service providers. For patients who cannot afford private services (e.g., psychological or physiotherapy services), the cost of these services could be a big barrier to accessing treatment. Having sustainable funding available for multidisciplinary pain services was also identified in the literature as a major gap at the publicly funded Pain and Wellness Centre in Ontario.⁵³

Availability of Professionals

Informants from 7 provinces spoke about a lack of health care providers – both primary care providers and pain specialists – as a barrier to providing quality care for patients with chronic pain.

Primary Care Providers

There is a 2-fold impact on care for chronic pain due a lack of family doctors. First, access to many of the pain clinics or programs in Canada requires referral from a primary care provider to ensure that the patient is fully supported outside the pain clinic. Patients who do not have a family doctor, therefore, have unequal access to these clinics. Second, informants reported that they cannot discharge patients from tertiary pain centres if the patient does not have a family doctor, as the family doctor is needed to manage prescription pain medicines. As a result, the clinic continues to see these patients, which may limit the clinic's capacity to see new patients and extending the wait list for services.

In addition, informants reported that there is a lack of pain education and training for providers was seen to create challenges in forming a multidisciplinary team with expertise in chronic pain. One informant felt there was a need for additional support, mentorship, and education about pain for primary care providers to support a comprehensive pain management program. Similarly, another informant perceived that the lack of pain education starts in medical school, where pain is not a main component of the curriculum and students graduate without sufficient knowledge of chronic pain. Informants described that there is a risk that this absence of knowledge may continue if physicians do not have adequate time for continuing education courses on the topic of chronic pain. A lack of provider training and knowledge about pain was also identified as a barrier in the literature by the US VA Stepped Care Model for Pain Management⁵² and by the whole person care model.⁵⁴

Pain Specialists

A lack of specialists with expertise in pain was also perceived as a barrier to providing timely care for patients with chronic pain, with some areas reporting very long wait times to see specialists (e.g., up to 5 years) and other areas reporting a complete lack of certain specialties resulting in patients needing to be referred outside their jurisdiction for specialist care.

Provision of Chronic Pain Therapies – Who and Where?

Challenges regarding who should provide care for patients with chronic pain and where these services should be provided was raised by 7 informants. It was reported that there is resistance by some primary care providers to renew opioid prescriptions, and that these providers rely on specialists to manage these medications for their patients. This was seen to create issues for discharging patients from tertiary pain programs if the patient's primary care provider is not comfortable prescribing opioids. Discharging patients from chronic pain programs was described as challenging because of the chronic nature of their condition and the reliance of some patients on interventional procedures to keep them functional. Findings in literature on The Ottawa Hospital Pain Clinic stepped care model also identified the process of discharging patients from the interprofessional team as a challenge because of the involvement of multiple programs and providers.²⁰ The clinic is in the process of developing discharge criteria to improve this process.²⁰

Several informants also discussed issues regarding where certain pain therapies should be offered. For instance, 1 tertiary pain program offers a variety of programs and services that the informant felt do not need to be housed in a tertiary hospital. As there is nowhere else for

these programs and services to be offered in the region, it was reported that these services will stay at the tertiary centre for now, but the informant wonders whether there might be a better avenue to provide these services. The location of services was raised as a contributing factor to unequal access to pain services within provinces and across the country. In some provinces, the central location of pain services was described as challenging for patients who live in rural or remote areas. In addition, there are jurisdictional restrictions that affect the availability of services (e.g., online programming or virtual health care visits) outside the host province, despite the demand for these services from patients in other provinces.

Building Capacity

As not all patients with chronic pain can be treated at tertiary pain centres, informants from 8 jurisdictions spoke about their experience with or the need to build capacity for care in other disciplines and in the community. For instance, providing additional training and professional development in the management of chronic pain, or giving primary care providers the ability to consult with pain experts to expand their scope of practice, are examples of capacity building. In 1 clinic, when they first launched their pain program, they invited a guest speaker to provide non-pharmacological pain education for the whole team. This 2-day workshop was described as having brought the whole team together and helped ensure everyone received the same education, which was perceived as useful in developing a coordinated approach across disciplines to treat chronic pain. At another tertiary pain clinic, to increase capacity in the community, a pain preceptorship program was developed, which allowed them to work with approximately 170 family physicians and see close to 500 patients in the community. In this program, primary care providers who had referred 5 or more patients to the pain clinic were identified and then visited by a multidisciplinary team (i.e., physician, addictions specialist, and psychologist) from the tertiary centre to develop the management plans together.

Using online resources that are freely available and do not require referrals was mentioned as a way to build capacity for the care of patients with chronic pain. The informants mentioned that there is no need to create new resources if it is possible to leverage previously established resources. For instance, 1 pain clinic leverages free resources developed by the federal government (e.g., Wellness Together Canada)⁵⁵ and by other pain clinics (e.g., TAPMI's online resources).¹³ However, it was reported that it can be a challenge to distribute online resources; for example, in 1 region, they struggled to disseminate an online pain neuroscience education resource that they had developed to all the primary care providers in the jurisdiction. Another informant mentioned that, while virtual programming may remove barriers to participation (e.g., travel) and increase access to these services, it was perceived that the downside is that participants lose out on peer interactions that they would normally receive with in-person groups.

The informants spoke about the need to take the initiative to address the needs in their communities, even if the steps taken are small. For instance, 1 informant was successful in developing a local pain education program. Another informant reported on the success they experienced through community outreach and travelling to local communities to provide services for patients in remote areas.

Finally, 2 informants mentioned that building capacity within the community or as part of a model is a long process and that there is still a long way to go for providing care for people with chronic pain.

Intake and Triage

A lack of a centralized intake and triage system was described as a barrier to providing care by 3 informants. There are concerns that without a formalized system, identifying the correct specialist becomes the responsibility of the referring physician, which may result in patients waiting a long time to see an incorrect specialist or patients being referred to and being seen by multiple specialists. Without a triage system, it was felt that there is no way to ensure that urgent cases are prioritized.

In contrast, in 1 province with a centralized intake system, there is the concern that this system could be overwhelmed. An informant reported that initially the centralized intake system reduced wait times, but as a higher volume of referrals started being directed to the central intake, it was described as becoming challenging for the system to handle the referrals in a timely way. The strain on the centralized intake system could also be compounded if the clinics or providers do not respond in a timely manner as to whether they will accept the patient, thus creating a bottleneck at the central intake.

Three informants spoke about the value of having an efficient intake and triage system for providing efficient care. One informant reported that an electronic system to monitor referral volumes and wait times has been a key success factor for their pain clinic. Another informant reported that having a full-time triage nurse who is responsible for communicating with the primary care providers is very important for preventing a bottleneck at the referral and triage stage of their clinic. In another region, by implementing a centralized intake system that only collects the minimal data required to triage patients, they were able to cut the wait list at the tertiary centre from 2 years to 6 months.

Expectations and Preferences for Care

Patient-Centred Expectations and Preferences for Care

Informants from 2 provinces reported challenges with managing patient expectations and preferences. One informant believes there is room for improvement regarding managing patient expectations for care. They believe that physicians struggle to admit that it is not always possible to fix chronic pain; however, it is important that patients have realistic expectations (e.g., anticipated outcome) to move forward with their care. Another informant spoke about managing patient expectations around the ability to reschedule appointments. This informant reported that they perceived that patients do not necessarily understand the issues created by repeatedly cancelling and rescheduling their appointments; these issues impact both the clinic and the ability to provide care to the patient and to other patients.

Two informants spoke about the challenge of managing patient preferences for the types of treatments they would like to receive, particularly when patient preferences conflict with the care plan developed by the care provider(s). Both informants mentioned that they felt that patients in their clinics were more likely to decline the psychological component of therapy (versus the physical or pharmacological components) and that this can be challenging for the care team if it has determined that the patient would benefit from all 3 aspects to manage their pain.

To support patient-centred care, 1 informant reported that offering programming at times that best suited the patient's schedule resulted in better attendance. Two other informants spoke about the importance of engaging with patients and their families to develop better solutions for pain, both in the development of individualized care plans and in the development of resources in collaboration with people with lived experience with pain.

Based on feedback from a stakeholder in London, Ontario, a perceived benefit of the stepped care program at The Ottawa Hospital Pain Clinic is that, by providing patients with an opportunity to access a variety of services after their orientation session, they are giving patients agency in their care (i.e., patients are important and central members of the health care team).

Provider-Centred Expectations and Preferences for Care

Two informants reported that misaligned expectations and a lack of understanding by referring physicians regarding what the pain programs have to offer has created challenges in providing high-quality care. One informant felt that a lack of understanding of the eligibility criteria for the program has contributed to a high volume of inappropriate referrals, which was seen to take time and resources away from the patients the program is designed to help.

Similarly, misaligned expectations of primary care providers with respect to what programs and services are offered at these pain programs was seen as an obstacle to patients receiving appropriate care. For instance, 1 informant reported that some providers in their jurisdiction believe that the pain clinic only manages opioid prescriptions and are unaware of the multi-modal therapies offered at the clinic. This could result in physicians not referring their patients, who might otherwise benefit from non-pharmacological therapies, to the clinic.

Transition for Pediatric to Adult Care

Informants from 3 provinces reported that there is a perceived gap associated with the transition from pediatric to adult pain services, with no clear pathway for this transition in many circumstances. Patients who transition from pediatric to adult services may experience challenges, such as difficulties accessing the therapies they need (e.g., psychology, physical therapy) or having the same model to care (e.g., interdisciplinary versus multidisciplinary). In addition, many adult pain programs may not be designed for young adults and lack the specific services needed by this populations, such as vocational or family planning, or there could be very long wait lists for these services. In 1 region, a process map was developed to illustrate what the transition from pediatric to adult chronic pain services should look like, but it was acknowledged that there are still some gaps in the process.

Similarly, 1 informant reported that chronic pain tends to run in families but felt that there does not seem to be any considerations for the familial components of chronic pain or whole-family efforts to manage chronic pain. This was described as particularly important for pediatric patients, where parents play a vital role in the child's ability to cope with chronic pain; the informant reported that if a parent's pain is poorly managed, it reduces the likelihood that the child will benefit from pain management.

Evidence and Program Metrics

The importance of measuring outcomes and tracking program metrics for improving patient care was mentioned by 3 informants. It was emphasized that it is important to track metrics that are informative and important to the patient. One informant reported that they felt as though some metrics that are required by the ministry of health may not be valuable to patients. For instance, the ministry requires that they track how quickly patients received an appointment date after their referral is submitted. The informant does not believe that this metric is useful and it would be more valuable to track how long it takes for patients to actually be seen in the clinic. It was also reported that tracking these metrics and patient outcomes could be challenging if there are not adequate systems in place to manage the data. One informant emphasized the importance of integrating research into clinical

practice. In their clinic, they measure and track everything they can, including having patients complete numerous questionnaires at every visit. The informant reported that these outcome data are then published in scientific journals to demonstrate the clinical effectiveness of their programs and to justify funding requests. However, it was noted that it has become more common that evidence from randomized controlled trials is required (rather than observational data) to make changes to health care and that this was perceived as causing delays in innovation. Findings from the literature on The Ottawa Hospital Pain Clinic Stepped Care Model suggest that the clinic routinely collects data to allow for continuous evaluation and improvement of the program.²⁰

Transition From Acute to Chronic Pain

Informants from 3 jurisdictions spoke about the need to prevent acute pain from developing into chronic pain, particularly for post-surgery pain in pediatric and adult patients. One informant reported that there have been discussions regarding where a transitional pain service might fit within the health system. Another informant suggested that there may be a need to develop indicators that help predict who may be prone to developing chronic pain and that there should be efforts to identify and treat these patients early on in their pain trajectory rather than focusing solely on investing in tertiary pain clinics.

