MINISTRY OF HEALTH

Ontario

Quality-Based Procedure Clinical Handbook

Non-Emergent Integrated Spine Care

REVISED January 2022

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List of Abbreviations

CACS	Comprehensive Ambulatory Classification System
C-ADR	Cervical Artificial Disc Replacement
CCI	Canadian Classification of Health Interventions
CIHI	Canadian Institute of Health Information
CORE	Clinically Organized Relevant Exam
DAD	Discharge Abstract Database
EMR	Electronic Medical Record
FSCO	Financial Services Commission of Ontario
GEM	Growth and Efficiency Model
HBAM	Health-Based Allocation Model
HIG	HBAM Inpatient Grouper
LBP	Low Back Pain
LOS	Length of Stay
MRDx	Most Responsible Diagnosis
NACRS	National Ambulatory Care Reporting System
OCCI	Ontario Case Costing Initiative
OHIP	Ontario Health Insurance Plan
PCP	Primary Care Practitioner
QBP	Quality-Based Procedure
WTAT	Wait Time Access Target

Preface

The Spine Quality-Based Procedure (QBP) was introduced in April 2018. This was supported by:

- Initial Spine QBP Expert Panel (2017) recommendations
- Non-Emergent Integrated Spine Care QBP Clinical Handbook (September 2017)
- Resource utilization analytics using Canadian Institute for Health Information (CIHI) Inpatient Discharge Abstract Database (DAD), National Ambulatory Care Reporting System (NACRS) and Comprehensive Ambulatory Classification System (CACS) data
- Ontario Case Costing Initiative (OCCI) methodology.

The initial Non-Emergent Integrated Spine Care QBP Clinical Handbook (September 2017) focused on integrated care pathways for diagnosis and treatment including day and inpatient surgery using non-instrumented and instrumented surgical approaches for elective degenerative spine conditions in adults.

Regarding cervical artificial disc replacement (C-ADR), the initial QBP Clinical Handbook noted that "At this time, disc arthroplasty (CCI procedure code 1.SE.53.^^) has not been included in this QBP. The Expert Panel recognizes that this procedure, particularly in the cervical spine, may become more prevalent with currently evolving evidence in the area. This procedure should be reviewed for future consideration in subsequent revisions to this QBP."

January 2022 Revision Summary

Following the introduction of the Spine QBP, clinicians identified challenges in addressing long wait times and wait lists in Ontario. This demonstrated a need for system planning to address these issues.

In February 2019, Health Quality Ontario (HQO), which is now part of Ontario Health, released a Health Technology Assessment (HTA) for "Cervical Artificial Disc Replacement Versus Fusion for Cervical Degenerative Disc Disease". The Final Recommendation noted that "HQO, under the guidance of the Ontario Health Technology Advisory Committee (OHTAC), recommends publicly funding cervical artificial disc replacement for cervical degenerative disc disease": https://www.hqontario.ca/evidence-to-improve-care/health-technology-assessment/reviews-and-recommendations/cervical-artificial-disc-replacement-versus-fusion-for-cervical-degenerative-disc-disease

In 2020 and 2021, in response to the COVID-19 pandemic, the Ministry of Health (the Ministry) and Ontario Health issued directives and guidelines to temporarily ramp down or cease non-

emergent and non-urgent surgeries and procedures in hospitals and community settings. In addition, increased requirements for infection prevention and control and the reassignment of hospital resources to respond to COVID-19 have collectively had a significant impact on access to spine surgeries for degenerative conditions.

While these measures were necessary to ensure that health system resources, staffing and supplies were available to support the response to COVID-19, and while measures implemented by the Ministry (e.g., COVID-19 Surgical Premiums) have supported recovery efforts, there remains a significant backlog of patients with degenerative spine conditions waiting for non-emergent spine surgeries.

The number of non-emergent spine surgeries (based on the QBP definition) that were completed between 2018/19 and 2020/21 decreased from 5,866 to 4,763 cases, or a 19% decrease (see Table 1 below). Wait times for spine surgery, which already exceeded provincial Wait Time Access Targets (WTATs) prior to the pandemic, reached an all-time high of 330 days (90th percentile) in November 2020.

Table 1. Spine QBP Volumes and Impact of COVID (from March 2020)

Spine QBP Group	2018/19 Actuals	2019/20 Actuals (COVID Impact Starting in Q4)	2020/21 Actuals (COVID Impact)	% Change (2018/19 to 2020/21)
Group A1: Non-Instrumented Day Surgery	1,441	1,556	1,351	-6.2%
Group A2: Non-Instrumented Inpatient Surgery	1,712	1,600	1,238	-28%
Group B: Instrumented Inpatient Surgery	2,713	2,635	2,174	-20%
TOTAL	**5,866**	**5,791**	**4,763**	**-19%**

Source: Ministry of Health (NACRS and DAD)

In response to these developments, a Spine QBP Mini Expert Panel (chaired by Dr. Raja Rampersaud, spine surgeon at University Heath Network and Co-Chair of the initial Spine QBP Expert Panel in 2017) was convened in June 2021 to consider updates to the Spine QBP and Clinical Handbook.

In January 2022, the Spine QBP Mini Expert Panel updated the Non-Emergent Integrated Spine Care QBP Clinical Handbook to:

- **Further refine the patient groupings to support the uptake of day surgery** for non-instrumented procedures (see Table 2 and Table 4);
- **Include cervical disc replacement in the instrumented inpatient group**; this accommodates (i) an alternative to the practice of anterior cervical fusion by replacement of the disc with bone graft and/or standalone cage without use of plate fixation and (ii) a non-fusion option that reflects the 2019 HQO HTA, which noted that C-ADR appears to be cost-effective compared with fusion for both one-level and two-level cervical disc degeneration (see Table 2 and Table 5);
- **Add a new procedure code to the instrumented inpatient group for fusions with intervertebral spacer devices** following CIHI's 2022 coding updates, which reflects the ability to use more precise coding for this category (see Table 2 and Table 5).
- **Updated guidance regarding shifting to day surgery for non-instrumented spine surgery** (see Section 4.3 and Section 5.0);
- **Provide newer data on system performance** for non-emergent spine surgery and case mix for the Spine QBP (see Section 7.0); and
- **Recommend a five-year capacity plan** to address long surgical wait lists and wait times for non-emergent spine surgery and to bring Ontario on par with degenerative spine surgery rates in other Canadian provinces (see Section 7.0).

Table 2. Summary of January 2022 Updates to Spine QBP Groupings

QBP Clinical Handbook (Jan 2022 Updates)	QBP Clinical Handbook (Sept 2017)
Group 1 (NEW): Non-Instrumented Day and Inpatient Surgery – COMBINED This new group is formed by combining the previous Group A1 (Non-Instrumented Day Surgery) and Group A2 (Non-Instrumented Inpatient Surgery).	**Group A1: Non-Instrumented Day Surgery**
	Group A2: Non-Instrumented Inpatient Surgery

Group 2 (REVISED): Instrumented Inpatient Surgery	Group B: Instrumented Inpatient Surgery
Same as previous Group B with addition of **Cervical Disc Replacement**, including C-ADR, and new Canadian Classification of Health Intervention (CCI) code for **fusions with intervertebral spacer devices**.	

To summarize, the January 2022 revision:

- **Combines Non-Instrumented Day and Inpatient Surgery into one group (Group 1)**; from a coding perspective, there is no change to the inclusion and exclusion criteria for Group 1 compared to previous Groups A1 (Non-Instrumented Day Surgery) and A2 (Non-Instrumented Inpatient Surgery);
- **Adds Cervical Disc Replacement to the Instrumented Inpatient Surgery group (Group 2)**; from a coding perspective, this procedure [1.SE.53.LL.^^ (Implantation of internal device intervertebral disc, open anterior approach)] has been added to the list of eligible QBP procedures from the previous Group B (Instrumented Inpatient Surgery).
- **Adds a new CCI code for fusions with intervertebral spacer devices to the Instrumented Inpatient Surgery group (Group 2)**; from a coding perspective, this procedure [1.SE.75.^^ Fusion, intervertebral disc] has been added to the list of eligible QBP procedures from the previous Group B (Instrumented Inpatient Surgery); this reflects the ability to use more precise coding for this category.

In addition to these updates, some content from the initial Non-Emergent Integrated Spine Care QBP Clinical Handbook in September 2017 has been moved to the Appendices, including:

- Detailed descriptions of Boxes 1-5 in Figure 3, which outlines the Patient Assessment, Self Management & Referral Pathway, has been moved to Appendix A (this was previously most of Section 4.1 in the 2017 handbook)
- Low Back Pain Imaging Pathway has been moved to Appendix B (this was previously Appendix 6 in the 2017 handbook)
- MOH Evidence-Based Framework for Spine Care has been moved to Appendix C (this was previously Section 3.5 in the 2017 handbook)
- Clinician and Patient Engagement has been moved to Appendix C (this was previously Section 3.7 in the 2017 handbook)

1.0 Purpose

Provided by the Ministry of Health

This QBP Clinical Handbook offers a compendium of the evidence-based rationale and clinical consensus driving the development of the policy framework and implementation approach for this QBP.

The clinical recommendations in this document and any subsequent adjustments to the funding model for these procedures are not intended to take the place of the professional skill and judgment of health care providers.

As with all QBPs, hospitals can supplement volumes as required using their global budgets, and changes to the QBP funding model do not impact physician billing.

2.0 Introduction to Quality-Based Procedures

Provided by the Ministry of Health

QBPs involve clusters of patients with clinically related diagnoses or treatments. QBPs use an evidence- and quality-based selection framework that identifies opportunities for process improvements, clinical redesign, improved patient outcomes, enhanced patient experience and potential cost savings.

The evidence-based framework used data from the Discharge Abstract Database (DAD) adapted by the Ministry of Health (MOH) for its Health-Based Allocation Model (HBAM) repository, which preceded the Growth and Efficiency Model (GEM).

The HBAM Inpatient Grouper (HIG) groups inpatients according to diagnosis or treatment for most of their inpatient stay. Day surgery cases are grouped in NACRS by the principal procedure they received.

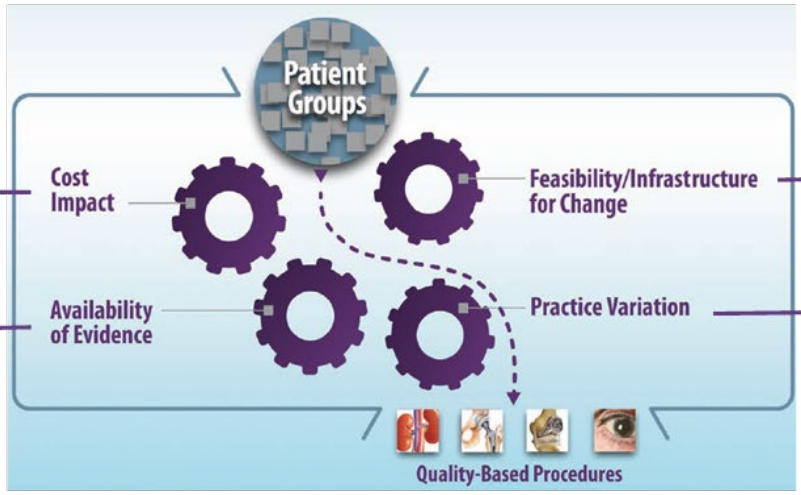
Additional data were used from the Ontario Case Costing Initiative. Evidence in publications from Canada and from other jurisdictions and in World Health Organization reports was also used to determine patient clusters and to assess potential opportunities.

The evidence-based framework assessed patients as presented in Figure 1. This framework identified QBPs that have the potential to both improve quality outcomes and reduce costs.

Figure 1. Evidence-Based Framework for QBPs

- Does the clinical group contribute to a significant proportion of total costs?
- Is there significant variation across providers in unit costs/ volumes/ efficiency?
- Is there potential for cost savings or efficiency improvement through more consistent practice?
- How do we pursue quality and improve efficiency?
- Is there potential areas for integration across the care continuum?

- Are there clinical leaders able to champion change in this area?
- Is there data and reporting infrastructure in place?
- Can we leverage other initiatives or reforms related to practice change (e.g. Wait Time, Provincial Programs)?



- Is there a clinical evidence base for an established standard of care and/or care pathway? How strong is the evidence?
- Is costing and utilization information available to inform development of reference costs and pricing?
- What activities have the potential for bundled payments and integrated care?

- Is there variation in clinical outcomes across providers, regions and populations?
- Is there a high degree of observed practice variation across providers or regions in clinical areas where a best practice or standard exists, suggesting such variation is inappropriate?

Practice Variation

Patient transition including discharge locations, expected length of stay (LOS), and readmissions are captured by CIHI and can be analyzed on the basis of diagnosis and treatment, age, sex, comorbidities and complexities, and other condition-specific data. Large practice or outcome variance can represent opportunity to improve patient outcomes by reducing this practice variation and focusing on evidence-informed practice. A large standard deviation from expected LOS and costs are flags to such variation. Ontario has detailed case-costing data for all patients discharged from a case-costing hospital from 1991 onwards, as well as daily resource use and cost data by department, by day, and by admission.

Availability of Evidence

Much Canadian and international research has been undertaken to develop and guide clinical practice. By use of these recommendations and those of the clinical experts, best-practice guidelines and clinical pathways can be developed for QBPs and appropriate evidence-informed indicators can be used to measure performance.

Feasibility/Infrastructure for Change

Clinical leaders are integral to this process. Their knowledge of patients and the care provided or required represents an invaluable component of assessing where improvements can and should be made. Many groups of clinicians have already provided rationale-for-care pathways and evidence-informed practice.

Cost Impact

The implementation of an evidence-based funding methodology can help to promote efficiencies and standardize costs. The introduction of evidence into practice for a set of patient clusters through the QBP Clinical Handbook and evidence-based framework for QBPs can also demonstrate opportunities to link quality with funding.

2.1 How Will QBPs Encourage Innovation?

Implementing evidence-informed pricing for the targeted QBPs will encourage health care providers to adopt best practices in their care delivery models and maximize efficiency and effectiveness. Moreover, best practices that are defined by clinical consensus will be used to understand required resource use for the QBPs and further assist in developing evidence-informed pricing.

Implementation of a "price x volume plus quality" strategy for targeted clinical areas will motivate providers to:

- Adopt best-practice standards
- Re-engineer their clinical processes to improve patient outcomes; and
- Develop innovative care delivery models to enhance the experience of patients

Clinical process improvement can include better discharge planning, eliminating duplicate or unnecessary investigations and paying greater attention to the prevention of adverse events (e.g., postoperative complications). These practice changes, together with adoption of evidence-informed practices, will improve the overall patient experience and clinical outcomes and help create a sustainable model for health care delivery.