Flexible Models

Rather than developing a new model, 2 informants recommended using successful models of care for other chronic diseases to develop models of care for chronic pain, such as building off of the Stepped Care 2.0 model for mental health.

Regarding developing their models, 2 informants emphasized that there is not 1 best approach that will meet the needs of all regions or patients. Because of the diversity of patients with chronic pain and the unique attributes of different regions (e.g., geographic size, population density, available services), it is important that any provincial guidance for models of care allows for flexibility in building regional models to best meet the needs of different areas. Harmonizing the approach to care across a province does not always work and it was suggested that government recommendations should allow for individualized approaches to treating patients.

Informants from 2 other jurisdictions supported the need for flexible models and approaches to care. It was felt that guidance from the government cannot be too rigid, as it should leave room for patient autonomy in what therapies they choose, and the models should consider patient readiness for change with respect to accessing services. One informant reported that there used to be a pain clinic in their jurisdiction based on a rehabilitation model and it followed a very rigid 6-week program for treatment. This program was described as physically and mentally challenging for patients and the clinic has since closed.

The importance of using an iterative approach to continuously improve models of care was discussed by 3 informants. Gathering feedback on the model from everyone (e.g., patients, referring physicians, tertiary care team) and incorporating it to improve the system was described as an important step in the development of models of care for chronic pain. Two informants mentioned that their models have undergone multiple modifications, with the current models looking very different from their initial approaches. Both regions recorded the process of developing their programs and they updated their manuals with each subsequent change. These manuals are designed to be used to develop future programs and clinics in

their jurisdictions, providing structure and guidance in determining which components are necessary and which are optional.

Approach to Care

Multi-modal Care

It was the opinion of 1 informant that the health care system needs to evaluate the approach to treating patients with chronic pain. This informant mentioned that there are a lot of interventions in Western medicine that will temporarily alleviate pain (e.g., injections) but they do not solve the underlying problem. This informant stated that the cure rate for chronic pain is close to zero and that there is a need for a more holistic or whole person approach to caring for patients with chronic pain. Similarly, since chronic pain is a lifelong condition, 1 informant felt that it should be treated accordingly by following a chronic disease management model (e.g., building self-management skills with patients). The informant also reported that patients and providers in their jurisdiction are happy since the shift was made toward this model and away from a rehabilitation model. The importance of incorporating self-management into management plans was emphasized by 2 other informants. Informants from 2 jurisdictions reported that the involvement of a multidisciplinary team is essential for caring for patients with chronic pain. However, it may be difficult to shift away from only using medical management for pain, with 1 informant reporting that they encountered some difficulties at their facility when they started using alternative non-pharmacological approaches (e.g., physical therapy) to managing pain.

Appointment Style

Informants from 2 regions felt that not only was access to a multidisciplinary team and therapies important, but that an interdisciplinary approach to patient assessment and treatment planning was also valuable. It was suggested that this interdisciplinary approach, where providers from multiple disciplines evaluate the patient together, is important for communication between the patients and the providers. It helps ensure that the whole team receives the same information from the patient, which minimizes potential conflicts that could arise if patients provide different information to different providers. It also helps to make sure that patients receive consistent messaging from all team members. Team messaging reinforces the importance of all components of the care plan; this is helpful in preventing patients from dismissing certain aspects of their pain management plans. One informant mentioned that people with chronic pain often experience fear avoidance (e.g., avoid physical activity due to fear of pain) and that an interdisciplinary approach to treatment (e.g., psychologist seen in tandem with physiotherapist) may be useful in assisting patients in overcoming fear avoidance – which supports the functional rehabilitation model.

Consideration of the length of time spent with patients was discussed by 1 informant. Their program prioritizes longer (i.e., up to 2 hours) but infrequent (i.e., every 6 weeks) patient assessments compared to the standard approach in their discipline of frequent but short patient visits. The informant feels that this allows for more time for the provider to conduct an in-depth assessment, to identify underlying issues, to provide patient education, and for the patient to ask questions and feel heard.

Rapid Access

One informant reported on the experience of their program in providing rapid access (i.e., within 2 weeks of referral) to all eligible patients for a thorough assessment and the provision of some conservative pain management therapies. Preliminary data collected by the program indicate that providing this rapid access was successful at reducing the number of patients

with moderate or high risk of a poor clinical outcome due to the chronicity of their pain. However, this program was designed for a very specific population and has strict eligibility criteria, which enables the 2-week turnaround for seeing referrals. The informant reported that if they had wider eligibility criteria for the program, they would not be able to meet their 2-week target and that would simply serve to transfer the wait list that exists elsewhere in the health care system to their program.

Equity and Diversity

One informant felt that there remains a lot to be done in equity and diversity and how providers discuss pain with their patients, the types of therapies provided, and the structure of pain services. They noted that marginalized populations (e.g., people living in poverty) are underrepresented in the patient populations who attend tertiary pain clinics and that there needs to be efforts to rectify this. Another informant reported that they noticed that their program does not see very many patients from rural or remote communities; they believe that these patients are underrepresented in their clinic. A stakeholder from a Canadian federal government department also indicated that a discussion around cultural appropriateness or cultural competency is absent from most of the models of care for chronic pain.

Language barriers were also discussed by 2 informants. Because of capacity issues in some jurisdictions, pain services and pain education are only offered in English, which was perceived as a barrier for those who speak other languages (e.g., French, Indigenous languages). Based on feedback from a stakeholder from a Canadian federal government department, it was noted that many educational resources (e.g., online resources) may only be available in English, limiting the accessibility of this information.

Objective #4: Identify other models of publicly funded care delivery for chronic pain specifically, including programs and services offered, that are being used in Canada and other countries.

This objective was addressed by research question 4, with findings from the literature and consultations.

Other Models of Care Used in Canada

Resources identified in the literature search and 15 consultations from 10 Canadian provinces and territories provided information on the use of the other models of care delivery, and the programs and services offered, for the management of chronic pain in Canada.

The provision of health care is provincially organized in Canada and within many provinces there are multiple health zones or health networks responsible for the organization of care for that jurisdiction. The organization of care for chronic pain varies substantially across the country. There are province-wide strategies, health zone-specific (i.e., regional) models, and local hospital or clinic-specific approaches; each of these are described separately in this report. There are also areas with no formalized approaches, which are also identified and described. For the purpose of this scan, a model of care was considered a provincial strategy if it was organized by the provincial government; a model of care was considered a regional strategy if it was applied to the whole health region or health zone; local approaches were models or programs that were developed independently and operated without oversight from a regional or provincial health authority; and an area was considered to have no formalized approach if no definitive programs or services for chronic pain were established within a hospital or clinic. In addition, the approach within a jurisdiction may vary between adult and

pediatric care. Given the complexity of health care organization in Canada, this scan does not include information from every provincial, regional, or local strategy for chronic pain.

The following is a summary of the various approaches to the provision of care for patients with chronic pain across Canada that were identified from the literature and consultations; a table summarizing this information is included in Appendix 3 (see Table 8).

Provincial Strategies

This Environmental Scan identified 1 provincial strategy for the provision of care for patients with chronic pain in Quebec. No other provincial or territorial models for chronic pain in Canada were identified, although Ontario has an informal provincial chronic pain network. This information is based on findings from the consultations.

Quebec

One informant from Quebec reported that the provincial government reorganized pain services in the province about 15 years ago, creating an overarching provincial strategy for chronic pain. The strategy is based on the model of care used for trauma care, which is a pyramid model whereby the first level of care is provided by general practitioners, the second level of care is at regional hospitals, and the third level is at centres of expertise. There are 4 health regions in the province of Quebec, each centred around a major university (i.e., McGill, Laval, Sherbrooke, and Montreal), with centres of expertise for pain management at tertiary hospitals. As part of the provincial strategy for chronic pain, the government provided guidance to each of the health regions regarding how to develop a model of care for chronic pain and required each region to develop a tertiary pain centre (i.e., the centre for expertise). The informant reported that each of the health regions interpreted the guidance from the province differently and that each region established their own model of care for pain based on the local attributes of their region (e.g., geographic size of the area, density of the population). As part of this Environmental Scan, we spoke to informants from 2 of the health regions: Montreal and McGill.

Ontario

There is no provincial model of care for chronic pain in Ontario; however, 1 informant from the Toronto Central health network provided some of the provincial perspective on chronic pain in Ontario. According to the informant, Canada has 11 pediatric chronic pain programs, of which 5 are located in Ontario (4 outpatient pediatric pain programs and 1 intensive inpatient pediatric pain program). This informant reported having worked with the Ontario provincial government to secure funding for these pediatric pain programs, which is why Ontario has more pediatric pain programs than any other province in Canada. Ontario has also formed the Ontario Chronic Pain Network – an informal network that links all of the academic adult and pediatric chronic pain services in Ontario. The network aims to reduce variability in care for patients with chronic pain across the province, to improve access to care, and to improve capacity for care in the community. The informant also reported that this network helped to secure funding for project ECHO (i.e., Extension for Community Health care Outcomes) to help build capacity for care for patients with chronic pain in the community and in remote regions via video consultations with specialists. This network does not have a website.

Regional Strategies

This Environmental Scan identified 4 provinces with regional strategies for the provision of care for patients with chronic pain (Alberta, Ontario, Nova Scotia, Quebec). This information is based on findings from the consultations and the literature. For the purpose of this scan,

regional strategies were considered ones where the model of care applied to the whole health region or health zone (as defined by the province).

Regional Strategies Within Alberta for Adults

An informant from Alberta explained that the chronic pain strategy in Alberta is zone-based. There are 5 health zones in Alberta and people living in different zones have different access to care for chronic pain. This informant provided details of the model used in the Calgary zone for adults living with chronic pain. This model is called the Calgary Pain Program and was developed about 15 years ago. The Calgary Pain Program was initially designed to be a hub-and-spoke model but developed into more of a hub-and-spoke-and-spoke model. The model includes a tertiary pain centre (i.e., the hub), primary care network (PCN) pain programs (i.e., the primary spokes), and care centred in family practice (i.e., the secondary spokes, termed “medical homes”). The model also integrates some components of stepped care. Health care provided within this model is publicly.

In the Calgary Pain Program, the tertiary chronic pain clinic (i.e., the hub) has 24 physicians and uses an interdisciplinary approach for treating patients. This clinic supports the PCNs in developing their pain programs and provides support to the medical homes, as needed. The tertiary hospital also offers an in-hospital chronic pain consultation service with nurse practitioners and a transitional pain service for patients who are post-surgery. There are 7 PCNs in the Calgary zone, 4 of which have developed their pain programs, with 1 more PCN pain program currently in development. All of the PCN pain programs are structured differently (e.g., multidisciplinary or interdisciplinary approach), but the aim is that each PCN pain program has a team with specialist knowledge in managing chronic pain housed in the PCN. The PCN pain programs provide support to the medical homes. The medical home is a model of primary care where most of the patient’s care is centred around a family practice (i.e., a family doctor and his or her multidisciplinary team), with specialists and services brought in to support the patient where needed. In the Calgary Pain Program model, the medical home is the key coordinator for patients; the medical home is responsible for keeping track of which specialists its patients see. In the Calgary zone, the current focus is on developing capacity for care for patients with chronic pain in the medical home. This model also recognizes the importance of pain neuroscience education for all patients with chronic pain. The Calgary zone is trying to incorporate an online resource into the medical home so that all patients have access to educational materials before referrals to the PCN or tertiary pain programs. This education component is similar to the first level of care in a stepped care model. The details of the programs and services offered within the Calgary Pain Program model are summarized in Table 5.

In this model, family physicians have the option of referring patients to the PCN pain program or directly to the tertiary pain centre. In the PCNs without a pain program, patients are referred directly to the tertiary pain centre. To be referred, patients must have a family physician. The PCN pain programs triage referrals to ensure that patients meet the programs’ eligibility criteria (which varies by PCN) and offer an intake visit with care providers. Movement through the PCN program varies by PCN but usually includes functional goal setting and recommendations for therapy based on these goals. Tertiary pain programs triage patients to ensure they meet the eligibility criteria and to determine which aspects of the program are needed by the patient. Patients who are not eligible for the program may be offered an e-consult between their family physician and a pain specialist or a phone appointment with a provider to avoid unnecessary clinic visits. Visits to the tertiary centre include an initial intake visit at which the program is described, goals are set, and a care plan is established. The

PCN and tertiary pain programs have case coordinators or case navigators who oversee the patient’s care while they are in that program. In addition, the PCN and tertiary pain programs have regular case rounds where providers who are not directly involved in a patient’s care can offer suggestions for additional services that might benefit the patient.

Regional Strategies Within Ontario for Adults

As part of the consultations, we spoke to informants from 2 of the 14 health networks in Ontario representing 3 different chronic pain services – 2 for adults and 1 for children. One informant was from the Toronto Central health network and provided information on the regional model for adults that is used in the health network; that is, the TAPMI hub-and-spoke model (as discussed in the section titled Hub-and-Spoke Model of Care for Chronic Pain).

One of the informants from The Ottawa Hospital Pain Clinic in the Champlain health region reported that, although there is no regional chronic pain model in that jurisdiction, there is a regional pain advisory committee. This advisory committee aims to bring awareness to chronic pain issues in the area, leverage existing resources, and build connections among those with an interest in chronic pain. This committee includes stakeholders from the pain clinic, the rehabilitation centre, the acute pain service, the Inter-Professional Spine Assessment and Education Clinic (ISAEC) program, palliative care, the addictions and substance use program, the research and evaluation program at the hospital, family health teams, and a patient partner.

Table 5: Programs and Services Offered Within the Calgary Pain Program’s Hub-and-Spoke-and-Spoke Model of Care

Tertiary Pain Centre (The Hub)	PCN Pain Programs (Primary Spokes)	Medical Homes (Secondary Spokes)	Pain Education
<p>Multiple disciplines:</p> <ul style="list-style-type: none"> • family medicine • anesthesiology • physiatry • gynecology • nursing • psychology • physiotherapy • kinesiology • OT • pharmacy • dietetics • social work <p>Treatment options include:</p> <ul style="list-style-type: none"> • individual visits • group education • interventions (e.g., nerve blocks, neuromodulation) 	<p>All PCN pain programs are structured differently</p> <p>Basic components include:</p> <ul style="list-style-type: none"> • 1-on-1 visits with multidisciplinary team members • group education (e.g., self-management, exercise) • physician with chronic pain expertise for medication management • psychologist or behaviour health consultant for counselling and CBT • social workers • rehabilitation experts (e.g., physiotherapist, kinesiologist, OT) 	<p>Family physician with access to a multidisciplinary team</p> <p>Family doctors receive chronic pain education to enable:</p> <ul style="list-style-type: none"> • discussions around pain self-management and pain neuroscience • offer limited self-management and rehabilitation skills 	<ul style="list-style-type: none"> • Online pain neuroscience education resource • Available to all doctors to share with patients before referral for pain programs

CBT = cognitive behavioural therapy; OT = occupational therapy; PCN = primary care network.

Regional Strategies Within Nova Scotia for Adults

An informant from Nova Scotia reported that there is no organized provincial model for chronic pain and that the 4 health zones within the province each have a different approach. This informant spoke about the model used in Nova Scotia's Central Zone and did not comment on the other zones. In the Central Zone, the goal is to use a hub-and-spoke model to deliver care for patients with chronic pain; however, the present model can be considered a modified hub-and-spoke model. This model includes a tertiary chronic pain clinic for complex cases and secondary centres in the community (e.g., community hospitals or community clinics). The provision of care at the secondary centres is physician-driven and is local to the specific sites. The tertiary centre provides interventional care for pain (e.g., nerve blocks, treatment under fluoroscopy), social work consultations, addictions therapy, physiotherapy, OT, an interdisciplinary pain self-management program, and complementary therapies (e.g., art therapy, qigong). The secondary sites provide medication management, counselling, and in-office injections (e.g., Botox therapy, trigger point injections). All of the care received at the tertiary and secondary centres in this model is publicly funded.

Patients can be referred to the secondary or tertiary pain centres by a physician or nurse practitioner using a standardized referral form. Patients can also self-refer to the pain self-management program offered at the tertiary centre, where there is a wait list coordinator who triages all patients. Referrals are triaged into 4 categories: regular wait list (patients may wait multiple years for an appointment), complex care (no timeline specified), fast-track (usually seen in 3 to 6 months), and urgent consultation (e.g., palliative or oncology patients; no timeline specified). Prior to their first clinic visit at the tertiary centre, patients attend a group visit with the team, which provides an overview of the programs offered at the clinic and provides patients with some resources they can access before clinic appointments. This visit used to be in person but has shifted to a virtual appointment to reduce travel for patients. Patients receive their first clinic appointment within a few weeks of this initial group visit. The initial assessments at the tertiary and secondary centres are conducted jointly by a physician and nurse, who work together to conduct an in-depth patient assessment and develop individual pain management plans. The majority of the care at these centres is provided by physicians and nurses, with the option to refer patients to multidisciplinary providers, if needed (e.g., physiotherapy, OT). Additional visits and follow-ups are scheduled, as needed.

Regional Strategies Within Quebec for Adults

There are 4 health regions in Quebec responsible for developing their own models of care for chronic pain based on the provincial strategy. This Environmental Scan includes information on the regional pain models from 2 of the 4 health regions, Montreal and McGill.

In the Montreal health region, an informant reported a pyramid model of care is used. This informant believes that out of the 4 health regions in the province, the Montreal model is the closest to what was outlined in the Quebec provincial pain strategy. The pyramid model involves 3 levels of care: primary care, regional pain centres, and a tertiary pain centre (the centre for expertise). As part of its regional strategy, the Montreal region focused first on developing regional pain centres and is now focusing on developing capacity for chronic pain services in primary care (e.g., increased access to physical therapy or psychology in primary care). The Montreal region is further divided into 9 areas based on the regional hospitals. Its regional plan for chronic pain aims to have a pain centre at each regional hospital. Currently, there are 7 regional pain centres, with 2 more in development. The tertiary pain centre in Montreal is located within a tertiary care hospital that is joined with a rehabilitation centre. The tertiary pain centre accepts patients with complex pain and works to develop capacity

at the primary care and regional levels. The tertiary hospital also offers a transitional pain service that aims to identify patients at risk of abusing opioids after surgery and helps them decrease the amount of medication taken post-surgery.

Primary care physicians can refer their patients to the regional pain centres in the Montreal region using a standardized referral form. To access specialist services at the tertiary centre requires referral from a physician at a regional pain centre, from other specialists, or from within the hospital (but the tertiary centre does not accept referrals from primary care). The current model requires that patients move through each level of the system before progressing to the next level. However, the informant reported that there are plans to change this system such that patients would be triaged based on complexity to help ensure that patients are directed toward the correct level of care that is needed, rather than progressing sequentially through all levels. For instance, with the new system, if it is known in advance that a patient will need tertiary care interventions, patients would then be triaged directly to the tertiary centre and skip the regional pain centre. At their first visit to the tertiary pain centre, patients meet with a general practitioner who conducts an assessment and refers patients to specialists, as needed. The multidisciplinary team members at the tertiary centre include general practitioners, anesthesiologists, neurologists, a neurosurgeon, a psychiatrist, nurses, physiotherapists, psychologists, a social worker, and a pharmacist. The tertiary centre offers various group sessions (e.g., mindfulness, pain education, support groups), as well as many other services, such as acupuncture, self-management programs, yoga, and chair gymnastics. The Montreal health region also uses project ECHO (i.e., Extension for Community Health care Outcomes) to increase capacity for care for patients with chronic pain in the region, particularly in remote areas.

In the McGill health region in Quebec, an informant reported that the McGill regional model was designed differently than that of the Montreal region. In the McGill region, there are no regional pain centres (i.e., the second level of care in the pyramid model from the Quebec provincial strategy); rather, they have a 2-stage model, with a tertiary pain centre and enhanced capacity for care for patients with chronic pain at the level of primary care. At the primary care level, there are family physicians who treat patients within their capacity, as well as some special chronic pain–focused clinics (e.g., low back pain clinic) within primary care. The clinics were developed with assistance from the tertiary pain centre (e.g., advice on caring for patients with chronic pain) and were established to relieve some of the pressure from primary care physicians. Similar to in the Montreal region, the tertiary pain centre in the McGill region is located within a tertiary care hospital that is joined with a rehabilitation centre. As there are no regional pain centres in the McGill region, the tertiary centre accepts referrals directly from primary care providers and offers treatments that would normally be offered at a secondary care facility (e.g., injections).

Primary care providers can refer their patients to the tertiary centre in the McGill region using a standard referral form and a centralized triage system; this process includes patient questionnaires and an orientation session (when feasible for the patient to attend). The orientation at the tertiary centre includes information about the pain clinic (e.g., available therapies, some pain education) and patients with severe pain can stay after the session to speak briefly with pain physicians. After the orientation session, patients are triaged by a team (physician, nurse, psychologist). Triage considers numerous factors including age, likelihood of returning to work, and risk of opioid addiction. The average wait time to be seen at the tertiary centre was reported to be 6 months; high-priority patients were reported to be seen within 2 to 4 weeks, and low priority patients were reported to, at times, wait up to 1 year. There is also a fast-track system for patients who have been treated at the primary care

specialty clinics but have not improved (based on predefined criteria). A fast-track system also exists for patients from other services, such as palliative care, or the University Institute of Geriatrics.