Refer to Appendix C for a detailed description of how the MOH Evidence-Based Framework for QBPs was applied to the Spine QBP.

3.0 Description of Spine QBP

This QBP is intended for adult patients with neck or low back pain and related symptoms for common degenerative conditions of the spine who undergo elective (non-emergent) day and inpatient spine surgeries performed in hospitals (see "Degenerative (QBP)" in Figure 2).

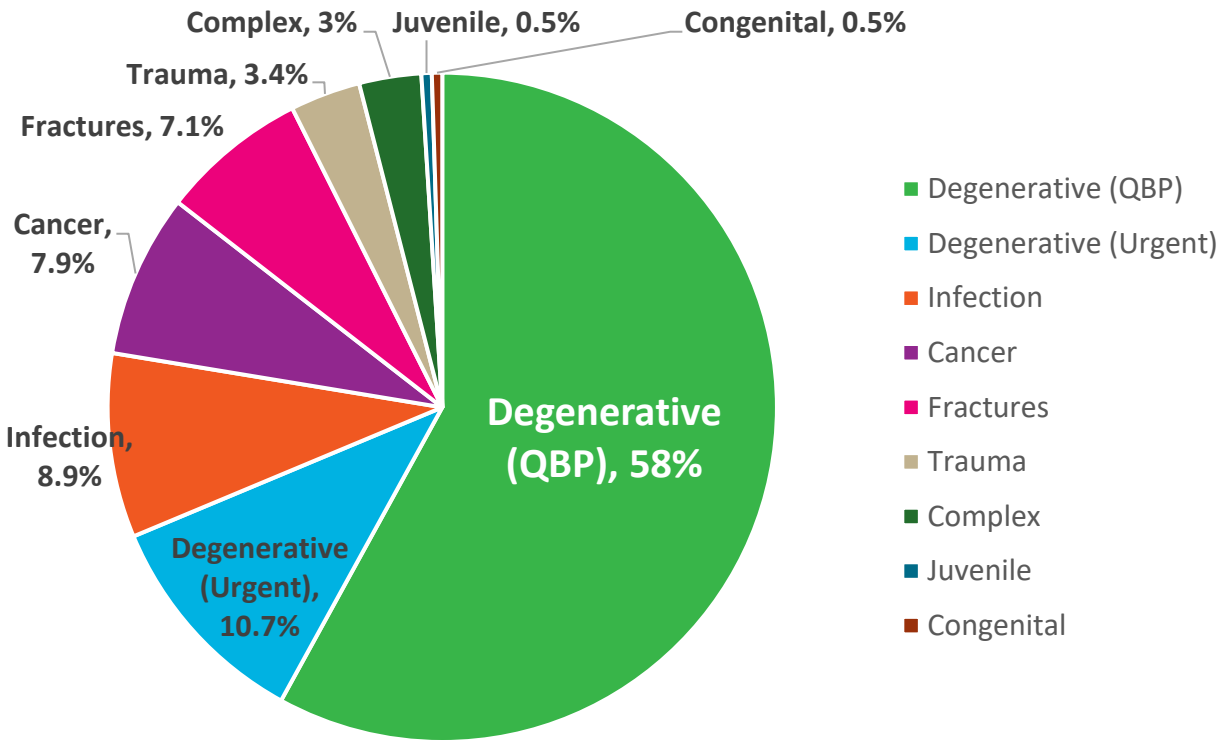
The Spine QBP does not include congenital, juvenile, trauma, fractures, cancer, infection nor non-elective (urgent) degenerative spine surgery (see "Degenerative (Urgent)" in Figure 2).

There are robust data sources (DAD and NACRS) that capture the delivery of day and inpatient spine surgery in hospitals and can support the measurement and monitoring of QBP performance indicators.

3.1 Spine Surgery in Ontario

Degenerative spine surgery (elective and urgent) represents 68.7% of all spine surgeries in Ontario. Of these, the Spine QBP comprises 58.0 % of provincial spine surgery volumes.

Figure 2. Spine Surgery in Ontario by Indication



Source: DAD and NACRS

3.2 Objectives of Spine QBP

This QBP builds on the **Ontario Low Back Pain Strategy** to create an integrated non-emergent spine care pathway for adults that:

- **Engages patients** as active partners in managing their care to prevent them from developing persistent and chronic spine problems; and
- **Supports standardized interdisciplinary approaches** to provide effective assessment, appropriate access, and patient-centered spine management.

The primary objective of this QBP is to:

- **Define best practice surgical protocols** for common elective spinal procedures to improve outcomes for adults with degenerative spine disorders.

Additionally, this QBP Clinical Handbook aims to provide a framework to achieve the following objectives:

- **Provide an integrated pathway for non-emergent spine** care that extends from primary care to specialist, spine surgery and rehabilitation care;
- **Define shared-cared principles** necessary for management of spine symptoms to provide the right care, at the right time, to the right patient;
- **Ensure the active role of patients and define self-management best-practices** to support them in self-managing their spine symptoms; and
- **Provide protocols for Primary Care Practitioners (PCPs)** to support effective assessment, appropriate investigation (laboratory and imaging), referral, and management of spine patients.

3.3 Description of Spine Symptoms

Spinal pain is the most common spine symptom that can occur at any point of the spine and present with a range of associated or independent symptoms including muscle tension or stiffness, or symptoms in the upper or lower extremity often described as a ‘burning’, ‘tingling’, ‘numbing’ sensation, and/or weakness.

Low back pain (LBP) occurs in the lumbar region of the spine, whereas **neck pain** occurs in the cervical region of the spine. The annual prevalence of activity-limiting LBP is estimated at 38% and most (50–80%) adults will experience LBP in their lifetime.[1] The exact source of axial neck and low back symptoms is often not apparent. In most patients, no specific cause of the pain can be identified. [2]

The high prevalence of chronic spine related symptoms places significant burden on patients and on the health system.[3] It is the primary cause of years lived with disability [4] with 25% of patients responsible for 75% of direct health care costs associated with neck and low back symptoms. [3 5 6 7] Most visits for neck and low back symptoms are to PCPs.[8 9 10] These conditions are also the most common reason for referrals to orthopedic surgeons and neurosurgeons. [8 11 12]

3.4 Current Management Approach

Best approaches to care and treatment for neck and low back symptoms are patient dependent and range from simple education to complex interdisciplinary care. [13 14]

For the majority of neck and low back patients, symptoms can be improved by self-managing pain symptoms and by keeping active and working in a temporarily modified manner. [13 14 15 16] In many patients, recurrence within 12 months is not uncommon.[17 18] Current models of care are ineffective in managing spinal conditions with a primary focus on biological aspects of pain and little or no attention given to psychosocial and chronic components. [13 14] System wide, there is a need to change patient messaging to convey that neck and low back pain is a common condition that is manageable, largely incurable, and likely to recur if not actively managed, i.e., this is a chronic condition for the majority of patients that is best suited for integrated care approaches.

For patients who require specialist care, there is wide variation in access and timeliness for referral to specialists and follow-up care if indicated. Patients depend on their PCPs to appropriately refer and coordinate their care needs. Management options can include observation, self-management strategies, unsupervised or supervised exercise or therapy, referral to multidisciplinary rehabilitation programs, surgery and/or other specialist care. An integrated approach is needed to best use the skills and knowledge of a range of health professionals who jointly share responsibility to manage the patient's care.

To improve care and ensure patients with neck and low back symptoms in Ontario are being managed appropriately using an interdisciplinary approach, the Ministry has taken the leadership through its LBP Strategy by:

- **Developing education tools** to enhance the knowledge of providers and patients and to give them access to approaches and tools that support high-quality care for patients with low back complaints: http://health.gov.on.ca/en/pro/programs/ecfa/action/primary/lb_edutools.aspx
- **Amending the Schedule of Benefits** to improve appropriateness of diagnostic referrals for LBP: http://health.gov.on.ca/en/pro/programs/ecfa/action/primary/lb_sob.aspx

- **Launching Rapid Access Clinics (RACs) for Low Back Pain** across Ontario to improve the quality of care and timely access to appropriate interdisciplinary and specialist low back pain care for appropriate patients: https://www.lowbackrac.ca/

The **Ontario Quality Standard for Acute Low Back Pain** addresses care for those 16 years of age and older with acute low back pain, with or without leg symptoms. It examines the assessment, diagnosis, and management of people with this condition by health care professionals across all health care settings, with a focus on primary care. This quality standard provides guidance on reducing unnecessary diagnostic imaging, encouraging physical activity, providing education, giving reassurance, assisting with self-management support, prescribing pharmacological therapies and suggesting additional non-pharmacological therapies: https://www.hqontario.ca/evidence-to-improve-care/quality-standards/view-all-quality-standards/low-back-pain

3.5 Patient Groups

This section outlines the spine surgeries for degenerative conditions that are included in this QBP.

Group 1 (Non-Instrumented Day and Inpatient Surgery)

1. Lumbar Discectomy
2. Lumbar Laminectomy
3. Cervical Laminectomy

Group 2 (Instrumented Inpatient Surgery)

4. Anterior Cervical Discectomy and Fusion **(UPDATED)**
5. Anterior Cervical Vertebrectomy and Fusion **(UPDATED)**
6. Cervical Posterior Decompression and Fusion
7. Lumbar Decompression and Fusion **(UPDATED)**
8. Cervical Disc Replacement **(NEW)**

The following table illustrates the care setting (✓) for the patient groups described above.

Table 3. Care Setting for Patient Groups

Spine Procedure	Day Surgery	Inpatient Surgery
Group 1: Non-Instrumented Day and Inpatient Surgery		
1. Lumbar Discectomy	✓	✓
2. Lumbar Laminectomy	✓	✓
3. Cervical Laminectomy	✓	✓
Group 2: Instrumented Inpatient Surgery		
4. Anterior Cervical Discectomy and Fusion **(UPDATED)**	×	✓
5. Anterior Cervical Vertebrectomy and Fusion **(UPDATED)**	×	✓
6. Cervical Posterior Decompression and Fusion	×	✓
7. Lumbar Decompression and Fusion **(UPDATED)**	×	✓
8. Cervical Disc Replacement **(NEW)**	×	✓

For spine surgery, the complexity, resource use and cost associated with the procedure is determined by the number of spinal vertebrae levels involved in the surgical intervention. Currently, coding for spine levels is optional in the NACRS and DAD reporting systems.

The Expert Panel recommends mandatory coding by hospitals of the number of spinal vertebrae levels involved in spine surgical interventions.

3.6 Inclusion and Exclusion Criteria

3.6.1 Inclusion Criteria

1. General Inclusion Criteria

All adult acute elective inpatient surgical discharges (cases recorded in CIHI DAD) and day surgery encounters (cases recorded in CIHI NACRS) are included as follows:

- Adults 18 years and older
- Health card issuing province is Ontario i.e., Province issuing hcn = "ON"
- Ontario is responsible for payment i.e., Responsibility for payment = "01"
- Elective inpatient admissions (admission category 'L') and outpatient day surgeries (patient category 'DS')

2. Case Mix Groups

Includes spine cases from inpatient case mix groups (**HIGs**):

- **HIG 7**: Thoracic/Major Intervention on Spine/Spinal Canal/Vertebra
- **HIG 8**: Other Site/Non-Major Intervention on Spine/Spinal Canal/Vertebra
- **HIG 313**: Spinal Vertebrae Intervention
- **HIG 314**: Other Intervention on Back/Neck

Includes spine cases from outpatient case mix groups (**CACS**):

- **C003**: Spinal Vertebrae/Intervertebral Disc Intervention
- **C007**: Spinal Canal/Cord Intervention

3. Most Responsible Diagnosis (MRDx)

This QBP focuses on common degenerative conditions of the spine and includes spine cases with the following MRDx codes recorded in the abstract:

- **M43^** (Other deforming dorsopathies)
- **M47^** (Spondylosis)
- **M48.0^** (Spinal stenosis)
- **M48.1^** (Ankylosing hyperostosis [Forestier])
- **M48.2^** (Kissing spine)
- **M48.8^** (Other specified spondylopathies)

- **M48.9^** (Spondylopathy, unspecified)
- **M50^** (Cervical disc disorders)
- **M51^** (Other intervertebral disc disorders)
- **M53^** (Other dorsopathies, not elsewhere classified)
- **M54^** (Dorsalgia)

4. Elective Spine Surgeries for Degenerative Spine Disease

This QBP focuses on common degenerative conditions of the spine. It includes:

- Spine cases with procedure codes in Table 4 recorded as the main procedure in the abstract; and
- Spine cases when 1.AW.72 [Release, spinal cord open approach with extradural incision (e.g., for decompression) with device NEC] is coded as the main procedure and the other spine procedures in Table 4 are coded at any occurrence in the abstract.

Table 4. Non-Instrumented Day and Inpatient Surgery (Group 1)

Intervention Location	Main Procedure CCI Code	Considerations
1. Lumbar Discectomy		
Intervention attribute location either at: • Lumbar • Lumbosacral	Cases where the main procedure is: • **1.SE.87.^^** (Excision partial, intervertebral disc) or • **1.SE.89.^^** (Excision total, intervertebral disc) Cases with **1.AW.72** as the main procedure when the following procedures are also coded in the abstract: • **1.SE.87.^^** (Excision partial, intervertebral disc) or • **1.SE.89.^^** (Excision total, intervertebral disc)	Procedure code **1.SE.89.^^** has been discontinued in 2015/16. It has remained in the definition for historical comparative purposes.

Intervention Location	Main Procedure CCI Code	Considerations
2. Lumbar Laminectomy (includes unilateral or bilateral laminotomy or non-instrumented laminoplasty)		
Intervention attribute location either at: • Lumbar • Lumbosacral	Cases where the main procedure is: • **1.SC.80.^^** (Repair, spinal vertebrae) Cases with **1.AW.72** as the main procedure when the following procedures are also coded in the abstract: • **1.SC.80.^^** (Repair, spinal vertebrae)	
3. Cervical Laminectomy (includes unilateral or bilateral laminotomy or non-instrumented laminoplasty)		
Intervention attribute location either at: • Cervical • Cervicothoracic	**1.SC.80.^^** (Repair, spinal vertebrae)	93% of all cervical laminectomies in Ontario are performed as inpatient procedures.