After being triaged, patients and their primary care providers are sent a letter inviting them to attend their first visit at the McGill tertiary pain centre; this letter provides the wait time and the name of the specialist and aims to help relieve patient anxieties. The referring physicians are given the opportunity to respond if they disagree with the priority level or wait time assigned to the patient. According to the informant, all patients referred to the tertiary pain centre in the McGill health region will be seen at least once, based on the region's "1 visit only" system. This system entails a patient assessment, providing advice to the referring physician and discharging the patient back to the primary care provider for follow-up. The first visit is typically conducted by 1 provider but combined first visits with more than 1 provider (e.g., physician and psychologist) are possible. When needed, patients are referred to the appropriate multidisciplinary specialty (e.g., facial pain specialist, physiatrists, anesthesiologists, psychologists) within the tertiary centre for additional care.

Local Approaches

This Environmental Scan identified 6 provinces and 1 territory with local approaches for the provision of care for patients with chronic pain (Alberta, British Columbia, New Brunswick, Newfoundland and Labrador, the Northwest Territories, Ontario, and Saskatchewan). The information in this scan is based on findings from the consultations and the literature. For the purpose of this scan, "local approaches" were considered ones where a specific model or program was developed and operated independently, without oversight from a regional or provincial health authority.

Local Approaches Within Alberta for Pediatrics

One informant reported on the pediatric pain services offered at the Alberta Children's Hospital in the Calgary Zone, which includes a tertiary pediatric pain program and an intensive pain rehabilitation program; both programs serve the Calgary Zone, parts of the Southern and Central Zones, and parts of British Columbia. Care received at the hospital is publicly funded; however, some referrals to specialists in the community (e.g., psychology, physical therapy) may be offered on a fee-for-service basis.

The tertiary pain program at the Alberta Children's Hospital is an outpatient clinic that shares clinic space with other medical programs. The tertiary pain program uses an interdisciplinary model, with an informal stepped care approach to the provision of care (i.e., less resource and time-intensive interventions are offered first and therapies are escalated, as needed). Referrals to the tertiary pain program can come from the community or within the hospital and nursing staff triage the referrals. The intake into the program consists of an interdisciplinary team assessment conducted by a physician, nurse, psychologist, and a physical therapist. There is also an interdisciplinary team approach to patient care and follow-up. The program offers individual and group interventions, as well as follow-up across different disciplines. Care usually follows the "3 P model" (i.e., physical, pharmacological, and psychological therapies) that is tailored to meet patients' needs. The program also offers a chronic pain self-management group program for youth and their parents, which entails an introduction to psychologically based self-management principles of chronic pain.

The intensive rehabilitation pain program at the Alberta Children's Hospital is designed for patients with complex chronic pain and significantly impaired functioning. It is an intensive

3-week, day, treatment program that follows a rehabilitation approach. The interdisciplinary team includes psychology, physical therapy, nursing, medicine, OT, family therapy, art therapy, recreation therapy, and a school-based component.

Local Approaches Within British Columbia for Adults

An informant from British Columbia reported that the province does not have an overarching government-mandated model for the organization or provision of care for chronic pain. The informant reported that there have been discussions since 2016 regarding developing a provincial pain strategy, but it has not come to fruition. Instead, various independent programs and services for adults with chronic pain have been developed and implemented throughout the province. These services include: Pain BC, a not-for-profit health charity; community-based family doctor networks; private pain clinics (not discussed in this report); and tertiary chronic pain clinics. Together, these 4 different approaches resemble stepped care, but there is no system or administration that connects all the programs together into a stepped care model.

Pain BC²⁴ is an independent, not-for-profit health charity that developed an array of services for people living with chronic pain. The many services offered through Pain BC could be considered the lower “steps” of a traditional stepped care model. People living in the province can freely access these services through the Pain BC website²⁴ and the majority of the services do not require referral from a health care professional. There is 1 coaching program that requires referral from a health professional; however, Pain BC has a support line that gives access to a social worker who can refer patients to the coaching program, if needed. Pain BC does a lot of promotion and outreach to clinicians to ensure they are aware of the services available for their patients. The Pain BC model is focused on 6 strategies: early intervention and prevention, support and empowerment, education for professionals, system redesign and health policy advocacy, combatting stigma and raising awareness, and research. This program offers 3 types of care. First, there are self-serve options, including a pain self-management website.⁵⁶ Second, there are peer-enabled supports, such as peer support groups that are facilitated by trained peers in tandem with a technical team and clinical staff, or a lay coaching program where the coaches are people living with pain. Third, Pain BC includes clinician-provided services, together with a pain support line staffed by social workers that provides connection to resources and psychosocial assessments, as well as a clinician-supported, 8-week, pain self-management course.

The community-based family doctor networks in British Columbia are divisions of family practice, with an interest in chronic pain, that work with their municipalities and local health authorities to provide pain services. Community physicians are trying to build local referral networks with family physicians and allied health professionals. For instance, a division of family practice may decide to pair a professional with training in Pain BC’s gentle movement and relaxation course with their community practice to improve access to this type of therapy. These networks are considering using the group medical visit model, where providers see a group of patients at once, to improve access to pain services.

The informant reported that there are some tertiary chronic pain clinics in British Columbia and that they were all developed independently by different specialties and sit within different health disciplines (e.g., orthopedics, surgical, mental health) in local hospitals. These publicly funded clinics are not standardized in how they were designed or in the pain services that they offer and there is no formal coordination for the clinics. To access these tertiary pain clinics, patients require referral from a physician, but there is no centralized intake or referral model. The programs and services offered at these clinics vary by centre, but in general they

include a multidisciplinary team (e.g., OT, physiotherapy, psychology, pain medicine, psychiatry), a pain self-management program, and the full range of pain services, from low-intensity interventions (e.g., physiotherapy, group exercise) to high-intensity interventions (e.g., medication management, infusions, and nerve blocks).

Local Approaches Within New Brunswick for Adults

There are 7 health zones in New Brunswick and, as part of this Environmental Scan, we spoke to informants from 2 of the 7 health zones. They provided information on a local program within their zones. One informant also mentioned that New Brunswick does have some publicly funded multidisciplinary pain clinics with long wait lists (e.g., up to 5 years) and that, in general, patients with chronic pain are mainly treated by their primary care providers, with referrals for specialist consultations, where necessary.

The informant from Zone 1 provided information on New Brunswick's ISAEC program. The New Brunswick ISAEC program originated from within the physiotherapy department at the Moncton Hospital and is modelled after the ISAEC program in Ontario. It is a collaborative approach between publicly funded physiotherapists and primary care providers. The objectives of the program are to reduce unmanageable chronic low back pain, reduce unnecessary referrals for imaging, reduce unnecessary consultations with specialists, and help direct patients to the most appropriate care. The informant reported that the ISAEC program serves as an unofficial triage system for accessing chronic pain services within the health zone, but that it is not a treatment program for patients whose pain has persisted for more than 1 year. The ISAEC program is for people with low back pain lasting less than 1 year and the intent is that family doctors refer their patients to the ISAEC program for assessment before referring them for imaging or to a specialist. The program is designed to provide rapid access (i.e., within 2 weeks of receipt of referral) to conservative therapy while patients wait to see a specialist (if needed). The initial visit includes an in-depth patient assessment (i.e., 1.5 to 2 hours) during which patients are screened using the STarT BACK questionnaire,⁵⁷ which stratifies patients by low, medium, or high risk of a poor clinical outcome due to the chronicity of their pain. This assessment serves as an approach to get timely access to care for high-risk patients. Following the initial assessment, the physiotherapists make recommendations for additional imaging, treatment, or follow-up (e.g., additional physiotherapy, chiropractor, psychology, rheumatology) and work with the primary care providers who provide the referrals for these services. In addition to the in-depth patient assessment, the program involves pain education and home exercises provided by physiotherapists. Patients are followed-up every 6 weeks; each patient receives between 0 and 4 follow-up visits with the ISAEC program, depending on their risk of a poor clinical outcome. Low-risk patients have 0 or 1 follow-up visits and high-risk patients have 2 to 4 follow-up visits.

The informant from Zone 3 in New Brunswick spoke about the pain management program that has been implemented as part of the neurorehabilitation centre. This publicly funded centre only admits patients with neurologic disorders who require rehabilitation services; thus, patients with other types of chronic pain would be referred to a pain clinic elsewhere in the province. This program was initiated locally within the centre to improve pain management in the facility. The approach initially focused on a coordinated effort for measuring and tracking patients' pain and it now includes interventions to manage pain. All patients at the neurorehabilitation centre have access to the pain program. The program offers both inpatient and outpatient pain services through a multidisciplinary team (i.e., psychiatry, psychology, physiotherapy, OT, nursing). Inpatients are seen by providers from multiple different disciplines individually and then the team meets to discuss the assessments and

findings, and to set pain management goals for the patient. For outpatients, the approach is less coordinated among the disciplines and often involves individualized assessments and pain management goals. The program also offers inpatient and outpatient pain management groups (with 4 hours of material) that were developed locally between physiotherapy, OT, and psychology. The inpatient group runs regularly, depending on case load and the outpatient group is offered twice a year.

Local Approaches Within Newfoundland and Labrador for Adults

According to the informant representing Newfoundland and Labrador, there are no provincial or regional strategies for chronic pain in this province. A health consultant from Newfoundland and Labrador was able to provide information on all 4 health regions in the province and reported that all 4 health regions each have their own approach for the provision of care for chronic pain. There are 3 regions that do not have a formalized program (see the section titled No Formalized Approach further on in this report), and 1 region, Labrador-Grenfell Health, offers a weekly pain clinic at the regional hospital within the rehabilitation and community support department. Referrals to the clinic are made by primary care providers or other specialists, but there is no standardized approach to referrals and no formal triage process. The clinic uses a team approach to care, with services (e.g., injections, medication management) provided primarily by 1 anesthesiologist and 1 nurse, and monthly multidisciplinary meetings that include a physiotherapist, psychologist, and chronic disease management coordinator. The clinic also offers addiction services and holistic therapies (e.g., massage, acupuncture).

Local Approaches Within the Northwest Territories for Adults

A physiotherapist from the Northwest Territories informed us that there are no pain centres, no centralized approach to care for patients with chronic pain, and very few services available for chronic pain care in the territory. Some basic care for pain (e.g., medication management) is provided through family doctors and some physical therapies (e.g., physiotherapy) are available in Yellowknife. Patients with complex pain that require interventions outside of what is provided by primary care providers (e.g., nerve blocks) are referred to Edmonton, Alberta for care. To help meet the needs of patients with chronic pain, a local educational pain program for adults with chronic pain was developed independently by rehabilitation professionals in Yellowknife. This pain education program is offered as part of the mandate of a publicly funded physiotherapy clinic, but the clinic did not receive any additional funding to develop or run this program. Referral to the pain program or to the physiotherapy clinic can be made by health care providers or via self-referral, although the pain program has a wait list. The pain education program is offered 3 to 4 times a year and consists of 5 weekly, 1-hour, small group sessions. The program is taught by physiotherapists and occupational therapists, and provides pain education, practical ideas, and homework on a variety of topics (e.g., goal setting, stress management, relaxation, and body mechanics). Patients requiring additional help can self-refer to the rehabilitation centre for individual therapy.