Notes:

- Day surgery (NACRS): 1-3 Levels
- Inpatient surgery (DAD): 3 or more levels or medical co-morbidities or other circumstances that prevent day surgery consideration for 1-3 Levels

Table 5. Instrumented Inpatient Surgery (Group 2)

Intervention Location	Main Procedure CCI Code	Considerations
4. Anterior Cervical Discectomy and Fusion (UPDATED) (includes fusion with or without anterior plating)		
Intervention attribute location either at: • Cervical • Cervicothoracic	Cases where the main procedure is: • **1.SC.74.LL.^^** (Fixation, spinal vertebrae, open anterior approach) or • **1.SC.75.LL.^^** (Fusion spinal vertebrae, open anterior approach) • **1.SE.53.LL.^^** (Implantation of internal device intervertebral disc, open anterior approach) **(NEW)** • **1.SE.75.^^** Fusion, intervertebral disc **(NEW)** Cases with **1.AW.72** as the main procedure when the following procedures are also coded in the abstract: • **1.SC.74.LL.^^** (Fixation, spinal vertebrae, open anterior approach) or • **1.SC.75.LL.^^** (Fusion spinal vertebrae, open anterior approach) or • **1.SE.53.LL.^^** (Implantation of internal device intervertebral disc, open anterior approach) **(NEW)**	93% of all anterior cervical discectomy and fusion surgeries in Ontario are performed as inpatient procedures. Procedure code **1.SC.75^^-XX-^** (using no device for fusion) cases are still considered "instrumented spine surgery" for the purposes of this QBP. Procedure code **1.SE.53.LL.^^** was added in the January 2022 revision. Inclusion of cervical disc replacement in the instrumented inpatient group accommodates an alternative to the practice of anterior cervical fusion by replacement of the disc with bone graft and/or stand-alone cage without use of plate fixation. Addition of **1.SE.75.^^** Fusion, intervertebral disc (new CCI code in CIHI's v2022 updates to capture fusions with intervertebral spacer devices) reflects ability to use more precise coding for this category.

Intervention Location	Main Procedure CCI Code	Considerations
	• **1.SE.75.^^** Fusion, intervertebral disc **(NEW)**	
5. Anterior Cervical Vertebrectomy and Fusion (UPDATED)		
Intervention attribute location either at: • Cervical • Cervicothoracic	**1.SC.89.LL.^^** (Excision total, spinal vertebrae, open anterior approach) **1.SE.75.^^** Fusion, intervertebral disc **(NEW)**	Addition of **1.SE.75.^^** Fusion, intervertebral disc (new CCI code in CIHI's v2022 updates to capture fusions with intervertebral spacer devices) reflects ability to use more precise coding for this category.
6. Cervical Posterior Decompression and Fusion (includes laminectomy/laminotomy with instrumentation or instrumented laminoplasty)		
Intervention attribute location either at: • Cervical • Cervicothoracic (Laminectomy alone not recommended at the cervicothoracic junction)	Cases where the main procedure is: • **1.SC.74.PF.^^** (Fixation, spinal vertebrae, open posterior approach) or • **1.SC.75.PF.^^** (Fusion spinal vertebrae, open posterior approach) Cases with **1.AW.72** as the main procedure when the following procedures are also coded in the abstract: • **1.SC.74.PF.^^** (Fixation, spinal vertebrae, open posterior approach) or • **1.SC.75.PF.^^** (Fusion spinal vertebrae, open posterior approach)	98% of cervical posterior decompression and fusion surgeries in Ontario are performed as inpatient procedures. Procedure code **1.SC.75^^-XX-^** (using no device for fusion) cases are still considered "instrumented spine surgery" for the purposes of this QBP.

Intervention Location	Main Procedure CCI Code	Considerations
7. Lumbar Decompression and Fusion (UPDATED) (includes laminectomy/laminotomy with instrumentation or instrumented laminoplasty)		
Intervention attribute location either at: • Lumbar • Lumbosacral	Cases where the main procedure is: • **1.SC.74.^^** (Fixation, spinal vertebrae) or • **1.SC.75.^^** (Fusion spinal vertebrae) • **1.SE.75.^^** Fusion, intervertebral disc **(NEW)** Cases with **1.AW.72** as the main procedure when the following procedures are also coded in the abstract: • **1.SC.74.^^** (Fixation, spinal vertebrae) or • **1.SC.75.^^** (Fusion spinal vertebrae) • **1.SE.75.^^** Fusion, intervertebral disc **(NEW)**	99% of procedures lumbar decompression and fusion surgeries in Ontario are performed as inpatient procedures. Procedure code **1.SC.75^^-XX-^** (using no device for fusion) cases are still considered "instrumented spine surgery" for the purposes of this QBP. Addition of **1.SE.75.^^** Fusion, intervertebral disc (new CCI code in CIHI's v2022 updates to capture fusions with intervertebral spacer devices) reflects ability to use more precise coding for this category.
8. Cervical Disc Replacement (NEW)		
Intervention attribute location either at: • Cervical • Cervicothoracic	Cases where the main procedure is: • **1.SE.53.LL.^^** (Implantation of internal device intervertebral disc, open anterior approach)	Inclusion of cervical disc replacement in the instrumented inpatient group accommodates a non-fusion option that reflects the 2019 HQO HTA, which noted that C-ADR appears to be cost-effective compared with fusion for both one-level and

Intervention Location	Main Procedure CCI Code	Considerations
		two-level cervical disc degeneration.

Notes:

- Inpatient surgery (DAD): 1 or more Levels
- Note to physicians: bilateral canal enlargement procedure is defined in CIHI as decompression of spinal cord; CIHI captures this procedure under CCI code 1.SC.80^^, and it is included in Group 1 above; CIHI coding requirements are used to describe QBP cases

3.6.2 Exclusion Criteria

1. **General Exclusion Criteria:**
   - Urgent/emergent spinal admissions
   - Pediatric cases (patients under 18 years of age) and procedures performed in children's hospitals
   - Abandoned or Out-of-hospital procedures

2. **Diagnosis Codes**

The Spine QBP focuses on common day and inpatient spine surgery procedures performed in hospitals for degenerative conditions of the spine. Therefore, the QBP excludes cases where the following diagnosis codes are recorded in the abstract:

- Cancer and tumours **(C00^ to D48^)**
- Trauma cases **(S codes)**
- Infection cases **(G06.1, M86.08, T81.4, T84.23, T84.58, T84.68 T85.7)**
- Unrelated spinal/spinal fractures cases
  - **M40^** (Kyphosis and lordosis)
  - **M41^** (Scoliosis)
  - **M42^** (Spinal osteochondrosis)
  - **M45^** (Ankylosing spondylitis)
  - **M46^** (Other inflammatory spondylopathies)
  - **M48.3^** (Traumatic spondylopathy)
  - **M48.4^** (Fatigue fracture of vertebrae)
  - **M48.5^** (Ankylosing spondylitis)
  - **M84.*8** (Malunion, stress or pathological fracture of the bone for other site)

4.0 Best Practices to Guide Implementation

This QBP is intended to reduce the risk of chronicity in patients with non-emergent and persistent symptoms for common degenerative conditions of the spine.

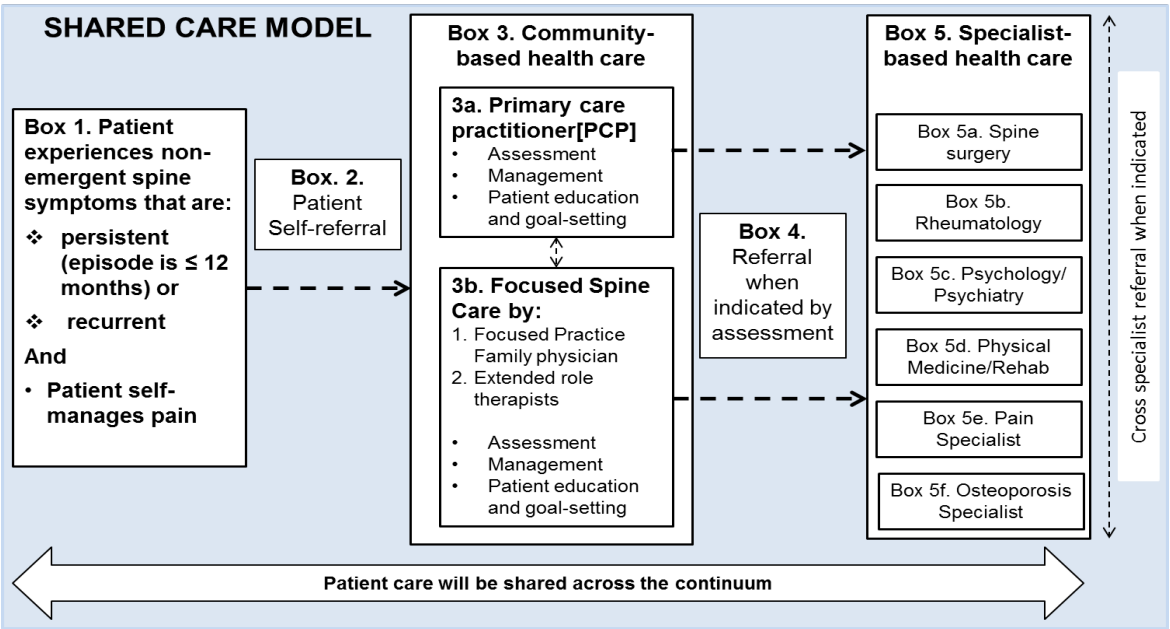
4.1 Patient Assessment, Self Management & Referral Pathway

The integrated care pathway supports a patient-centered approach for patients presenting with non-emergent persistent spine symptoms experienced for no more than 12 months, noting that some patients may acceptably receive specialist-based interventions beyond 12 months of symptom onset. To effectively manage spine symptoms, a shared care approach is needed including:

- **Bi-directional communication between health care providers** to actively share responsibility for managing patients with spine symptoms; and
- **Partnership between the patient and their health care provider** to enable self-management and seamless goal setting.

Several aspects of treatment may be required during the typically variable and chronic course of clinical spine symptoms. Patient care must be integrated and shared across the continuum. Figure 3 provides an overarching framework for integrated spine care from primary care to referral to specialists if required (see Appendix A for a detailed description of Boxes 1-5).[19]

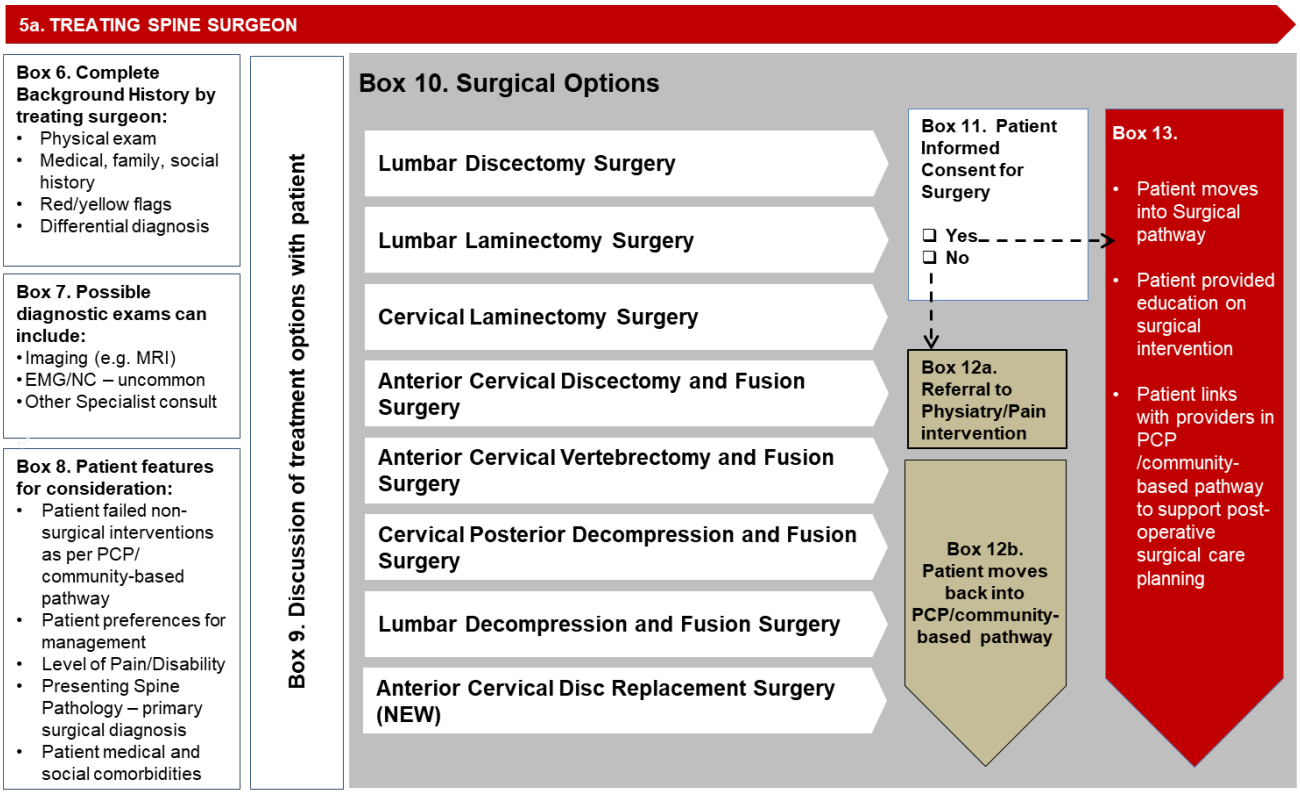
Figure 3. Patient Assessment, Self-Management and Referral Pathway



4.2 Surgical Decision to Treat Pathway

Processes to support the treating spine surgeon with decision to treat with surgical intervention are highlighted in Figure 4.

Figure 4. Surgical Decision to Treat Pathway



Box 6. Complete Background History

The treating spine surgeon should perform thorough patient assessments prior to surgical intervention to establish a diagnosis or differential diagnoses when required and to determine appropriate surgical treatment options for patients presenting with signs and symptoms of a degenerative spine disorder that is amendable to surgical intervention. Assessments may include an appropriate physical examination; medical, family, and social history; red and yellow flag assessment; and differential diagnosis.

Box 7. Diagnostic Exams

Possible diagnostic exams can include confirmatory and/or planning imaging or consideration of referral to another non-operative specialist when needed. Electromyogram and nerve conduction are uncommon but may be used in certain instances.

Box 8. Consideration of Patient Features

Given that each patient's presentation is unique, the treating surgeon must assess patient-level features prior to determining appropriate treatment approaches such as:

- Whether a patient has tried and failed non-surgical interventions
- A patient's preferences for management of condition
- A patient's level of pain and/or disability
- Presenting spine pathology
- Current medical and psychosocial comorbidities

Box 9-10. Discussion of Treatment Options

A patient must be informed of available treatment options as well as the risks and benefits of the available treatment options in addition to that being recommended by the surgeon.