Local Approaches Within Ontario for Adults

As part of this scan, we spoke to 3 individuals from the Champlain health network who participated in a joint consultation. The informants reported that the local approach used in their jurisdiction includes the stepped care model at The Ottawa Hospital Pain Clinic (see section titled Stepped Care Model for Chronic Pain) – an intensive pain rehabilitation program at The Ottawa Hospital – and access to an e-consult service. The intensive pain program at the rehabilitation centre is a 4-week outpatient program called the Chronic Pain Management Program – a group-based interdisciplinary self-management program where

patients learn skills and techniques to better cope with chronic pain.⁵⁸ The e-consult service is a province-wide service that allows primary care providers to seek advice for their patients from pain specialists. It is asynchronous written communication between specialists from a variety of disciplines and primary care providers. The informants believe that e-consult is 1 of the fastest ways for primary care providers to access specialist-level care for their patients. A perceived downside of e-consult is that it is not seen to be an efficient way to provide multidisciplinary care for patients; for example, for complex patients, the primary care provider may be required to seek an e-consult from multiple specialists to build a comprehensive care plan for their patients.

One additional local approach for care for patients with chronic pain in Ontario was identified in the literature search.⁵³ The Pain and Wellness Centre is a publicly funded, community-based, chronic pain clinic located in the Central health network. This clinic provides consultations and chronic pain management. The team includes physicians, a psychologist, a psychotherapist, a mindfulness facilitator, naturopathic doctors, a dietician, massage therapists, chiropractors, and a community resource facilitator. Following the initial consultation with a physician, patients will receive either: treatment recommendations from the referring physician; referrals for additional diagnostic tests; referral for external specialist services (e.g., TAPMI); or entry into the interdisciplinary pain management program. For the latter program, patients must commit to attending the clinic twice a week for a minimum of 2 hours per visit; they receive between 3 and 6 services (i.e., manual therapy, exercise therapy, CBT, mindfulness, naturopathic doctor, nutrition counselling, and/or massage therapy).⁵³ The Pain and Wellness Centre has partnerships with hospital-based academic pain clinics and facilitates transfers of patients to and from these centres to provide specialized care, as needed.⁵³

Local Approaches Within Ontario for Pediatrics

An informant from a tertiary pediatric pain program in the Toronto Central health network explained that their clinic sees patients with severe pain and that this would be considered the top level of care in a stepped care model, if such a formalized model existed in the region. The informant reported that the tertiary pain clinic follows a true interprofessional model. The core interprofessional team includes a senior-level nurse, a pain anesthesiologist, a psychologist, and a physiotherapist. The clinic also includes other specialties outside of the core team to whom patients can be referred: patients can be referred to the clinic from the community and from within the hospital, and all referrals are checked against eligibility criteria. Once accepted into the program, patients are triaged based on their levels of disability caused by their pain. Patients with mild disability are often referred out to the community for treatment (if the cost of treatment is not a barrier for the family). Patients with moderate disability are treated at the pain clinic. Patients with severe disability are referred to an intensive pain rehabilitation program at another hospital in the area. Prior to the first appointment, patients are sent information about the interprofessional program. At the first intake appointment, the patient is seen by the whole interprofessional team. After the intake assessment, the team debriefs and then presents the family with a diagnosis, pain education, and pain management recommendations.

At the tertiary pediatric pain program, all care plans are tailored to the patient and all patients are referred for pain neuroscience education. The care at this tertiary pediatric pain program follows a functional rehabilitation model and treatment recommendations based on a “3 P model” (i.e., physical, psychological, and pharmacological recommendations). The physical therapies are centred around developing strength, endurance, and flexibility.

The clinic also offers OT, which addresses problems with sleep, scheduling, liaising with school, and some physical therapies. The psychological therapies include mindfulness, CBT, acceptance, and commitment therapy. The pharmacological component of care is focused on medication management. One of the main objectives of the pharmacotherapy and mental health therapies is to support the functional rehabilitation approach. Following every clinic appointment, a nurse provides a summary of the appointment to the patient via email. There are 2 nurses who serve as the main points of contact for the patients and all patient logistics (e.g., appointments) are coordinated by a patient information coordinator or clinic clerk. Eventually, patients are discharged from the clinic based on discharge criteria. All care provided at the tertiary pain clinic is publicly funded, but referrals to outside specialist services may not be covered.

Local Approaches Within Saskatchewan for Adults and Pediatrics

One informant provided an overview of the 3 pain programs offered in Saskatchewan including 1 pediatric program and 2 programs for adults. The informant also mentioned some of the stand-alone services for chronic pain offered in Saskatchewan, including physiatrists, anesthesiologists who provide interventional treatments, an online pain self-management CBT program, pain services at a rehabilitation centre, an online pharmacy-led consultation for medication questions, and a peer-led pain self-management program based on a chronic disease management model.

The pediatric program is an interdisciplinary complex pain clinic that has operated since 2009 and treats children with chronic pain between the ages of 6 and 17 years of age. This is not a stand-alone program and its operational funding comes from a variety of sources including borrowed time from other departments and faculty appointments. This clinic provides team-based publicly funded services 1 day per week. The interprofessional team includes a pediatrician, a nurse, a physical therapist, and a pediatric psychologist. The team works together to conduct a comprehensive initial assessment with the patient and family (when possible); then the team members consult together to develop a care plan, which they subsequently share with the patient and the family. The patient's care plan is tailored to meet their needs, although the informant reported that most patients require all of the services offered at the clinic (i.e., mental health, physiotherapy, pediatric medicine, nursing); this care plan determines the patient's follow-up with the physician or other disciplines. Referral from a physician is required to access the program using the online referral form. A nurse triages the referrals and priority access to the clinic is based on the urgency of the clinical condition.

For adults with chronic pain, there is the Regina Chronic Pain Clinic, which offers publicly funded multidisciplinary care. The multidisciplinary team includes a physician, a nurse practitioner, a psychiatric nurse, and a pharmacist. The providers see and assess the patients separately and then consult as a team to share findings and develop a care plan tailored to the patients' needs. The clinic offers a wide range of services including a traditional Indigenous healing support program available to all patients. Access to this clinic requires referral from a physician and patients are triaged based on urgency. According to the informant, the clinic is aiming to build up its model so that it is similar to the pediatric clinic (i.e., moving toward a true interdisciplinary model of assessment).

Adults with chronic pain in Saskatchewan also have access to chronic pain and opioid pharmacotherapy management services through a program called Medication Assessment Centre Interprofessional Opioid Pain Service, or MAC iOPS. This is a pharmacist-led program operated by the University of Saskatchewan, with 4 full-time pharmacists and a physician who

provides virtual consultations for the pharmacists. The program recently received funding to hire a multidisciplinary team including a physiotherapist, social workers or counsellors, and mental health care providers. All care provided at the clinic is publicly funded. People can self-refer to the MAC iOPS program but, as participation requires linkage with a family physician, the program will help patients find a family physician, if needed. A clinic manager receives the referrals and schedules the visits. The initial 1-hour visit to the program entails a meeting with a pharmacist to discuss complex medication needs and a medication review. The pharmacist then consults with the physician, who may recommend additional services for the patient; all treatments are tailored to patient's needs. According to the informant, the goal is to develop this program into a hub-and-spoke model, with the clinic serving as the hub and primary care providers acting as spokes that can connect back to the hub for assistance.

No Formalized Approach

This Environmental Scan identified 2 provinces that reported areas within the province that have no formalized approach for the provision of care for patients with chronic pain (Newfoundland and Labrador, and Prince Edward Island). This information is based on findings from the consultations. For the purpose of this scan, a jurisdiction was considered to have no formalized approach if the area does not have any definitive programs or services for chronic pain established within a hospital or clinic. This does not mean that there are no services for patients with chronic pain in the area; rather, care may be provided by independent physicians. But there is no governing body that informs or organizes the provision of this care.

Newfoundland and Labrador for Adults

The informant from Newfoundland and Labrador reported that there is no provincial strategy for chronic pain in the province and that each of the 4 health regions has its own approach. The Labrador-Grenfell Health region has a pain clinic (see the section entitled Local Approaches earlier on in this report) and the other 3 regions (Eastern Health, Central Health, and Western Health) do not have any formal programs for managing chronic pain. In the Eastern Health region, chronic pain services are distributed across various other clinical programs at the regional hospital and the services provided vary by pain specialist within the different disciplines (e.g., interventional treatments, education, medication management, or CBT). Physicians can refer patients to other providers, depending on the needs of the patient or their location, and patients are often seen by more than 1 provider. For example, 1 of the treatment options in the Eastern Health region is a pain program run through the rehabilitation program, which offers multidisciplinary care (e.g., social work, physiotherapy, OT). However, feedback from a stakeholder from the Eastern Health region indicated that the wait list may be long, with variable uptake by patients. In the Central Health region, there is 1 anesthesiologist with an interest in pain who runs a part-time practice at the regional hospital, offering medication management, nerve blocks, and injections. In the Western Health region, care for patients with chronic pain is limited to an outpatient service provided by an anesthesiologist who provides some pain interventions and injections. In all 3 regions, referrals to pain specialists are made by primary care providers and there is no standardized referral process; and occasionally patients are referred to (and seen by) multiple pain specialists. In the Central and Eastern Health regions, there is no formalized triage process and the anesthesiologist in the Western Health region triages patients based on the patients' pain referral forms and initial in-person assessments.

Prince Edward Island for Adults

A physician from Prince Edward Island reported that the province does not have an organized model of care for patients with chronic pain; such care is organized by individual providers with an interest in chronic pain. There is no local or regional administration for the care and providers are required to find their own office space and provide their own administrative support. Patients with chronic pain are first assessed by their primary care provider, who may prescribe pain medications, but patients requiring additional help for their pain are referred to 1 of 3 pain practices in the province. There are 2 emergency room doctors who run a small pain clinic that offers a self-management program and medical management for pain (e.g., medication, small injections); this program is reported to have a 2-year wait list. There is an anesthesiologist who does specialist consultations and spinal interventions (e.g., for spinal pain or nerve injuries). This anesthesiologist also travels to remote areas to offer pain services in community clinics and leverages available resources by providing written referrals for the only pain self-management program from TAPMI.¹³ There is also a visiting anesthesiologist with a fellowship in chronic pain who comes from Halifax once a month to see patients with chronic pain. There is no official triage or guidance as to which patients should be referred to which provider and it is up to the referring physician to decide where to refer patients. Patients can also be referred to pain clinics in other provinces, but some of these clinics are reported to have 5-year wait lists. Complex cases requiring specialist services that are not available in the province (e.g., spinal surgery) are referred to other provinces.

Other Models of Care Used Internationally

Resources identified in the literature search provided information on the use of the other models of care delivery for chronic pain in other countries and the programs and services offered.