This QBP includes the following elective day and inpatient spine surgery procedures:

1. Lumbar Discectomy
2. Lumbar Laminectomy
3. Cervical Laminectomy
4. Anterior Cervical Discectomy and Fusion **(UPDATED)**
5. Anterior Cervical Vertebrectomy and Fusion **(UPDATED)**
6. Cervical Posterior Decompression and Fusion
7. Lumbar Decompression and Fusion **(UPDATED)**
8. Cervical Disc Replacement **(NEW)**

Box 11-13. Decision for Surgery

If a patient chooses not to have spine surgery, the treating spine surgeon should consider referral to physiatrist and/or pain specialist as appropriate. If the patient chooses to have spine surgery and provides informed consent, the patient can follow a surgical pathway to receive the appropriate spine surgery procedure. The patient should receive education on the treatment option, required preparation before and on the day of surgery and post-surgery recovery care. It is important that the patient continue to be monitored and managed by their PCP.

4.3 Surgical Pathways

This section describes the surgical pathways for patient groups having spine surgery to treat degenerative spine disease as described in Section 3.5. Best practice evidence and expert consensus guided the development of these pathways and recommended processes of care.

4.3.1 Non-Instrumented Day and Inpatient Surgery (Group 1)

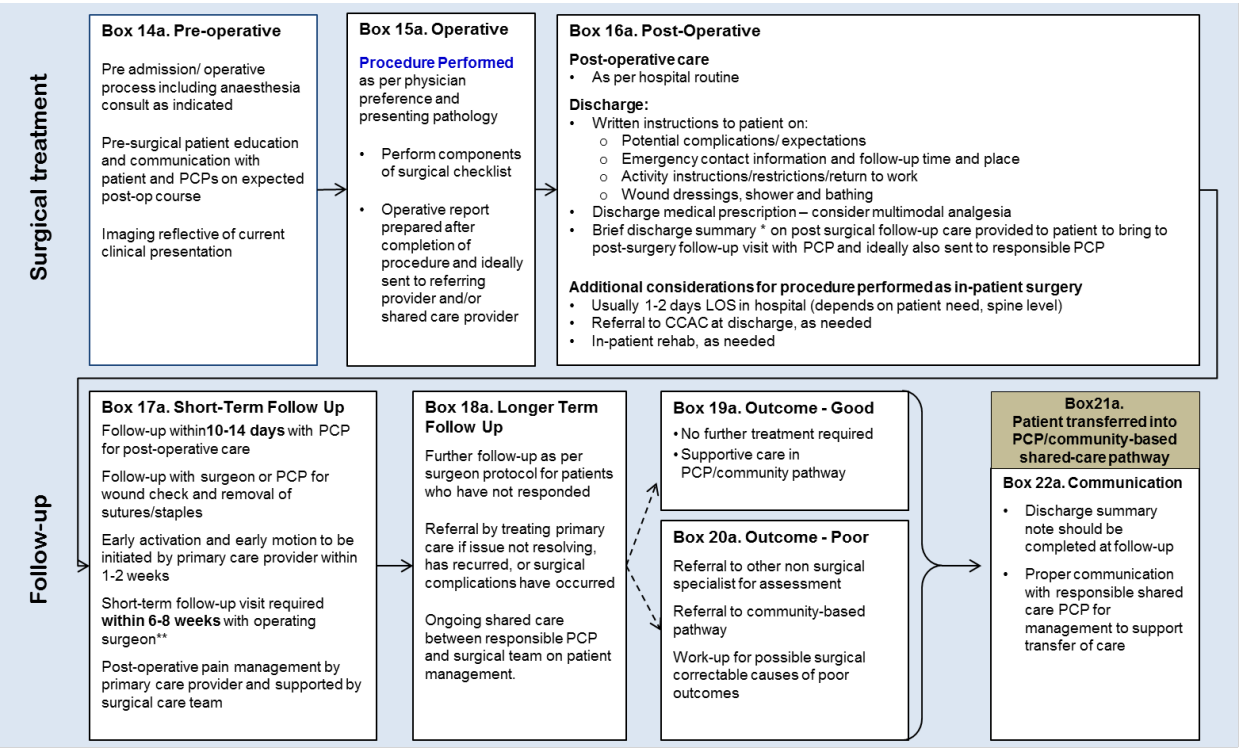
The clinical pathway in Figure 5 outlines the care processes for Non-Instrumented Day and Inpatient Surgery (Group 1):

- **Lumbar Discectomy:** this procedure with intervention attribute location either at the Lumbar or Lumbosacral should be performed as a day surgery for 1-3 Level.
- **Lumbar Laminectomy:** this QBP procedure with intervention attribute location either at Lumbar or Lumbosacral should be performed as a day surgery for 1-3 Level.
- **Cervical Laminectomy:** this procedure with intervention attribute location either at Cervical or Cervicothoracic should be performed as a day surgery for 1-3 Level for non-myelopathy patients.

Inpatient surgery is performed for >2-3 Levels or where patient medical co-morbidities or other circumstances (e.g., myelopathy) prevent day surgery consideration regardless of levels.

Refer to clinical pathway in Figure 6 for patients undergoing **cervical laminectomy** alone for cervical **myelopathy.**

Figure 5. Surgical Pathway for Non-Instrumented Day and Inpatient Surgery



Box 14a. Pre-Operative Care

Pre-operative care includes pre-admission and operative processes, including anesthesia consult as indicated. The treating surgeon should determine clinical indications that necessitate surgery and assess the patient's ability to follow the post-surgical routine and complete clinic follow-up. Appropriate imaging reflective of current clinical presentation should be performed.

Pre-surgical education on surgical procedure should be provided to the patient. Communication between the patient and their PCP is required regarding expected post-operative course to support a shared care approach to patient management of their spine pain.

Box 15a. Operative Care

The procedure is typically performed under general anesthesia. For anatomical 1 Level or 2 Level cases, the Expert Panel recommends that **lumbar discectomy** or **lumbar laminectomy** is performed as a day surgery procedure. In some patients, 3 Level cases may be appropriate for day surgery. These procedures are more often performed as an inpatient surgery for >2 Levels or if the patient has medical co-morbidities or other circumstances that prevent day surgery consideration.

The operating surgeon and surgical team must complete the **surgical checklist**. The general components of the checklist should be as per institutional policy. At a minimum, the surgical checklist should consider marking of the operative site, antibiotics use, intra-operative x-ray/image confirming correct level, and patient positioning check.

Canadian Spine Society - Choosing Wisely Canada provides recommendations for physicians and patients that include guidance on use of antibiotic therapy in spine surgery, which are available online: http://www.choosingwiselycanada.org/recommendations/spine/

After completion of surgery, the treating surgeon should prepare an **operative report** and ideally send the report to the referring PCP and/or shared care PCP responsible for the patient.

Box 16a. Post-operative Care

Post-operative care should be provided as per hospital protocol.

Discharge care processes should include **written instructions** to the patient by the operating surgeon on the following:

- Potential early complications and expectations following surgery
- Information to access after-hours assistance or emergent care

- Information and education on activity restrictions/return to work
- Instructions on wound dressings, shower, and bathing following surgery
- Time and place for their follow-up visit. Follow-up visits are usually carried out by the operating surgeon or surgical team. If returning to an operating surgeon is not feasible, follow-up care may be delegated to a qualified professional with demonstrated competency to detect complications.

Discharge medical prescription provided to the patient post surgery may also consider multimodal analgesia.

Patient teaching should be offered by the surgical team to support patients with self-managing their post-operative surgical care and pain.

A **brief discharge summary** should be provided to patient to provide to their PCP at their post-surgical visit. Ideally, the treating surgeon should also send a copy of the discharge summary to the responsible shared-care PCP responsible for the patient. The brief discharge summary should include the following information:

- Date of surgery
- Diagnosis
- Final surgical procedure
- Operative and post-operative complications
- Follow-up care instructions on:
    - Suture care and removal
    - Daily activity restrictions (self-care, work restrictions) (short and long-term)
    - Medications (short and long-term)
    - Rehabilitative treatment (short and long-term)
- Next surgical appointment
- Planned date/time frame for return to work if relevant

For patients who received the procedure as an inpatient surgery, the following should be considered when planning for their post-operative care:

- Depending on the patient's need and the anatomical level involved in the procedure, the patient's length of stay may be around 1-2 days.
- At discharge, the patient may require referral to local Home and Community Care Support Service (previously known as the CCAC).
- Inpatient rehabilitation may be required for some patients.

Box 17a. Short-Term Follow-up:

Short-term follow-up requires that a patient follow-up with the PCP at 10-14 days after surgery. Within 1-2 weeks, the PCP should initiate early activation and early motion in the surgical patient. Dependent on patient response, PCPs should support patients with ongoing follow-up care. The operating surgeon may see the surgical patient at two weeks for suture removal as per surgeon practice or as required. The operating surgeon should see the patient again 6-8 weeks post surgery.

The surgical care team should support the PCP who is responsible for managing post-operative pain in the surgical patient.

Box 18a. Longer-Term Follow-up

Longer-term follow up is required with the operating surgeon as per their routine and particularly for patients slow to respond to or non-responders to surgery. The PCP responsible for managing the patient post-surgery and should request reassessment of the patient by the operating surgeon if issues are not resolving within 12 weeks, or if symptoms recur or complications arise. Ongoing shared care between the PCP and surgical team may be required to manage the patient post-operatively.

Box 19a and 20a. Surgical Outcomes

Ongoing care supportive care should continue to be provided by the PCP to manage outcomes in patients regardless of outcomes of surgery. Patients should continually be engaged in self-managing their pain.

Patients who achieve good outcomes from surgery typically should not require further surgical or specialist treatment. In patients with poor outcomes to surgery, referral to other non-surgical specialist for assessment and management should be considered (see referral criteria in Figure 3). The operating surgeon may also consider work up for possible surgical correctable causes of poor outcomes.

Box 21a and 22a. Patient Transfer and Communication to Community-Based Shared Care

The transfer of patient care to primary care for ongoing management should include a **discharge summary** note (as per Box 16a) with proper communication on expected post-operative course by the operating surgeon. It is recommended that the discharge summary be provided to the patient and to the PCP for any health care services required in the first month of the postoperative period.

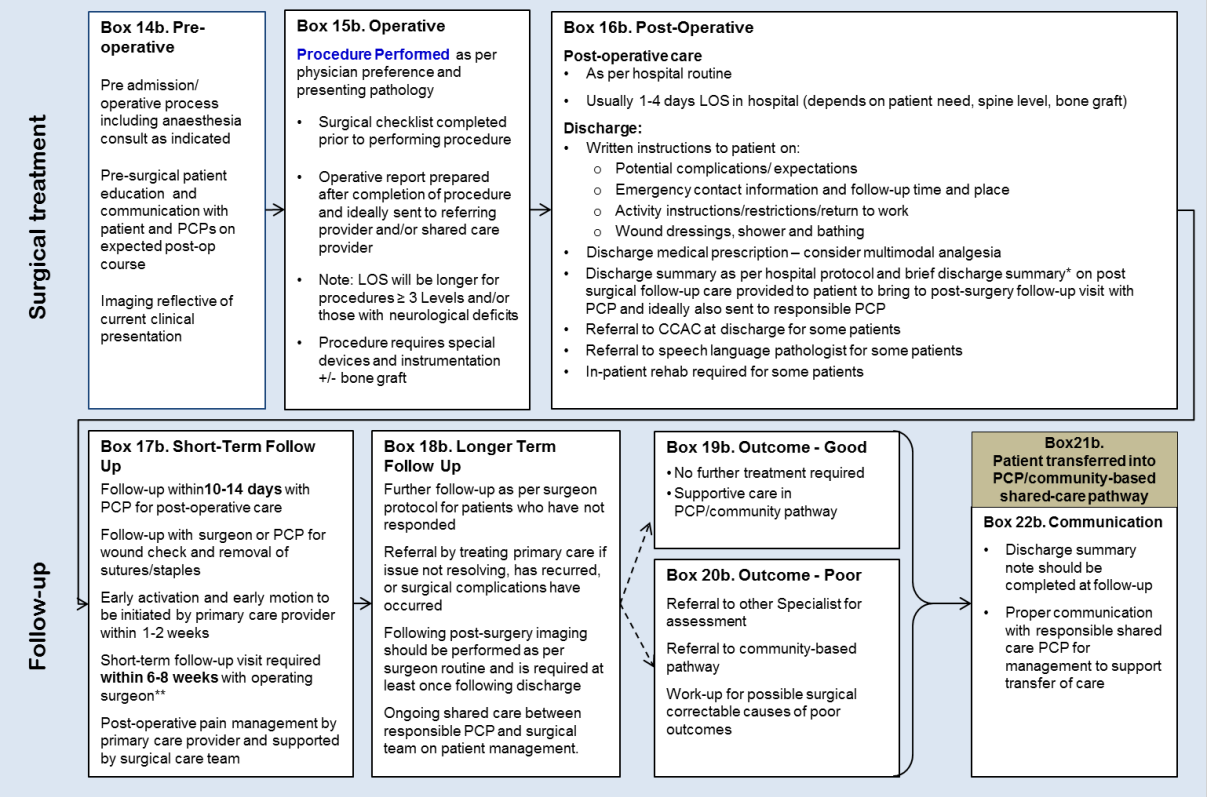
4.3.2 Instrumented Inpatient Surgery (Group 2)

The clinical pathway in Figure 6 outlines the care processes for Group 2 (Instrumented Inpatient Surgery):

- **Anterior Cervical Discectomy and Fusion (UPDATED):** this procedure with intervention attribute location either at Cervical or Cervicothoracic is performed as an inpatient surgery for 1 or more Levels.
- **Anterior Cervical Vertebrectomy and Fusion (UPDATED):** this procedure with intervention attribute location either at Cervical or Cervicothoracic is performed as an inpatient surgery for 1 or more Levels.
- **Cervical Posterior Decompression and Fusion:** this procedure with intervention attribute location either at Cervical or Cervicothoracic is performed as an inpatient surgery for 1 or more Levels; complete laminectomy alone not recommended at the cervicothoracic junction.
- **Lumbar Decompression and Fusion (UPDATED):** this procedure with intervention attribute location either at Lumbar or Lumbosacral is performed as an inpatient surgery for 1 or more Levels.
- **Cervical Disc Replacement (NEW):** this procedure with intervention attribute location either at Cervical or Cervicothoracic is performed as an inpatient surgery for 1 or more Levels. This includes replacement of the disc with an artificial arthroplasty to maintain motion.