Europe

Three additional models of care for chronic pain from European countries were identified in the literature search. In Scotland, the Scottish Service Model for Chronic Pain⁴⁸ was revised and simplified in 2014 to include 4 levels of care. These levels are: pain education that is accessible to everyone, care provided in the community setting, specialty pain management from multidisciplinary teams, and referrals for highly specialized care.⁴⁸ This Environmental Scan did not identify any other information about the Scottish Service Model for Chronic Pain. In the Netherlands, an integrated care model for chronic low back pain was identified as being investigated as part of a randomized controlled trial in 2010.⁴³ In this trial, patients from 17 primary or secondary care centres were randomly assigned to receive either usual care or care following the integrated care model.⁴³ This model provided care through a multidisciplinary team (i.e., clinical occupational physician, medical specialist, occupational therapist, and physiotherapist), and included a workplace intervention (e.g., ergonomics) and a graded physical activity component based on the principles of CBT.⁴³ From the UK, a National Health Service model for integrated care for chronic pain management was identified⁴⁴; this model was being evaluated in a survey of pain specialists in the UK. The results of this survey found that 2-thirds of respondents were unsatisfied with the current level of integration in this model. The survey respondents valued engaging physicians in planning, education and training, easily accessible medical records, good medical leadership, evidence-based guidelines, and a triage system as vital components of an integrated care model.⁴⁴

US

Two additional models of care for chronic pain were identified from the US. In Tennessee, at an integrative health care clinic for patients with complex chronic pain, a whole person care model was founded in 2007.⁵⁴ This whole person model has 3 core principles: whole person therapies, care coordination among providers, and the provision of interdisciplinary care by an interdisciplinary team (including outpatient services). Following an integrative health consultation, individual patient pain management plans are developed by a nurse practitioner or a physician. This integrated pain management plan is focused on lifestyle and behaviour change, and includes health psychology (e.g., mindfulness-based interventions), group psychotherapy, therapeutic movement (e.g., yoga), physical therapy (e.g., acupuncture, massage), and mind and body therapies (e.g., nutrition counselling, biofeedback).⁵⁴ This clinic relies on revenue generated through fee-for-services, billing providers, and insurance companies. In Massachusetts, an Integrated Center for Group Medical Visits was tested as part of a randomized controlled trial in a medical centre and in outpatient community health centres.⁴⁵ The approach is intended to empower and motivate individuals; it combines elements from integrative medicine, medical group visits, mindfulness-based stress reduction, and self-management techniques. Patients attend 10 weekly group visits facilitated by clinicians with training integrative medicine and instructors with training in yoga or mindfulness-based stress reduction. These group sessions each focus on a different integrative health activity (e.g., pain self-efficacy or stress management) and are supplemented by an online component that includes an automated coach and an online toolkit.

Australian

The literature search identified 1 additional model of care for chronic pain New South Wales, Australia – a whole person integrated model of care that was implemented in 2004.⁴⁶ This whole person integrated model has an holistic approach that recognizes the importance of the biopsychosocial influences in the causes and management of pain. The therapeutic approach involves treating the whole person to address overall well-being (rather than treating symptoms independently) with informed choice by the patients. Treatment includes individual approaches (i.e., medical and multidisciplinary assessments, personalized care plans, pain management through medicine, physiotherapy, and psychology), group approaches (i.e., small- and large-group education classes on understanding pain, lifestyle, and living and moving with pain), and a partnership with primary care to implement the care plan (i.e., contact with a general practitioner, nurse practitioner, allied health). This model has evolved over time to include additional components such as an educational website, development of new triage criteria, a standardized referral questionnaire, and a pre-clinic education seminar.⁴⁶

Limitations

The aim of this Environmental Scan was to provide an overview of models of care used in Canada and internationally for chronic pain and other chronic medical conditions. The findings are based on a limited number of consultations with informants and a targeted review of the literature. Information was limited to items published in English and the consultations were only conducted in English. This report is not intended to be an exhaustive review on the topic of models of care. There may be models of care for chronic pain or other chronic medical conditions that are used in Canada or internationally that were not captured

in this report, including models of care for specific populations living with chronic pain (e.g., seniors, people living in institutional settings). This report focused on publicly funded care and, as such, models of care or programs implemented through for-profit facilities (e.g., private physiotherapy clinics, dental clinics) are not represented in this report. In addition, the report aimed to identify outcomes associated with the models of care, which required specific knowledge of the models of care, and it is unknown whether these outcomes are relevant to people with lived experience with chronic pain.

Potential stakeholders for the consultations were identified by CADTH, as well as by stakeholders, and it is likely that not all relevant stakeholders were identified or contacted. In addition, the consultations conducted for this scan did not include representation from every discipline that may provide care for chronic pain (e.g., chiropractors, dentists, pharmacists, occupational therapists) or from patients who are receiving care for chronic pain. While attempts were made to identify and contact stakeholders from all Canadian provinces and territories, CADTH did not obtain responses from all jurisdictions. In addition, given the large variation in provincial, regional, and local approaches to the provision of health care, and specifically in the organization of care for patients with chronic pain across Canada, it was not possible to consult with stakeholders from every jurisdiction. The responses provided by the informants are based on their unique experiences and perspectives from their own jurisdictions and may not represent the experiences of others in the same jurisdiction or in all jurisdictions, nor the experiences of others within informants' professional groups. The report does not include detailed descriptions of the geographical areas (e.g., size, population density) where the different approaches for providing care for patients with chronic pain are implemented, which may limit the generalizability of the findings between different regions (e.g., rural versus urban settings).

For the selected models (i.e., hub-and-spoke, OCM, and stepped care), no information was identified on the OCM for caring for patients with chronic pain and only 1 hub-and-spoke model of care for chronic pain was identified (with 2 additional jurisdictions that described their models as "modified" hub-and-spoke models). Therefore, there was no information on patient-related outcomes that were associated with the OCM and limited information on patient-related outcomes that were associated with the hub-and-spoke model of care. In addition, limited information was identified regarding the programs and services offered within the hub-and-spoke models for other chronic (non-pain) conditions. The majority of the information relating to the issues, challenges, and lessons learned from implementing various models of care was obtained from the consultations. Informants from 13 of the 15 consultations reported on their experiences with models or approaches to care other than the 3 selected models; therefore, the specific perspective relating to barriers and facilitators associated with the selected models is somewhat limited in this report.

Conclusions and Implications for Decision- or Policy-Making

This Environmental Scan gathered information on models of care for patients with chronic pain and other chronic medical conditions used in Canada and internationally. Specifically, the aims of this Environmental Scan were to describe how selected publicly funded models of care for patients with chronic pain and other chronic medical conditions (i.e., hub-and-spoke,

OCM, and stepped care) are implemented, summarize patient-related outcomes associated with models of care for chronic pain, summarize the challenges and lessons learned in implementing publicly funded models of care for patients with chronic pain, and identify and describe other publicly funded models of care delivery for patients with chronic pain. This Environmental Scan was informed by a literature search and 15 in-depth consultations with clinicians (e.g., physicians, psychologists, physiotherapists) or managers involved in the provision of care for patients with chronic pain and government health consultants, or executive directors, with expertise on the topic. This scan provides a snapshot of the information available at the time of the literature search and from expert consultations. It is not intended to be a comprehensive overview of all models of care for pain and other chronic medical conditions.

Three models of care were selected as priority models of interest for this Environmental Scan: the hub-and-spoke, OCM, and stepped care models (Objective #1). For the selected models of care, information regarding 1 hub-and-spoke model and 4 stepped care models for the delivery of care for chronic pain was identified and described in this report. The hub-and-spoke model is a regional model in Toronto, Ontario, Canada, with 1 virtual hub that triages all patients and 5 spokes that offer a variety of programs and services (e.g., interventional therapies for pain, self-management options, addiction services, transitional pain service; see Table 2). Three international stepped care models for which the “steps” of the model are based on the level of care of the facility and patients progress sequentially through the steps were described (see Table 3). This includes 1 model from the US with 4 steps and 2 models from Australia with 3 and 4 steps; the steps range from population-level care to tertiary care centres. One Canadian stepped care model was summarized for which the steps are based on the type of care provided and are not considered sequential. This model includes 9 steps and the interventions include online education modules, self-management programs, group therapy, and 1-on-one therapy (see Table 3). No information was identified on the use of OCM for the delivery of care for chronic pain.

For the selected models for other chronic medical conditions, this scan summarized 5 hub-and-spoke models, 9 stepped care models, and the OCM for the delivery of care in Canada and internationally. The 5 hub-and-spoke models were for pediatric patients with complex conditions, spinal disorders in rural settings, cancer, and opioid use disorder (2 different models). The programs and services offered at 3 of these models were summarized but were not reported in the literature sources that provided information on the other 2 models (Appendix 3, Table 6). The programs and services offered at the hubs and spokes varied substantially by clinical condition; for instance, the hub for cancer included diagnostic assessments and surgical consults, whereas a hub for opioid use disorder provided comprehensive assessments and methadone treatment, where needed. Of the 9 stepped care models, 8 were for the care of patients with mental health conditions and 1 was for patients with insomnia. For all 9 stepped care models, the “steps” were based on the type of care provided (i.e., the intensity of the interventions increases with each step), not the level of care of the facility where treatment was provided. The programs and services offered within these stepped care models included online education, self-management resources, group sessions, and 1-on-one treatments (Appendix 3, Table 7). The OCM is an alternative payment model, whereby practices commit to providing high-quality, well-coordinated oncology care and are reimbursed a monthly rate that covers all care (oncology and non-oncology-related).

The main patient-related outcomes identified in the literature and via the consultations that were associated with the selected and other models of care for chronic pain were measures of pain (e.g., intensity, catastrophizing, interference), psychosocial outcomes (e.g., depression,

anxiety, distress, sleep), functional outcomes (e.g., disability, functional status, health-related quality of life, work status), and health care utilization (e.g., opioid use, medication use, frequency of health care visits; Objective #2 and Table 4). In addition, 5 informants mentioned the use or development of standardized core outcome sets for adult and pediatric patients with chronic pain that could be used provincially or nationally to ensure all pain programs collect the same outcome data. The measurement tools were specified by the researchers for 1 of the core outcome sets, were unpublished for 1 outcome set, and it was unclear whether these will be specified for the outcome sets that are in development. Similar patient-related outcomes were reported for the standardized outcome sets and the models of care (i.e., measures of pain, physical functioning, mental health), although measures of health care utilization were not included as part of the standard outcome sets. Future work with engagement of people with lived experiences of chronic pain may help to determine the relevance of these outcomes to the population of interest.