Refer to clinical pathway in Figure 6 for patients undergoing **cervical laminectomy** alone for cervical **myelopathy.**

Figure 6. Surgical Pathway for Instrumented Inpatient Surgery



The care processes outlined in **Box 14a** to **Box 22a** for pre-operative, post-operative, and follow-up care for Group 1 (Non-Instrumented Day and Inpatient Surgery) in Section 4.3.1 are similar to the care processes for the Group 2 (Instrumented Inpatient Surgery) described here in Section 4.3.2.

There are some additional post-operative inpatient care and discharge processes required for Group 2 (Instrumented Inpatient Surgery), including:

- Patients who undergo the spine procedures in this pathway will usually require 1-7 days of in-hospital stay. The LOS will vary depending on patient need, surgical level, and use of autogenous (i.e., patient donor site morbidity) bone graft during the procedure. The LOS will be longer for procedures performed for ≥3 Levels and/or those with neurological deficits.
- Follow-up imaging is required at least once following discharge from the hospital. Imaging should be performed as per the treating surgeon's routine.
- At discharge, some patients will require referral to Home and Community Care Support Services (previously known as Community Care Access Centre), speech language pathology, and/or inpatient rehabilitation.

- A **discharge summary** is required as per hospital protocol. The transfer of patient care to primary care for ongoing management should include a discharge summary note (as per Box 16a). It is recommended that the discharge summary be provided to the patient and to the PCP to support shared-cared management of the patient.

5.0 Implementation of Best Practices

The Expert Panel identified key partners to support implementation of best practices outlined in this QBP Clinical Handbook, including patients, clinicians, hospitals, regulatory colleges, Ontario Health and the Ministry. Key considerations for effective implementation include:

1. **Strong partnership between primary care, RACs for Low Back Pain and spine surgery programs at hospitals to effectively manage patients needing spine surgery.**

2. **PCPs should identify and utilize local resources in their catchment area to support screening, management and referrals of non-emergent spine patients.**

A number of resources available in the community include the following:

- **Education tools to help patients** to understand and to self-manage their pain:
    - A low back pain self-management video to educate and increase awareness of self-management tools and techniques in patients experiencing low back pain is available: https://www.youtube.com/watch?v=BOjTegn9RuY
    - Patient Education inventory that provides useful links on general patient education and mechanical pain management: http://www.health.gov.on.ca/en/pro/programs/ecfa/docs/lb_tk_edu_bw.pdf
- **Clinically Organized Relevant Exam Back Tool** (CORE Back Tool) assists PCPs with assessing patients who present with low back pain to support risk stratification for appropriate screening, referral, and management: https://cep.health/media/uploaded/CEP_CORE_Back_2016.pdf
- **Clinically Organized Relevant Exam Neck Tool and Headache navigator** (CORE Neck Tool) assists PCPs with assessing patients who present with neck pain to support differential diagnoses, risk stratification for appropriate screening, referral, and management: https://cep.health/media/uploaded/CEP_HeadandNeck_2016_v15.2-1.pdf
- **Quick Reference Guide** on management of neck associated disorders is available: https://www.fsco.gov.on.ca/en/auto/Documents/2015-qrg.pdf
- Clinically focused **online course** can support PCPs with assessing and managing low back pain: https://cep.health/clinical-products/low-back-pain/
- **List of family physicians with a Focused Practice Designation** (applicable to support patients with specialized musculoskeletal knowledge or cognitive-based therapy skills) can be obtained from the Ontario Medical Association: https://www.oma.org/

- **Self-management resources and programs** including Toronto Central Self-Management Program (https://selfmanagementtc.ca/) and Living Well Self-Management Program of Southeastern Ontario (http://www.livingwellseontario.ca/)
- **Provincial RAC Low Back Pain program** (formerly known as ISAEC) is an innovative, upstream, shared-care model of care in which patients receive rapid low back pain assessment (less than four weeks on average), standardized clinical tools, education and evidence-based self-management plans. It is designed to decrease the prevalence of unmanageable chronic low back pain, reduce unnecessary diagnostic imaging as well as unnecessary specialist referral. Recent program innovations include virtual assessment and an education toolkit, plus videos for virtual care providers as well as how to prepare for a virtual assessment: https://www.lowbackrac.ca/
- **Ontario Low Back Pain Quality Standard** (Care for Adults with Acute Low Back Pain): https://www.hqontario.ca/evidence-to-improve-care/quality-standards/view-all-quality-standards/low-back-pain

3. Implementation of QBP will require accurate data entry and coding for reimbursement and quality indicator measurement especially related to surgical wait times and wait lists

For quality indicator measurement to effectively monitor patient access to spine care, it is recommended that wait times **from referral to first clinician appointment** (**Wait 1**) and wait times **from decision to surgery** (**Wait 2**) be captured and reported separately for:

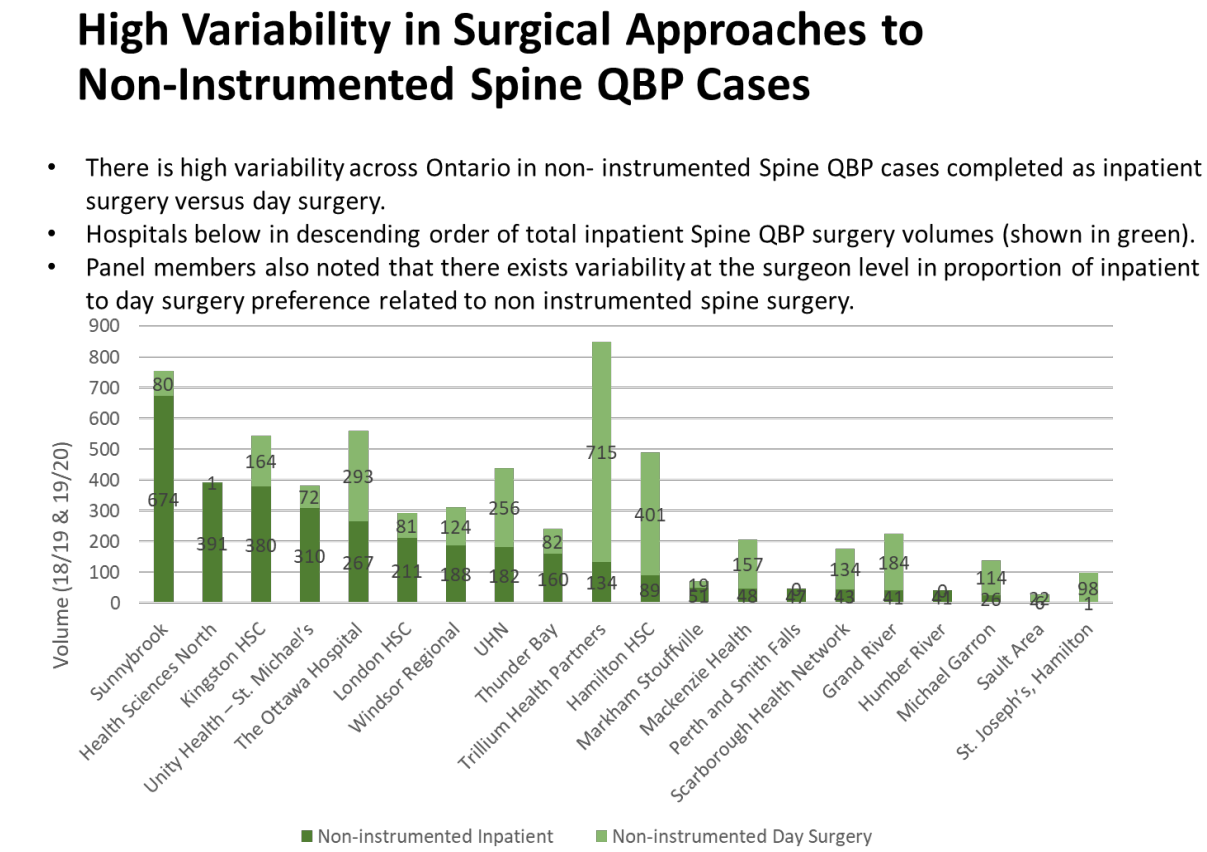
- Inpatient vs. day spine surgery
- Lumbar Instrumented vs. non-instrumented
- Cervical Instrumented vs. non-instrument interventions

4. Shifting to Day Surgery for Non-Instrumented Spine Surgery (NEW)

Non-instrumented day surgery for degenerative spine conditions is associated with improved patient experience, quality indicators and overall hospital and health system cost without compromising patient safety [20] [21].

There exists high variability in the ratio of ambulatory to inpatient spine surgery across Ontario (Figure 7). This represents a significant opportunity for improving both quality and value of spine surgery in Ontario. Appropriate day surgery spine protocols should incorporate current evidence-based clinical indications, geographically appropriate ambulatory patient selection and **enhanced recovery after surgery (ERAS)**.

Figure 7. Ratio of Day to Inpatient Spine Surgery Across Ontario



Data source: Health Sector Models Branch, 18/19-19/20

5. Revised Spine QBP Clinical Handbook (January 2022 revision) is based on two separate resource utilization and funding streams for spine surgery procedures in Groups 1 and 2.

The new and revised spine surgery QBP groupings continue to have different relative intensity weights or Case Mix Index (CMI), which reflect the resource utilization for performing spine surgery. Resource utilization is impacted by use of instrumentation during surgery. Costs for instrumented surgery are considerably higher.

Table 6. Provincial Average CMI for Spine QBP Groups

Spine QBP Group	2019/20 Provincial Average CMI
Group 1: Non-Instrumented Day and Inpatient Surgery	0.993
Group 2: Instrumented Inpatient Surgery	1.9961

Source: Health Sector Models Branch, Ministry of Health

6.0 What Does it Mean for Interdisciplinary Spine Care Teams?

The role of interdisciplinary spine teams includes the following considerations:

1. It is critical that **patient self-management** be integrated into the management of spine symptoms related to degenerative conditions to achieve and maintain quality outcomes.

2. The Expert Panel recommends **an integrated shared care approach to the management of non-emergent spinal disorders** and consequently the expansion and enhancement of current regional and provincial initiatives that strive to accomplish this goal. A shared care model has most value in the identification of risk factors for chronicity, enabling appropriate investigations and referral, expansion of treatment options, and follow-up care for post surgery.

3. There are also opportunities for provider groups to consider **innovative improvements** to their existing care delivery model, especially to reduce urgent/emergent cases if possible.

   It is recognized that there are patients presenting to hospital Emergency Departments (ED) with degenerative spinal conditions. Although emergent spine care of patients admitted directly from the ED requiring emergent surgery (e.g., acute cauda equina syndrome) would not be considered within the scope of this QBP, there are health delivery opportunities for **expedited triage clinics** to assess appropriate patients referred from their ED visit **and triaged to scheduled surgical time** according to their condition's urgency if emergent surgery is not medically required. If possible, the patient may **wait at home for their scheduled elective surgical time** within days rather than be admitted to an inpatient bed simply to wait for a surgical time.

7.0 Surgical Service Capacity Planning

Surgical capacity planning should consider the significant challenges that exist with current service delivery for surgical spine care in Ontario. This includes the significant provincial variation in both Wait 1 and Wait 2 (see Figure 8 and Figure 9).

Additionally, access challenges for surgical spine care will only continue to increase with the aging population. Consideration regarding optimization and prioritization of current human and surgical resources, surgeon recruitment and capacity growth by expanding ambulatory spine surgery have been identified as key areas for improvement.

Wait Times

Currently, the **90th percentile wait times** across the province **from referral to first clinician appointment** (**Wait 1**) and **from decision to surgery** (**Wait 2**) for patients requiring spinal surgery exceed the provincial target of 182 days in many locations in Ontario. Long wait times have a significant impact on patient quality of life and outcomes.

Figure 8. Provincial Variation in Wait Times from Referral to First Clinician Appointment

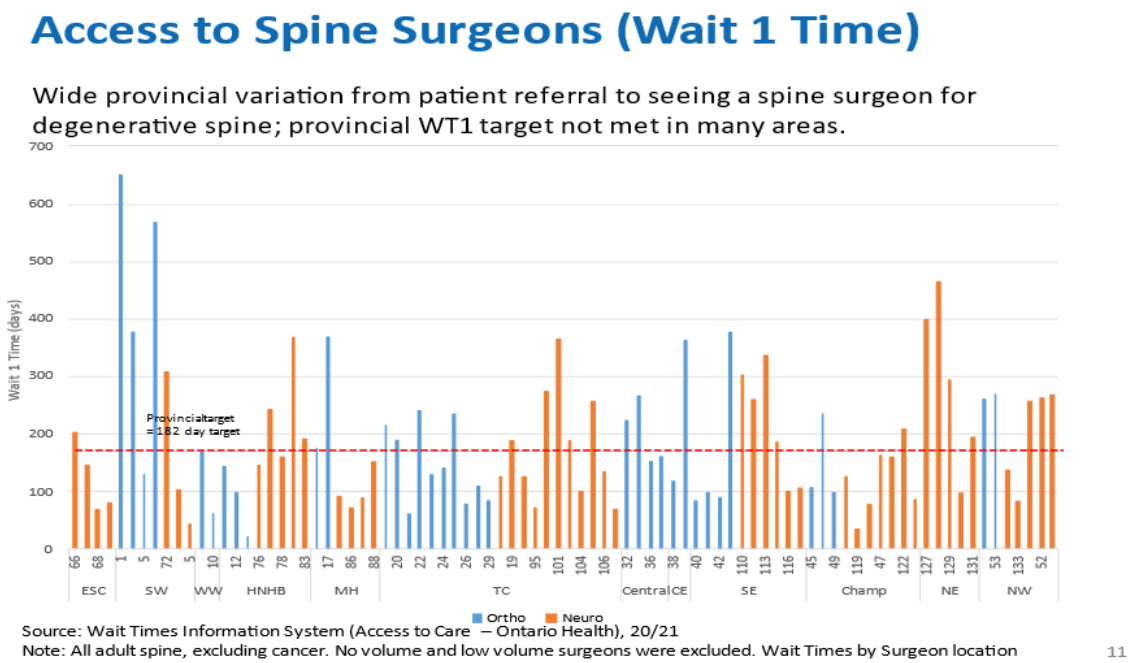
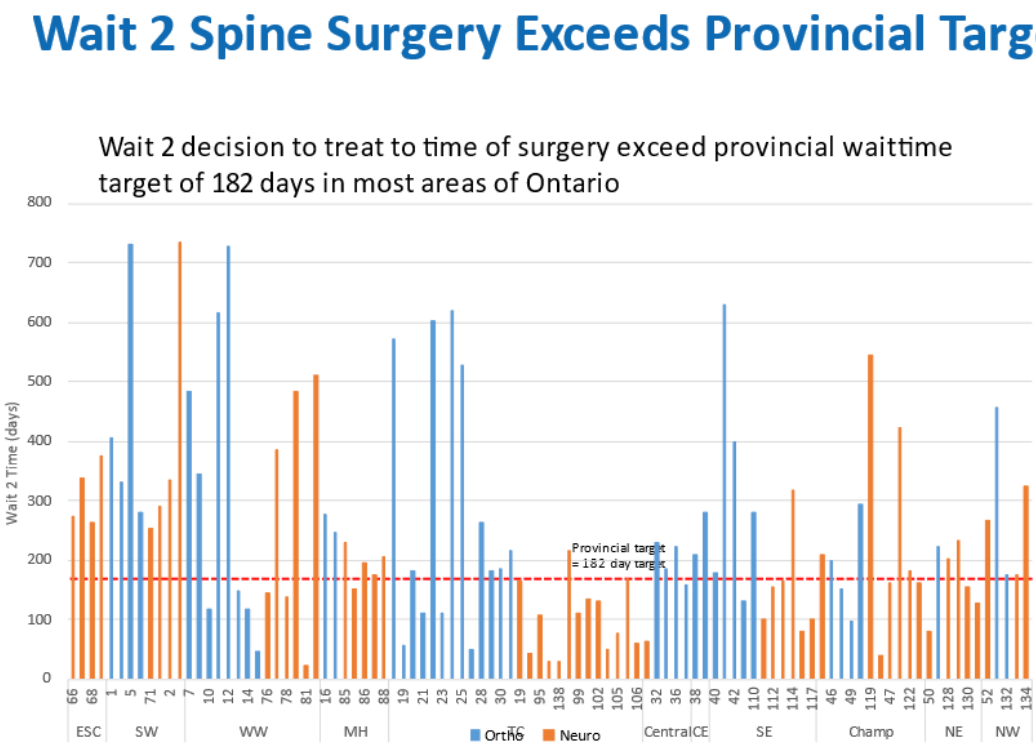


Figure 9. Provincial Variation in Wait Times from Decision to Surgery



Source: Wait Times Information System (Access to Care – Ontario Health), 20/21
Note: All adult spine, excluding cancer. No volume and low volume surgeons were excluded. Wait times by Surgeon location.

12

Five-Year Capacity Plan

To address long surgical wait lists and wait times for non-emergent spine surgery and to bring Ontario on par with degenerative spine surgery rates in other Canadian provinces, the Spine QBP Mini Expert Panel has prepared a five-year capacity plan for this QBP. Per the capacity plan, the Expert Panel recommends an **annual increase of some 1,378 Spine QBP volumes per year for the next five years beginning in 2022/23.**

The capacity plan recommendations were based on the following parameters:

- **Increasing the rate of spine surgery in Ontario** from the current low rate of 7.51 inpatient spine surgery cases per 10,000 to the Canadian average of 10.50 inpatient spine surgery cases per 10,000 (excluding Ontario and Prince Edward Island (PEI); PEI is excluded, as the majority of spine surgeries are done elsewhere);

- **Increasing the rate of spine surgery performed as day surgery** from 1.4 cases per 10,000 to the Alberta rate of 1.7 day surgery spine cases per 10,000;
- **Establishing a planning goal of 60% day surgery and 40% inpatient surgery** for Group 1 (Non-Instrumented Day and Inpatient Surgery) and applying this ratio in the methodology for the five-year capacity plan; and
- Ensuring that each hospital that receives Spine QBP volumes submits a **Spine Surgery Human Resources Plan** to their Ontario Health Region, including new spine surgeon recruitment strategies (see Table 7 for list of hospitals[i]).

It is recommended that incremental Spine QBP volumes be **protected** to ensure that capacity for spine surgeries is increased in Ontario per the recommendations of the Spine QBP Expert Panel's five-year capacity plan.

Table 7. Spine QBP Hospitals

Region	Facility Name	2019/20 Actual Cases	% of Provincial Volume
West	St. Joseph's Healthcare Hamilton	65	1.1%
West	Grand River Hospital	239	4.1%
West	Windsor Regional Hospital	325	5.6%
West	London Health Sciences Centre	365	6.3%
West	Hamilton Health Sciences	350	6.0%
Central	Mackenzie Health	234	4.0%
Central	Markham Stouffville Hospital (renamed Oak Valley Health effective Aug 2021)	86	1.5%
Central	Humber River Hospital	19	0.3%
Central	Trillium Health Partners	1,018	17.6%
Toronto	Toronto East Health Network (Michael	110	1.9%

[i] This table includes hospitals that receive base funding for Spine QBP volumes and excludes hospitals that receive Spine QBP volumes through one-time reallocations by Ontario Health Regions.

Region	Facility Name	2019/20 Actual Cases	% of Provincial Volume
	Garron Hospital)		
Toronto	University Health Network	448	7.7%
Toronto	Sunnybrook Health Sciences Centre	569	9.8%
Toronto	Unity Health Toronto	381	6.6%
East	Perth & Smiths Falls District Hospital	39	0.7%
East	Lakeridge Health	16	0.3%
East	The Ottawa Hospital	495	8.5%
East	Kingston Health Sciences Centre	292	5.0%
Central	Scarborough Health Network	255	4.4%
North	Thunder Bay Regional Health Sciences Centre	162	2.8%
North	Health Sciences North	306	5.3%
North	Sault Area Hospital	17	0.3%
	TOTAL	**5,791**	**100%**

Source: Health Sector Models Branch, Ministry of Health

8.0 Performance Evaluation and Feedback

In introducing QBPs, the Ministry has a strong interest in:

1. Supporting monitoring and evaluation of the impact of QBPs; and
2. Providing benchmark information for clinicians and administrators to promote ongoing quality improvement.

The Ministry, in consultation with experts, developed an approach for evaluation and performance measurement based on the policy objectives of QBPs and a set of guiding principles. This resulted in the creation of an **integrated scorecard** with the following **six quality domains**:

1) Effectiveness (including safety)
2) Appropriateness
3) Integration
4) Efficiency
5) Access
6) Patient-centeredness

The scorecard is based on the following guiding principles:

- **Relevance:** the scorecard should accurately measure the response of the system to introducing QBPs
- **Importance:** to facilitate improvement, the indicators should be meaningful for all potential stakeholders (patients, clinicians, administrators, Ontario Health Regions and the Ministry)
- **Alignment:** the scorecard should align with other indicator-related initiatives where appropriate
- **Evidence:** the indicators in the integrated scorecard need to be scientifically sound or at least measure what is intended and accepted by the respective community (clinicians, administrators and/or policy-decision makers)

The initial Spine QBP Expert Panel recommended the following indicators across the six quality domains of the scorecard to provide a foundation that ensures provision of care that is aligned with best practice principles.

Table 8. Spine QBP Quality Scorecard

What is Being Measured?	Key Provincial Indicators	Expert Panel Recommended Indicators	
		Surgical	Non-Surgical
1. Effectiveness			
What are the results of care received by patients and do the results vary across providers that cannot be explained by population characteristics as well as is care provided without harm?	• Proportion of QBPs that improved outcomes • Proportion of QBPs that reduced variation in outcome • Proportion of (relevant) QBPs that reduced rates of adverse events and infections	1. Post-surgical complication rates (NACRS/DAD) 2. Patient satisfaction with outcomes and pain post spine surgery (patient surveys) 3. Number of spine surgeries performed annually per 10,000 population (NACRS/DAD)	15. Reduced use of opioids and related adverse events (ODB / NACRS / DAD) 16. Number of ED visits for non-emergent spine symptoms (NACRS / DAD) 17. Proportion of non-emergent spine symptoms patients referred for MRI who underwent surgery (Access to Care MRI data / NACRS / DAD)
2. Appropriateness			
Is patient care being provided according to scientific knowledge and in a way that avoids overuse, underuse or misuse?	• Proportion of QBPs that reduced variation in utilization • Proportion of (relevant) QBPs that saw a substitution from inpatient to outpatient/day surgery • Proportion of (relevant) QBPs that	4. Number of surgical referrals (OHIP) 5. Inpatient length of stay for spine surgical patients (NACRS / DAD) 6. Percent of day surgery cases for (NACRS / DAD): • Discectomy	18. Number of specialist referrals for disciplines included in the QBP best practice guidelines (OHIP) 19. Number of MRI scans by PCP and Hospital (MRI data) 20. Number of PCPs that have completed

What is Being Measured?	Key Provincial Indicators	Expert Panel Recommended Indicators	
		Surgical	Non-Surgical
	saw a substitution to less invasive procedures • Increased rate of patients being involved in treatment decision • Proportion of (relevant) QBPs that saw an increase in discharge dispositions into the community	• Laminectomy (lumbar)	spine care education programs (CME credits) 21. Future Development: Number of providers using and documenting the CORE Back or Neck Tool to manage patients with non-emergent spine symptoms (EMR)
3. Integration			
Are all parts of the health system organized, connected and work with another to provide high quality care?	• Reduction in 30-day readmission rate (if relevant) • Improved access to appropriate primary and community care including for example psychosocial support (e.g., personal, family, financial, employment and/or social needs) • Coordination of care (TBD) • Involvement of family (TBD)	7. 30-day readmission rate to hospital (NACRS / DAD) 8. 30 days return to ED following surgery (NACRS / DAD) 9. Percent of PCPs who received hospital discharge report from surgeon within 2 weeks (Developmental Indicator)	22. Percent of QBP spine surgery patients seen by PCP within 2 weeks of surgery (NACRS / DAD / OHIP) 23. Number of Extended Role Practitioners by Region (CPSO / other professional association data source)

What is Being Measured?	Key Provincial Indicators	Expert Panel Recommended Indicators	
		Surgical	Non-Surgical
4. Efficiency			
Does the system make best use of available resources to yield maximum benefit ensuring that the system is sustainable for the long term?	• Actual costs vs. QBP price	10. Number of surgical referrals that receive a surgical procedure within 6 months (OHIP)	24. Proportion of patients referred for repeat spine imaging (MRI, CT, X-ray) for the same complaint (Ministry of Health)
5. Access			
Are those in need of care able to access services when needed?	• Increase in wait times for QBPs / for specific populations for QBP • Increase in wait times for other procedures • Increase in distance patients have to travel to receive the appropriate care related to the QBP • Proportion of providers with a significant change in resource intensity weights (RIW)	11. 90th percentile combined Wait 1 and Wait 2 for QBP non-instrumented spine surgeries (WTIS): • Lumbar procedures (Discectomy; Laminectomy) • Cervical procedures (Laminectomy) 12. 90th percentile combined Wait 1 and Wait 2 for QBP instrumented spine surgeries (WTIS): • Cervical procedures (Anterior Cervical Discectomy and Fusion / Anterior Vertebrectomy; and	25. Same day or next day access to PCP for patients with non-emergent spine symptoms (patient survey) 26. Percentage of evidenced-based active rehabilitation spine care programs by region 27. Percent of patients with non-emergent spine symptoms who have access to evidenced-based active rehabilitation spine care program when needed (patient survey)

What is Being Measured?	Key Provincial Indicators	Expert Panel Recommended Indicators	
		Surgical	**Non-Surgical**
		Fusion / Posterior Decompression and Fusion) • Lumbar procedures (Decompression and Fusion)	
6. Patient-Centeredness			
Is the patient/user at the center of the care delivery and is there respect for and involvement of patients' values, preferences and expressed needs in the care they receive? (TBC)	• Increased rate of patients being involved in treatment decision • Coordination of care (TBD) • Involvement of family (TBD)	13. Percent of surgical patients satisfied with (patient survey): • Interaction with clinical team • Discharge planning • Pre-op education • Post-op education 14. Rate of return to work / ADL (EMR / patient survey)	28. Percent of patients receiving PCP supported early patient self-management (i.e., within the first three months) including: • Goal setting • Information on expectations and chronic disease management (Patient survey / EMR) 29. Percent of non-emergent spine patients satisfied with care co-ordination and communication between providers (patient survey) 30. Rate of return to work / ADL (EMR / patient survey)

What is Being Measured?	Key Provincial Indicators	Expert Panel Recommended Indicators	
		Surgical	Non-Surgical
			31. Future Development: Percent of non-emergent spine patients who are able to manage their pain e.g., pain stability / management (CORE back tool pain scale / EMR)

It should be noted that although not explicitly mentioned as a separate domain, the **equity** component of quality of care is reflected across the six domains of the scorecard and will be assessed by stratifying indicator results by key demographic variables and assessing comparability of findings across sub-groups. Where appropriate, the indicators will be **risk-adjusted** for important markers of patient complexity so that they will provide an accurate representation of the quality of care being provided to patients.

The Ministry and experts recognized that to be meaningful for clinicians and administrators, it is important to tie indicators to **clinical guidelines** and **care standards**. Hence, the Expert Panel that developed the best practices was asked to translate the provincial-level indicators into QBP-specific indicators. In consulting the Expert Panel for this purpose, the Ministry was interested in identifying indicators both for which (1) provincial data is readily available to calculate and (2) new information would be required. Measures in the latter category are intended to guide future discussion with Ministry partners regarding how identified data gaps might be addressed.

In developing the integrated scorecard approach, the Ministry recognized the different users of the indicators and envisioned each distinct set of measures as an **inter-related** cascade of information. That is, the sets of indicators each contain a number of system or provincial level measures that are impacted by other indicators or driving factors that are most relevant at the Ontario Health Region, hospital or individual clinician level. The indicators will enable the province and its partners to monitor and evaluate the quality of care and allow for **benchmarking** across organizations and clinicians. This will in turn support quality improvement

and enable target setting for each QBP to ensure that the focus is on providing high-quality care, as opposed to solely reducing costs.

It is important to note that **process-related indicators** selected by the Expert Panels will be most relevant at the provider level. The full list of these measures is intended to function as a 'menu' of information that can assist administrators and clinicians in identifying areas for quality improvement. For example, individual providers can review patient-level results in conjunction with supplementary demographic, financial and other statistical information to help target care processes that might be re-engineered to help ensure that high-quality care is provided to patients.

Baseline reports and regular updates on QBP specific indicators can be generated by hospitals and clinicians. Reports can be supplemented with results at the Ontario Health Regional and Provincial levels to measure relative performance. Sharing of facility-level information will facilitate dissemination of best practices and target setting at the provider-level.

The Ministry recognizes that the **evaluation process** will be ongoing and will require extensive collaboration with researchers, clinicians, administrators and other relevant stakeholders to develop, measure, report, evaluate and, if required, revise and/or include additional indicators to ensure that the information needs of its users are met.