Various barriers and facilitators to providing care for patients with chronic pain were identified in the literature and via consultations with informants (Objective #3). Big picture barriers identified via the consultations, such as a lack of clarity regarding which health discipline is responsible for the provision of care for chronic pain and a lack of a direction from the provincial or federal government, have resulted in disjointed approaches to care for chronic pain within provinces and across Canada. Other barriers that were identified included: insufficient funding for infrastructure and providers, a lack of local support and collaboration, an absence of a formalized referral and triage system, and insufficient management of expectations for care. In addition, the transitions from pediatric to adult pain services, and from care for acute to chronic pain, were identified as gaps in the health care system. Conversely, facilitators for successful models and programs for chronic pain included strong government support and local collaborations; leveraging existing resources and models; an efficient intake and triage system; and using a flexible, iterative approach for caring for patients with chronic pain.

In addition to the 3 selected models of care, this scan identified multiple different approaches for providing care for patients with chronic pain across Canada (Objective #4). There were provincial strategies, regional strategies developed by provincial health zones, local programs and services, and areas with no formalized models or programs (Appendix 3, Table 8). Specifically, Quebec was identified as the only province with a provincial strategy for chronic pain; no other provincial or territorial models for chronic pain were identified in Canada. In Quebec, the provincial strategy for chronic pain recommends using the pyramid model and this strategy provides guidance to the 4 health regions to develop their own models of care for chronic pain.

Regional strategies for chronic pain were identified in 4 provinces (Alberta, Ontario, Nova Scotia, and Quebec), where the model of care is applied to the whole health region or health zone. There are 5 health zones in Alberta and each has their own regional strategy for caring for adults with chronic pain; this scan included details regarding the hub-and-spoke-and-spoke model for adults (Calgary Zone; see Table 5). In Ontario, the provision of care for patients with chronic pain differs across the 14 health networks and this scan identified 1 regional hub-and-spoke model for adults in the Toronto Central region. In Quebec, this scan included information on the regional models for the Montreal (pyramid model) and McGill (2-stage model) health regions. There are 4 health zones in Nova Scotia, each with a different approach for caring for patients with chronic pain; this scan included information on the regional modified hub-and-spoke model used in the Central Zone.

Local approaches whereby the model or program for care for patients with chronic pain was developed without regional or provincial oversight were identified in 6 provinces and 1 territory (Alberta, British Columbia, New Brunswick, Newfoundland and Labrador, Northwest Territories, Ontario, and Saskatchewan). In Alberta, an interdisciplinary tertiary pediatric pain program was identified. Three independent strategies for adults in British Columbia were identified (i.e., Pain BC, family doctor networks, and tertiary pain clinics). Two local programs were identified in New Brunswick (i.e., a low back pain clinic and a pain program at a neurorehabilitation centre), as well as 1 weekly pain clinic in Newfoundland and Labrador, and a local education program in the Northwest Territories. Three local approaches were identified in Ontario: an interprofessional tertiary pediatric pain program, a stepped care model within an adult pain clinic, and an interdisciplinary clinic. Similarly, 3 local programs for chronic pain were identified in Saskatchewan (an interdisciplinary pediatric pain clinic, a multidisciplinary pain clinic for adults, and an opioid pain service).

Two provinces were identified (Newfoundland and Labrador and Prince Edward Island) that reported areas within the province that have no formally organized programs or services for the provision of care for patients with chronic pain and the current approaches used in these areas were summarized in this report. Furthermore, this scan identified 6 additional models of care for chronic pain that are implemented in European countries (3 models), the US (2 models), and Australia (1 model).

This Environmental Scan provides information pertaining to the implementation of different models of care for chronic pain and other chronic medical conditions in Canada and internationally, addressing the need to better understand models of care for chronic pain that was identified in the October 2020 report by the Canadian Pain Task Force.⁷ Notably, this report included examples of multi- and interdisciplinary models of care, and variations of the stepped care and hub-and-spoke models, for the care of patients with chronic pain. This report also included multiple examples of referral pathways, centralized intake and triage, standardized care pathways, patient navigators, and individualized pain management approaches that are used within the various models. The information identified in this scan demonstrates that there is substantial diversity in the models of care for pain and other chronic medical conditions, and that the organization of care for patients with chronic pain is not standardized. Within the selected models of care, there were many different approaches to the design of the model (e.g., the number of steps in the stepped care model or what constitutes the "hub" in a hub-and-spoke model) and which programs and services were offered (varies within and across clinical conditions). Additionally, information gathered via consultations suggested that these models may be further adapted to better suit the health care landscape of a particular region. For instance, the hub-and-spoke-and-spoke model identified in Alberta is an adaptation of the hub-and-spoke model that also integrates some components of stepped care. The extent of variability in models of care suggests that there may not be a "best" model for the provision of care for chronic pain; however, this Environmental Scan did not include an assessment of the clinical or cost-effectiveness of the identified models of care. This Environmental Scan also identified strengths of various models and potential challenges that may be encountered when implementing a model of care. Together with information regarding the design features of models, knowledge of these barriers and facilitators may assist decision-makers in designing, adopting, or adapting a model of care for chronic pain. This information may be useful in future planning and activities that address the recommended actions outlined in the Canadian Pain Task Force action plan from May 2021.⁵

Notable gaps identified in this report included a lack of information on the use of the OCM for chronic pain and associated patient-related outcomes, the programs and services offered within the hub-and-spoke models for other chronic medical conditions, and the barriers and facilitators associated specifically with the selected models of care (i.e., hub-and-spoke, OCM, stepped care). This report was not a systematic review and it is possible that information on these topics exists but was not captured in the limited literature review or the consultations conducted for this report. In addition, this information should be interpreted within the constraints of scope of the report; that is, this report provides an overview of how care is organized but does not include an assessment of the clinical effectiveness or cost-effectiveness of the identified models, nor does it assess whether or to what extent these models meet the needs of individuals with chronic pain.

Overall, this Environmental Scan identified a multitude of models of care for chronic pain and other chronic medical conditions, with substantial variation within and across models. There was no single model that was used in an identical fashion in more than 1 situation; rather, models of care were adapted to meet the needs of specific populations (e.g., based on the clinical condition or age group) or the unique attributes of a geographical area (e.g., population density or availability of specialists). Decision-makers should consider the needs of their patients and the specific needs of their jurisdictions when designing, adopting, or adapting a model of care for chronic pain.

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Appendix 1: Consultation Questions

Jurisdictional Model of Care

1. Please describe your occupation and scope of work as it relates to the management of chronic pain.
2. Does your jurisdiction have an organized program or model of care for the provision of care for chronic pain?
 - a. If yes, can you please provide an overview of this model?
 - Is there a specific name for the model?
 - b. If no, please describe how care for chronic pain is provided.
 - Are you aware of any models of care for chronic pain that are currently being considered for use?
3. Can you describe the organizational structure of this (model of) care?
 - a. Physical organization (e.g., single- or multi-centre?)
4. What are the different programs or services offered under the different components of this approach to care?
 - a. Do all patients have access to all these services? Are there different levels of service?
5. Who are the team members involved in providing this care? How is the team structured?
6. I'd like to know more about how patients access this model/care.
 - a. Can you describe how patients are referred to this program?
 - b. Is there a process for triaging patients? [If yes, please describe.]
7. Once referred, can you describe how patients move through the program or access the different treatments?
 - a. Do all patients follow the same pathway?
 - b. Who manages patient flow through the program?
8. As part of the Environmental Scan, we are interested in learning about 3 models of care for chronic pain: the stepped (or tiered) care model, the hub-and-spoke model, or the Oncology Care Model.
 - a. Thinking about the provision of care for chronic pain in your jurisdiction. Are there any aspects of this care that are organized in either a stepped care model, a hub-and-spoke model, or similar to the Oncology Care Model?
 - If yes, can you describe how these models are implemented in your jurisdiction?
 - If no, do you have any insights on these models?
9. Thinking about the administration of care for chronic pain in your jurisdiction:
 - a. Who is responsible for managing or administering this (model of) care?
 - b. Can you tell me about the funding structure for this (model of) care?
 - c. Are you aware of any proposed changes to the way care is provided to patients with chronic pain in your jurisdiction?

- d. Have you had the opportunity to evaluate this approach to the provision of care for chronic pain?
 - If yes, which patient-related outcomes have you used to evaluate the effectiveness of the care?
 - If no, which patient-related outcomes do you think would be important to measure in evaluating the effectiveness of the care?

Barriers and Facilitators to Implementing Models of Care for Chronic Pain

1. Based on your experience, what are some key success factors or strategies that have worked well when implementing this approach to care for chronic pain?
2. Based on your experience, what are the main barriers or challenges experienced when implementing this approach to care for chronic pain?
3. Can you share any specific lessons learned when implementing your jurisdiction's approach to care for chronic pain?

Opportunity for Discussion and Questions

1. Are you aware of any other models of care delivery for chronic pain specifically?
2. Is there anything else that you would like to note regarding care for chronic pain in your jurisdiction?
3. Do you have any questions for CADTH?

Appendix 2: Chronic Pain and the Impact of the COVID-19 Pandemic

During the consultations, several informants mentioned the impact of the COVID-19 pandemic on their approach to caring for patients with chronic pain. Informants were not directly asked about the impact of the pandemic on their model of care and these responses were volunteered by the informants without prompting. Therefore, these findings are not expected to be comprehensive or systematic and there may be other relevant changes that exist that are not reported here. The following is a summary of the main areas that were reported to have been impacted by changes in the delivery of care due to the COVID-19 pandemic.

1. Delayed planning of meetings and system changes.
 - a. One informant reported that their province was scheduled to have their first planning meeting in April 2020 to organize a provincial pain management strategy; however, the COVID-19 pandemic meant that this meeting did not take place and, at the time of the consultation, no further arrangements had been made.
 - b. Informants from 2 other provinces reported that discussions regarding provincial pain strategies have been put on hold due to COVID-19.
 - c. In another province, an informant was concerned that the plans to develop a provincial strategy for chronic pain will never come to fruition because of the high health care costs of the COVID-19 pandemic.
 - d. In another province, the development of 2 pain centres was halted due to COVID-19.
2. Moving toward digital tools
 - a. Virtual visits: Informants from 5 jurisdictions reported that patient assessments and visits (including physical therapy and psychology) shifted to virtual visits during the pandemic. One informant highlighted that these are not as effective as doing the consults in person, while another informant reported that their program was already planning to switch from in-person visits to virtual visits to improve access to care (e.g., reduce travel times for patients) and the pandemic helped accelerate this change.
 - b. Virtual programming: Informants from 4 jurisdictions reported that their programs started offering some of their services virtually due to the pandemic, including pain education programs and self-management programs. Informants felt that this virtual programming was an advantage, as it improves access to care for people in rural and remote communities. However, with virtual programming, patients lose the benefits of peer interactions.
 - c. Digital questionnaires: 1 informant reported that their program has shifted away from paper to electronic questionnaires.
3. Affecting the waitlist
 - a. Informants from 4 jurisdictions reported that the COVID-19 pandemic has increased the wait time for care for patients with chronic pain in their jurisdictions.
4. Clinics or programs not running
 - a. Informants from 3 jurisdictions reported that certain components of their programs were not running due to the pandemic, including self-management programs and in-depth patient questionnaires.

5. Access to services
 - a. One informant reported that in response to the increased distress caused by the pandemic, 1 of the programs in their jurisdiction provided access to a social worker (via a support line) who can refer patients to specific services to improve access.
 - b. Another informant reported that jurisdictional restrictions for virtual care have reduced their ability to see patients from other provinces (i.e., those they used to see in person).