9.0 Support for Change

The Ministry, in collaboration with its partners, will deploy a number of supports to support adoption of the funding policy. These supports include:

- **Committed clinical engagement** with representation from cross-sectoral health sector leadership and clinicians to champion change through the development of standards of care and the development of evidence-informed patient clinical pathways for the QBPs.
- **Dedicated multidisciplinary clinical expert group** that seek clearly defined purposes, structures, processes and tools which are fundamental for helping to navigate the course of change.
- **Strengthened relationships with Ministry partners and supporting agencies** to seek input on the development and implementation of QBP policy, disseminate quality improvement tools, and support service capacity planning.
- **Alignment with quality levers such as the Quality Improvement Plans (QIPs)**; QIPs strengthen the linkage between quality and funding and facilitate communication between the hospital board, administration, providers and public on the hospitals' plans for quality improvement and enhancement of patient-centered care.
- **Deployment of a Provincial Scale Applied Learning Strategy known as IDEAS** (Improving the Delivery of Excellence Across Sectors). IDEAS is Ontario's investment in field-driven capacity building for improvement. Its mission is to help build a high-performing health system by training a cadre of health system change agents that can support an approach to improvement of quality and value in Ontario.

We hope that these supports, including this QBP Clinical Handbook, will help to facilitate a sustainable dialogue between hospital administration, clinicians, and staff on the underlying evidence guiding QBP implementation. The field supports are intended to complement the quality improvement processes currently underway in each organization.

10.0 Expert Panel Membership

Spine QBP Mini Expert Panel (2021)

Member	Affiliation	Representation
Dr. Raja Rampersaud (Chair)	Orthopaedic Surgeon, Clinician Investigator, University Health Network	Orthopaedic Spine Surgeon
Dr. Eugene Wai	Orthopaedic Surgeon and Epidemiologist, The Ottawa Hospital	Orthopaedic Spine Surgeon
Dr. Albert Yee	Orthopaedic Surgeon, Division Head, Sunnybrook Health Science Centre	Orthopaedic Spine Surgeon
Dr. Fawaz Siddiqi	Neurosurgeon, London Health Sciences Centre	Spinal Neurosurgeon
Dr. Ryan DeMarchi	Neurosurgeon, Health Sciences North	Spinal Neurosurgeon
Darren Gerson	Vice President, Quality and Performance, Sunnybrook Health Sciences Centre	Quality and Performance
Wendy Gerrie	Director, Provincial Integrated Decision Support Program, OHA	Provincial Decision Support
Jane Chen	Manager, Cost and Activity Reporting, University Health Network	Case Costing / Finance
Elizabeth Chiu / Rebecca Hou	Manager / Specialist, Coding and Abstracting, University Health Network	Decision Support

Member	Affiliation	Representation
Andrew Wincen	Senior Decision Support Analyst, Critical Care Services Ontario	Decision Support
Allen Pykalo	Implementation Lead, Provincial Programs Branch, MOH	MOH Representative
Marnie Weber	Executive Director, Strategic Development, University Health Network	Health Administrator
Jessica Curtis	Project Manager, Strategic Development, University Health Network	Project Lead

Initial Spine QBP Expert Panel (2017)

Name	Affiliation	Functional Representation	LHIN Representation
Dr. Raja Rampersaud (Chair)	Orthopedic Spine Surgeon, University Health Network; Lead, ISAEC pilot	Orthopedic Spine Surgeon	Toronto Central
Dr. Julia Alleyne (Co-Chair)	Primary Care Physician with Focused Practice in Sport and Exercise Medicine, University Health Network, Toronto Rehab Institute	Family Medicine	Toronto Central
Dr. Inge Schabort	Family Physician, Stonechurch Clinical	Family Medicine	Hamilton Niagara Haldimand Brant

Name	Affiliation	Functional Representation	LHIN Representation
	Teaching Unit, McMaster University		
Dr. James Rutka	Co-Chair, Provincial Neurosurgery Ontario; Chair, Department of Surgery, University of Toronto	System Planner	Provincial
Dr. Rick Moulton	Chairman, Division of Neurosurgery, The Ottawa Hospital	Neurosurgeon	Champlain
Dr. Ryan DeMarchi	Neurosurgeon, Health Sciences North	Neurosurgeon	North East
Dr. Dominic Rosso	Dr. Dominic Rosso, Director of Interventional and Diagnostic Neuroradiology, Trillium Health Partners	Neuroradiology	Mississauga Halton
Dr. Christopher Bailey	Orthopedic Spine Surgeon, London Health Sciences Centre	Orthopedic Spine Surgeon	South West
Dr. Ronald Pokrupa	Neurosurgeon, Kingston General Hospital	Spine Neurosurgeon	South East
Dr. Anuj Bhatia	Director of Clinical Pain Services in	Anesthesiologist / Pain Specialist	Toronto Central

Name	Affiliation	Functional Representation	LHIN Representation
	Department of Anesthesia, University Health Network		
Dr. Paul Fenton	Radiologist, Musculoskeletal and Spine specialty, Kingston General Hospital	Radiology	South East
Dr. Robert Inman	Director, Spondylitis Program, University Health Network	Rheumatology	Toronto Central
Dr. John Flannery	Director, Musculoskeletal and Multisystem Rehabilitation Program, Toronto Rehabilitation Institute	Physiatry	Toronto Central
Dr. John Kowal	Psychologist, Chronic Pain Management Program, The Ottawa Hospital Rehab Centre	Psychology	Champlain
Jill Burkholder	Past President, Nurse Practitioners Association of Ontario; Primary Health Care Nurse Practitioner, Maple Family Health Team	Nurse Practitioner	South East

Name	Affiliation	Functional Representation	LHIN Representation
Dr. Deborah Kopansky-Giles	Steering Committee Member, Bone and Joint Canada Professor, Canadian Memorial Chiropractic College	Chiropractor	Provincial
Dr. Pierre Côté	Canada Research Chair in Disability Prevention and Rehabilitation, University of Ontario Institute of Technology; Epidemiologist/Chiropractor	Chiropractor / Researcher	Provincial
Caroline Fanti	Practice Leader, Inter-professional Spine Assessment and Education Clinics (ISAEC) program	Physiotherapy	North West
Dr. Andrea Furlan	Scientist, Institute for Work and Health	Methodologist / Researcher	Provincial
Dr. Eugene Wai	Orthopaedic Surgeon and Epidemiologist, The Ottawa Hospital	Methodologist / Researcher	Champlain
Dr. Fawaz Siddiqi	Neurosurgeon, Researcher, Health Care Delivery Model	Methodologist / Researcher	South West
Dr. Chaim Bell	Adjunct Scientist, ICES	Health Services Researcher	Provincial

Name	Affiliation	Functional Representation	LHIN Representation
Dr. Angela Chung	Founding Director of University Health Network Osteoporosis Program, the Founding Director of Centre of Excellence in Skeletal Health Assessment (CESHA)	Senior Scientist / Osteoporosis	Toronto Central
Elizabeth Chiu	Manager of Coding and Abstracting, University Health Network	Decision Support	Provincial
Marnie Weber	Executive Director, Strategic Development, University Health Network	Hospital Administrator	Toronto Central
Patti Cochrane	Senior Vice President, Clinical Strategy and Chief Innovation Officer, Trillium Health Partners	Hospital Administrator	Mississauga Halton
Michael Stewart (ex-officio)	Project Lead, Quality Alignment to Payment, Health Quality Branch, Ministry of Health and Long-Term Care	System Planner	Provincial

Name	Affiliation	Functional Representation	LHIN Representation
Allison Costello (ex-officio)	Manager (A), Quality Programs and HQO Liaison, Health Quality Branch, Ministry of Health and Long-Term Care	System Planner	Provincial
Seetha Kumaresh (ex-officio)	Acting Program Manager for the Blended Models Unit in Primary Health Care Branch, Ministry of Health and Long-Term Care	System Planner	Provincial
Cindy VandeVyvere	Senior Planner, Critical Care Services Ontario	Project co-Lead	Provincial
Samra Mian	Corporate Planner, University Health Network	Project co-Lead	Provincial
Tanya Mohan	Senior Business Analyst, Critical Care Services Ontario	Project Support	Provincial
Paul Santaguida	Program Director, Health Quality Programs (HQP)	Project Support	Provincial

Appendix A: Patient Assessment, Self Management & Referral Pathway

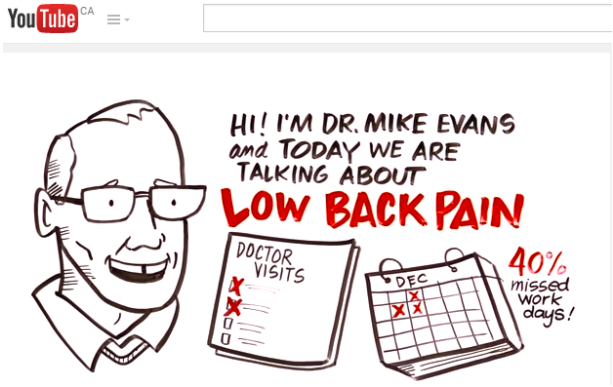
This appendix contains content from the initial Non-Emergent Integrated Spine Care QBP Clinical Handbook in September 2017, which included a detailed outline of the care processes for the Patient Assessment, Self Management & Referral Pathway (Boxes 1-5 in Figure 3).

Box 1. Patient Experiences Non-Emergent Spine Symptoms

The pathway begins with the patient experiencing non-emergent spine symptoms that are persistent or recurrent in nature. Prognosis for managing these symptoms is largely favourable. Majority are not caused by any serious underlying injury or disease. Patients can benefit from lifestyle changes and increased mobility rather than diagnostic tests. Assessment and support from a PCP is recommended to effectively support patients in managing their non-emergent spine symptoms.

Education tools are currently available to help patients to understand and to self-manage their low back symptoms (the same self-management principles apply to patients with neck pain):

- **Self-management video** to educate and increase awareness of self-management tools and techniques in patients experiencing low back symptoms. The video is created by Dr. Mike Evans (Health Design Lab) and developed in collaboration with the Centre for Effective Practice and the Institute for Work & Health. Available online: https://www.youtube.com/watch?v=BOjTegn9RuY



- **Patient Education Inventory** that provides useful links on general patient education and mechanical pain management. Available online: http://www.health.gov.on.ca/en/pro/programs/ecfa/docs/lb_tk_edu_bw.pdf

Box 2. Patient Self-Referral

Patients for whom symptoms do not resolve will seek a PCP.

1) Patients will be able to identify appropriate symptoms (early identification of red flags[ii])
2) Patients will not fully respond to self-management
3) Patients will identify new or escalating symptoms

Box 3. Community-Based Health Care

The expectation is that most patients presenting with spine symptoms will be managed by a PCP. As outlined in the Ontario acute low back pain standards, the PCP should undertake careful clinical assessments prior to referring for imaging investigations and/or to specialist. Share-cared principles outlined above should be applied to actively engage the patient in self-managing their spine symptoms. The PCP should maintain responsibility for the ongoing management of the patient and participate in bi-directional communication between health care providers involved in managing patients with spine symptoms.

Ontario Low Back Pain Quality Standard (Care for Adults with Acute Low Back Pain): https://www.hqontario.ca/evidence-to-improve-care/quality-standards/view-all-quality-standards/low-back-pain

Box 3a. Assessment

Spine Complaints: Low Back

The **Clinically Organized Relevant Exam Back Tool (CORE Back Tool)** assists PCPs with assessing patients who present with low back complaints to support risk stratification for appropriate screening, referral, and management.

The tool guides the PCP through questions that assist with the following assessments and/or management strategies:

- History taking and physical examination to determine whether the causes of pain are benign mechanical, or more threatening
- Screening for red flags that identify secondary causes of low back symptoms that may warrant further diagnostic work-up and/or immediate referral and treatment

[ii] Red flag conditions are a result of serious medical disorders that require emergent, urgent and /or specialized assessment and management by a health care professional.

- Screening of yellow flags to facilitate psychosocial assessment to determine the patient's risk of chronicity
- Identification of back complaint pattern
- Patient education, goal setting and patient self-management.
- Referral, treatment recommendation (includes goal-specific rehabilitation, specialist referral, and medication), and follow-up time frame

The **CORE Back Tool** is available through the Centre for Effective Practice at: https://cep.health/media/uploaded/CEP_CORE_Back_2016.pdf

Spine Complaints: Neck

The assessment of neck complaints should follow the same principles outlined for patient presenting with low back related complaints. The importance and implications of assessing for red flags in the low back, is also critical in patients with neck complaints. In addition neck conditions (as well as those affecting the thoracic spine) may result in compression of the spinal cord leading to myelopathy, which is more common than Cauda Equina Syndrome (CES) and can range in its clinical presentation from subjective neurological complaints such as hand numbness to progressive tetraplegia. Screening for myelopathy in patients with neck complaints, like CES in the low back is mandatory for all practitioners.

The **Clinically Organized Relevant Exam Neck Tool (CORE Neck Tool)** assists PCPs with assessing patients who present with neck complaints to support risk stratification for appropriate screening, referral, and management.

The tool guides the PCP through questions that assist with the following assessments and/or management strategies:

- History taking and physical examination to determine whether the causes of pain are benign mechanical, or more threatening
- Screening for red flags that identify secondary causes of neck symptoms that may warrant further diagnostic work-up and/or immediate referral and treatment
- Screening of yellow flags to facilitate psychosocial assessment to determine the patient's risk of chronicity
- Patient education, goal setting and patient self-management
- Referral, treatment recommendation (includes goal-specific rehabilitation, specialist referral, and medication), and follow-up time frame

The **CORE Neck Tool** is available through the Centre for Effective Practice at: https://cep.health/media/uploaded/CEP_HeadandNeck_2016_v15.2-1.pdf

Box 3a. Management

A summary of the **Guideline for Evidence-Informed Primary Care Management of Low Back Pain** has been endorsed in Ontario. The guideline outlines evidence-informed decisions about care for low back complaints and support:

- Use of evidence-informed conservative approaches to the prevention, assessment, diagnosis, and treatment in primary care patients with low back symptoms
- Appropriate specialist referrals and use of diagnostic tests in patients with low back complaints
- Engagement of patients in appropriate self-care activities

- A Summary of the **Guideline for the Evidence-Informed Primary Care Management of Low Back Pain** is available online: https://actt.albertadoctors.org/CPGs/Pages/Low-Back-Pain.aspx
- A **clinically focused online accredited course** can support PCPs with assessing and managing low back pain is available online: http://www.health.gov.on.ca/en/pro/programs/ecfa/action/primary/lower_back.aspx
- An **evidence-based guideline for the management of neck pain** is available online: https://www.fsco.gov.on.ca/en/auto/Documents/2015-cti.pdf

  Although this guideline aims to inform the management of neck pain resulting from traffic collision, the recommendations were informed by the entire body of literature on neck pain (regardless of etiology).