Appendix 3: Additional Tables

Table 6: Hub-and-Spoke Models for Other Chronic (Non-Pain) Conditions

Model, country, condition	Programs and services offered
Canadian	
Hub-and-spoke model for kids with complex care ²⁶ Ontario, Canada Pediatric patients with complex conditions	Not reported
Ottawa community of practice hub-and-spoke model ²⁹ Ontario, Canada Cancer	Hub provides: diagnostic assessments, surgical consultations for regional patients and for non-regional patients with complex cases Spoke hospitals offer: unique satellite cancer surgery programs (based on capacity and needs of community) Providers include: surgical, medical, radiation oncologists, nurses, social workers, administrators, family doctors, radiologists, public health leaders
International	
Hub-and-spoke spinal service ²⁷ UK Spinal disorders in a rural setting	Not reported
Vermont hub-and-spoke opioid treatment system ^{28,59} Vermont, US Opioid use disorder	Hubs provide: methadone treatment and supports, initiate buprenorphine treatment, provide comprehensive assessments and treatment protocols, and coordinate with primary care Spokes (the physicians): prescribe buprenorphine, coordinate access to recovery support and provide case management. Spokes have direct access to the hubs for consultation on referrals, screenings, and induction logistics. Supported by a Medication-Assisted Treatment team composed of a registered nurse and a licensed behavioural health provider Spoke providers include: family practitioners, internists, psychiatrists, obstetricians, and pediatricians
California hub-and-spoke medications-for-addiction treatment program ³⁰ California, US Opioid use disorder	Hubs (i.e., licensed opioid treatment programs) serve as regional consultants and subject matter experts to the spokes Spokes include: clinics with drug addiction treatment providers who prescribe and/or administer buprenorphine; provide ongoing care for patients with more stable disorders; manage induction and maintenance Spokes can also refer complex patients to a medications-for-addiction treatment team, which include nurses, behavioural health specialists, peer support workers, and other care coordinators

Table 7: Stepped Care Models for Other Chronic (Non-Pain) Conditions

Model, country, condition	Care provided at each step
Canadian	
Newfoundland and Labrador Stepped Care 2.0¹¹ Newfoundland, Canada Mental Health	Step 1 = watchful waiting, online self-directed online information Step 2 = online self-directed interactions Step 3 = real time peer support Step 4 = real time psychoeducational workshops, seminars Step 5 = expert assisted e-support or in-person programs Step 6 = intensive group programming Step 7 = intensive flexible 1-on-one programming Step 8 = specialist consultation (e.g., psychiatric consult) and chronic care Step 9 = acute care and case management, system navigation and advocacy
Vincent stepped care model for insomnia⁴¹ Manitoba, Canada Insomnia	Step 1 = 6-week computerized treatment completed independently (psychoeducational, relaxation, stimulus control, cognitive therapy, sleep hygiene, mindfulness meditation) Step 2 = in-person, single counselling session with psychologist Step 3 = 6-week in-person CBT group program Step 4 = individualized psychotherapy
UOttawa stepped care counselling service⁴⁰ Ontario, Canada Mental Health	Step 1 = online resources (e.g., books, apps, podcasts, worksheets) Step 2 = walk-in, face-to-face, single counselling session (rapid access, short-term) to develop action plan Step 3 = self-directed online mental health resources Step 4 = peer-to-peer services and workshops (emotional, health, academic needs) Step 5 = group counselling by professionals (depression, anxiety, stress, relationships) Step 6 = individual short-term counselling (6 to 8 sessions) Step 7 = pathways to specialized mental health care
International	
Stepped care for prevention and treatment (described in a systematic review)³⁴ Netherlands and Hong Kong Depression or anxiety disorders	Stepped care for prevention: Step 1 = watchful waiting Step 2 = self-help, psychotherapy Step 3 = face to face psychotherapy (e.g., CBT) Step 4 = referral to specialists Stepped care for treatment: <ul style="list-style-type: none"> • programs varied, with 2 to 4 steps • steps differed across models • services offered included: psychotherapy (self-help, and in person), exposure therapy, CBT

Model, country, condition	Care provided at each step
Heart2Heart stepped care model³⁷ UK Mental health care for cardiac patients	Step 1 = screening for anxiety and depression, CBT education Step 2 = guided self-help, face to face, group or telephone sessions, computerized CBT Step 3 = high intensity, 1-on-one CBT therapy, mindfulness classes Step 4 = intervention for severe and complex cases, CBT and other treatments
Improving Access to Psychological Therapies stepped care³⁵ Ireland Adult mental health	Step 1 = population-level approach (e.g., pamphlets, websites, mental health promotion) Step 2 = self-help (e.g., computerized CBT) Step 3 = group treatment (e.g., psychoeducational) Step 4 = 1-to-one treatment (e.g., brief CBT) Step 5 = referral to secondary care
Stepped care³⁶ UK Depression and anxiety	Site A (specialist-led): Step 1 = guided self-help, group classes Step 2 = short-term evidence-based psychological interventions Step 3 = complex evidence-based psychological interventions Step 4 = crisis teams, inpatient services by specialists, self-harm reduction Site B (primary care-led): Step 1 = guided self-help, group classes Step 2 = short-term psychological interventions (e.g., CBT) Step 3 = specialized psychological treatment Step 4 = crisis teams, inpatient services by specialists, self-harm reduction Site C (specialist-led): Step 1 = self-directed computerized CBT, guided self-help, group classes Step 2 = short-term psychological interventions (including CBT) Step 3 = not specified Step 4 = not specified Site D (primary care-led with specialist partner) Step 1 = guided self-help, group classes Step 2 = psychology and counselling Step 3 = psychology, psychotherapy, and community mental health Step 4 = not specified
Gateway stepped care model³⁸ Scotland Mental health services	Step 1 = community focused (e.g., mental health promotion in community groups, self-help material, local events) Step 2 = mental health awareness training and session for primary care staff, employers Step 3 = advice clinics, assessment clinics, mental health sessions for return to work Step 4 = group work: mental health life skills, recovery focused groups, personal development, overcoming anxiety Step 5 = individual work: 1-on-one CBT, interpersonal therapy, psychosocial interventions, self-help sessions

Model, country, condition	Care provided at each step
<p>Luther College Counseling Service stepped care model³⁹ Iowa, US Mental health</p>	<p>Step 1 = initial screening: assessment to determine which resources are appropriate, develop action plan</p> <p>Step 2 = referral to resources on campus (e.g., nutrition, wellness, career centre, tutoring, fitness, housing)</p> <p>Step 3 = peer support groups</p> <p>Step 4 = self-help resources: online tools (videos, websites)</p> <p>Step 5 = in-person groups or workshops (e.g., sleep, anxiety, procrastination)</p> <p>Step 6 = therapeutic consultation or 1-time counselling session</p> <p>Step 7 = group counselling</p> <p>Step 8 = online brief individual therapy sessions</p> <p>Step 9 = individual therapy</p> <p>Step 10 = off-campus referral</p>

CBT = cognitive behavioural therapy.

Table 8: Overview of the Various Approaches to Care for Patients With Chronic Pain in Canada Identified in This Report

Province	Level (provincial, regional, local)	No model	Hub-and-spoke	Stepped care	Other model or program ^a
Alberta	Provincial	X ^b	–	–	–
	Regional Calgary Zone (adult)	– ^c	Modified (hub-and-spoke-and-spoke)	–	–
	Regional Calgary Zone (pediatric)	–	–	–	Interdisciplinary model at tertiary pain clinic
	Local approaches	–	NI ^d	NI	NI
British Columbia	Provincial	X	–	–	–
	Regional	X	–	–	–
	Local (adult)	–	NI	NI	Pain BC Community-based family doctor networks Independent tertiary pain clinics
New Brunswick	Provincial	X	–	–	–
	Regional	–	NI	NI	NI
	Local Zone 1 (adult)	–	NI	NI	ISEAC program
	Local Zone 3 (adults)	–	NI	NI	Neurorehabilitation pain program

Province	Level (provincial, regional, local)	No model	Hub-and-spoke	Stepped care	Other model or program ^a
Newfoundland and Labrador	Provincial	X	–	–	–
	Regional	X	–	–	–
	Local (Labrador-Grenfell Health) (adult)	–	–	–	Weekly pain clinic
	Local Central (adult)	–	–	–	1 specialist
	Local Eastern (adult)	–	–	–	Care distributed across programs
	Local Western (adults)	–	–	–	1 specialist
Northwest Territories	Provincial	X	–	–	–
	Regional	X	–	–	–
	Local Yellowknife (adults)	–	NI	NI	Physiotherapy-based pain education program
Nova Scotia	Provincial	X	–	–	–
	Regional Central Zone (adult)	–	Modified hub-and-spoke	–	NI
	Local	–	NI	NI	NI

Province	Level (provincial, regional, local)	No model	Hub-and-spoke	Stepped care	Other model or program ^a
Ontario	Provincial	X	–	–	–
	Regional Toronto Central (adults)	–	X	–	–
	Local Toronto Central (pediatric)	–	NI	NI	Interprofessional model at a tertiary pain clinic
	Local Champlain (adult)	–	–	X	NI
	Local Central (adult)	–	NI	NI	Community-based chronic pain clinic
Prince Edward Island	Provincial	X	–	–	–
	Regional	X	–	–	–
	Local (adult)	–	–	–	2 ER physicians, 1 specialist, and 1 visiting specialist
Quebec	Provincial	–	–	–	Pyramid model
	Regional Montreal (adult)	–	–	–	Pyramid model
	Regional McGill (adult)	–	–	–	2-stage model
	Local	–	NI	NI	NI

Province	Level (provincial, regional, local)	No model	Hub-and-spoke	Stepped care	Other model or program ^a
Saskatchewan	Provincial	X	–	–	–
	Regional	X	–	–	–
	Local (pediatrics)	–	NI	NI	Interdisciplinary complex pain clinic
	Local Regina (adult)	–	NI	NI	Multidisciplinary pain clinic
	Local Saskatoon (adult)	–	NI	NI	MAC iOPS

ER = emergency room; ISEAC = Inter-Professional Spine Assessment and Education Clinic; MAC iOPS = Medication Assessment Centre Interprofessional Opioid Pain Service; NI = none identified.

Note: The Oncology Care Model is not included in this table, as this report did not identify any uses of this model in Canada. This table only includes the models and programs of care for patients with chronic pain in Canada that were identified as part of this Environmental Scan; it is not an exhaustive list and there may be models of care or programs for chronic pain that are used in Canada that were not captured in this report.

^aModels and programs reported in the “other” column may have the same description or name (e.g., “pyramid model”), but all are unique models or programs.

^bX indicates that this approach was used in this jurisdiction.

^c–“ indicates that “no model” was already identified for that level or jurisdiction, or that a different model was identified.

^d“NI” indicates that no models or approaches were identified for this category in this report, but it does not exclude the possibility that they may exist in the province or territory.