Box 3a. Patient Education and Goal Setting

PCPs should recognize a patient's active role in their care. Patients must be engaged as partners in self-managing their spine symptoms, treatment, physical and social consequences, and lifestyle changes.[22]

PCPs should facilitate self-management strategies with a patient during clinic office visits. Effective facilitation of patient self-management requires the following:

- Teaching self-management skills to solve patient-identified problems

- Implementing self-management skills that are generalizable
- Building patient self-confidence to yield better outcomes (e.g. decrease pain and increase function)
- Increasing patient's self-efficacy

Enabling patient self-management requires at least 1-3 primary care office visits (see Table 9).

Table 9. Office Visits to Enable Patient Self-Management

Checklist	Considerations
Visit 1: ☑ Assessment ☑ Reassurance ☑ Pain symptom ☑ Activity Management	• Primary care driven during the office visit • Patient responds in office to movement, education, and exercise
Visit 2: ☑ Advanced Pain Symptom Management ☑ Home Exercise ☑ Reassurance and Return to Activities	• Referral to rehab provider for education and exercise • Needs consistency in implementing exercise and education given in 1-2 (30-45 minute) sessions
Visit 3: ☑ Referral for Goal Specific Therapy	• This is the person who has concurrent or recurrent episodes, presence of myofascial triggers, high demand work, poorer coping skills • Referral for goal-oriented therapy: Short course sessions (e.g. 4-6 sessions) using manual therapy, education, progressive exercise, motivational counselling. • Please see rehabilitation criteria in Box 5d below.

Box 3b. Extended Role Practitioner

A PCP can also consider referring a non-emergent spine patient to an extended role practitioner for a focused spine assessment. These practitioners undertake similar focused examination for clinical decision-making as outlined in the section above (Box 3a: Patient Education and Goal

Setting). In addition to these assessments, these practitioners offer greater spine expertise and should provide more comprehensive focused spine care assessment and specific management plans linked to coordinated patient goal setting for spinal conditions.

Focused spine assessments can be completed by two practitioner types:

1. Focused Practice Family Physician: Family physicians with a Focused Practice Designation who can offer specialized services to manage patients with neck and low back symptoms. The scope of specialization for these physicians includes addiction medicine, pain management, sports medicine, physical medicine and rehabilitation, or psychotherapy.
2. Extended Role Therapists: Rehabilitation professionals with advanced clinical practice training in spine related musculoskeletal/ arthritis care can also offer specialized services to manage patients with neck and low back symptoms.

A **list of family physicians with a Focused Practice Designation** can be obtained from the Ontario Medical Association: https://www.oma.org/

Box 4. Referral Criteria to Specialist

PCPs can refer to specialists for further assessment or treatment of patient with spine symptoms. Any one of the specialists in Box 5 can also identify the need to refer to another specialist. Ideally, the communication should be sent to the patient's family physician and/or other referring PCP to support shared-care communication and responsibility.

Box 5. Specialty Care

Criteria to support PCPs with the referral of patients with spine symptoms to respective specialists have been defined by the Expert Panel. The referral criteria were assessed for feasibility of implementation through focus groups with PCPs across Ontario. The criteria are also relevant to specialists who can also refer to one another as appropriate.

Box 5a. Spine Surgery Referral Criteria

Prior to referral to a spine surgeon for treatment the following diagnostics and assessments should be completed by the referring provider:

- CORE Back or Neck Tool or similar assessment
- Imaging (see Appendix B for **Low Back Pain Imaging Pathway** developed by the Provincial Diagnostic Imaging Appropriateness Panel for MSK and Spine)

Based on findings, the following patients (see Table 10) are appropriate for referral to a spine surgeon.

The findings from the assessment should be shared by the referring provider with the spine surgeon at the time of referral.

The criteria assume that patients have typically failed a 6-12 week course of appropriate non-operative treatments (see rehabilitation criteria in Section Box 5d). For patients who are deteriorating, referral to a spine surgeon should be considered sooner.

Table 10. Referral Criteria to Spine Surgeon

Appropriate for Office Referral to Spine Surgeon (any of)	
Low Back	**Neck**
Any of: 1. Leg dominant pain (Constant/Intermittent) 2. Major structural pathology (e.g. spondylolisthesis or scoliosis / kyphosis) 3. Functionally significant neurological deficit(s) related to spinal pathology	Any of: 1. Arm dominant pain (Constant / Intermittent) 2. Major structural pathology (e.g. spondylolisthesis or scoliosis / kyphosis) 3. Functionally significant neurological deficit(s) related to spinal pathology or patient presents with stable or slowly progressive myelopathy regardless of functional significance
Not Appropriate for Referral to Spine Surgeon (any of)	
Low Back	**Neck**
Any of: 1. Non-mechanical pain (e.g. pain not associated with movement or activity); if there is uncertainty regarding red flags – seek surgical referral. 2. Uncomplicated persistent back dominant pain in the absence of major structural pathology (e.g. degenerative disc disease,	Any of: 1. Non-mechanical pain (e.g. pain not associated with movement or activity); if there is uncertainty regarding red flags – seek surgical referral. 2. Uncomplicated persistent neck dominant pain in the absence of major structural pathology (e.g. degenerative disc disease

and/or facet arthrosis is not considered major structural pathology). 3. Inflammatory back pain	and/or facet arthrosis is not considered a major structural pathology). 3. Inflammatory neck pain

Note: Reminder that urgent or emergent referral to emergency room should be considered when patient presents with red flags, particularly with severe/ progressive neurological deficit.

Box 5b. Rheumatology Referral Criteria

The following patients are appropriate for referral to a rheumatologist:[23] [24]

Table 11. Referral Criteria to Rheumatologist

Appropriate for Referral to Rheumatologist

Patients at risk for inflammatory arthritis:
• Spine pain with multiple joint swelling and tenderness
• Spine pain >3 months duration, typically with onset < 45 years of age
• And any two of the following:
  ○ Early morning stiffness > 30 minutes
  ○ Improvement of pain with exercise not with rest
  ○ Pain at night (with improvement upon getting up)
  ○ Associated uveitis, inflammatory bowel disease, or psoriasis

<u>Not Appropriate</u> for Referral to Rheumatologist
• Arm/Leg dominant pain • Neurological symptoms • Established diagnosis of an inflammatory condition being followed by Rheumatologist

Box 5c. Psychology/Psychiatry Referral Criteria

Psychological factors have been found to play an important role in recovery from spine pain.[25] Disability is significantly predicted by patient perceptions about their spine pain symptoms, maladaptive beliefs related to the controllability of their condition, and low self-efficacy in their ability to perform ADL despite existing pain.

To manage these patients effectively, the psychologist/psychiatrist to whom the patient is being referred must have the following skillset:

- ✓ Knowledge about spine pain (e.g. hurt vs. harm, acute vs. chronic pain, biopsychosocial approach)
- ✓ An ability to teach adaptive symptom management strategies (e.g. relaxation techniques, goal setting, problem-solving, assertive communication, sleep hygiene, etc.)
- ✓ An ability to help patients identify and modify maladaptive thoughts and beliefs
- ✓ An ability to help patients modify their behaviour using established behavioural principles and more generally, an ability to provide treatment in a supportive, empathic, and encouraging manner.

To coordinate shared care, mental health professionals are encouraged to communicate with PCPs (with the patient's informed consent) on clinical impressions and treatment recommendations.

Prior to referral to a psychologist or psychiatrist for evidence-based treatment, the following diagnostics/ assessment should ideally be completed by the referring provider:

- Completion of any one of the established screening measures*:
  - ☑ **Keele STarT Back Screening Tool:** a 9-item tool designed to identify patients with low, medium, and high risk of chronicity - patients identified as "high risk" should ideally be referred for mental health services.[26] [27] [28] https://startback.hfac.keele.ac.uk/
  - ☑ **PHQ-4:** a 4-item screening measure for depression and anxiety that contains the first two items of both the PHQ-9 depression scale and the GAD-7 anxiety scale - a score of at least 3 (out of 6) is accepted as the cut-off for both depression (2 items) and anxiety items (2 items).[29] https://www.oregonpainguidance.org/app/content/uploads/2016/05/PHQ-4.pdf
  - ☑ **PSEQ-2**: a 2-item screen for pain self-efficacy with a proposed clinical cut-off score less than or equal to five (5).[30] https://www.sciencedirect.com/science/article/pii/S0033318213001424?casa_token=dfG_tE7kVfcAAAAA:l2dTpj1YqY1GMXlFaYiz17iGB4QaIE9rkXmaQEfQumVQWfcDyzWDDSSxWNVYzOkIVDKOV4cN6g

* Prior to completion of any of the above-mentioned screening measures, the referring provider should assess the readiness and emotional well-being of the patient to participate in these assessments.

- Review and adjustment of psychotropic medications with referral to psychiatry, as indicated.

Based on findings, the following patients are appropriate for referral to a psychologist or psychiatrist (see Table 12).

The findings from the assessment should be shared by the referring provider with the psychologist or psychiatrist at the time of referral.

Table 12. Referral Criteria to Psychologist/Psychiatrist

Appropriate for Spine Related Referral to Psychologist/Psychiatrist
Any one of the following: • Psychosocial factors related to dealing with the impact of spine symptoms (e.g. fear, anxiety, pain-related beliefs, and sadness) • Psychosocial factors that are exacerbated by the presence of the spine symptoms (e.g. depression, anxiety, and opioid abuse risk) • Environmental and/or psychosocial stressors that impact recovery from spine symptoms (e.g. poverty, family dysfunction, and job dissatisfaction)
Not Appropriate for Spine Related Referral to Psychologist/Psychiatrist
Any one of the following: • Acute risk of suicide • Presence of an unstable or unmanaged major psychiatric condition • Currently stable and receiving adequate, available, and ongoing support from a mental health professional

Possible treatment options include:

1. **1-2 visits of psycho-educational supportive counselling**

    - For individuals deemed to be a "low" risk for chronicity and with mild psychosocial distress
    - Focus on encouraging activity and self-management; avoidance of unhelpful labels and medicalization; provision of oral and written communication

2. **Six (6) session group psycho-educational curriculum (e.g. Living a Healthy Life with Chronic Conditions)**

    - For individuals amenable to group-based treatment and with "low" or "moderate" risk of chronicity and mild to moderate psychosocial distress

- Focus on self-management strategies, including relaxation, goal setting, pacing, exercising, communication.

3. Individual (one-on-one) Cognitive Behavioural Therapy (CBT)

- For individuals with "high" risk of chronicity and elevated levels of psychosocial distress
- Based on empirically supported CBT treatment principles and protocols
- In addition to the self-management strategies noted above, treatment focuses on cognitive, emotional, and behavioural responses to pain and the impact on functioning across life domains

It is recognized that there are barriers to accessing mental health services, including cost and lack of local resources. This is a broader system issue that extends beyond the current initiative. Some patients may have coverage through health benefits or employee assistance programs. Others could access services through community-based organizations or counseling centres, some of which offer services on sliding fee scales.

Box 5d. Outpatient Rehabilitation Referral Criteria

Referral to outpatient rehabilitation can be indicated in some patients presenting with spine symptoms. To manage these pain patients effectively, the rehabilitation provider to whom the patient is being referred must have the following skillset:

- ✓ A knowledge of the evidence-based interventions that may benefit a patient (sometimes the best treatment is education and reassurance)
- ✓ A knowledge of the course and prognosis of the condition
- ✓ Ability to establish SMART goals[iii] (https://brocku.ca/webfm/PRP_SmartGoals_pdf.pdf) and to progress these goals with the patient
- ✓ Ability to prescribe and progress exercise
- ✓ Ability to modify, assess and treat functional limitations pertaining to work, home or fitness pursuits that could limit activity tolerance
- ✓ Ability to provide manipulative and soft tissue therapy including massage, mobilizations, myofascial release techniques, contract-relax muscle work
- ✓ Ability to provide condition specific education and facilitate patient self-management
- ✓ Ability to integrate evidence-based treatment protocols
- ✓ Willing to engage and collaborate in inter-professional communication and care
- ✓ Understand opioid management

[iii] SMART goals are Specific, Measurable, Attainable, Relevant, and Timed

Prior to referral to rehabilitation practitioner for treatment the following diagnostics and assessments should be completed by the referring provider:

- An understanding of where the patient is along the natural history of the condition
- An assessment of yellow flags/risk factors for delayed recovery (in particular patient's expectation of recovery)
- A discussion about patient preferences for and accessibility to treatment (e.g. cost, transport, availability of services)

Based on findings, the following patients (see Table 13) are appropriate for referral to a psychologist/ psychiatrist.

The findings from the assessment should be shared by the referring provider with the outpatient rehabilitation provider at the time of referral.

Table 13. Referral Criteria to Outpatient Rehabilitation Provider

Appropriate for Referral to Outpatient Rehabilitation Provider
Any one of the following: • Absence of red flags • Patient whose medical pain management has been optimized to be able to engage in active exercises • Patient who is open to implementing new information and/or strategies into their management program (e.g. goal setting, self-management focus)
Not Appropriate for Referral to Outpatient Rehabilitation Provider
Any one of the following: • Presence of red flags (consider referral to an appropriate specialist) • High pain levels that interfere with activities and function (consider referral for pain management in primary care or specialist care) • Presence of comorbid psychiatric condition that interfere with activities and function (consider facilitating home exercise, education, self-management) • Inability to attend regular sessions to complete treatment plan due to work/life demands (consider facilitating home exercise, education, self-management) • Higher priority problem that requires further investigations (e.g. significant medical pathology) prior to clearance for a rehabilitation-focused program (consider referral to an appropriate specialist)

Box 5e. Pain Specialist Referral Criteria

Prior to referral to a pain specialist for treatment, the following assessments should be completed by the referring practitioner to:

- Understand where the patient is along the natural history of the condition
- Assess yellow flags
- Assess patient's constant nature of pain

The referring practitioner should consider completing an **established screening measure**:

- **CORE Back Tool** or similar assessment to support physician with assessment of red and yellow flags and assess whether pain experienced by the patient is intermittent or constant; completion of a 10-point visual analog scale can assist PCPs with measuring the severity of pain experienced by the patient.
- PCPs may consider completing a more comprehensive pain rating scale that may help facilitate referral e.g., **Brief Pain Inventory**,[31] **painDetect**,[32] **McGill Short-Form questionnaire**,[33] or others.

Based on findings, the following patients (see Table 14) are appropriate for referral to a pain specialist. The findings from the assessment should be shared by the referring practitioner with the pain specialist at the time of referral.

Table 14. Referral Criteria to Pain Specialist Provider

Appropriate for Referral to Pain Specialist Provider
• High constant pain levels that interfere with activities and function • Presence of yellow flags • Patient who identifies active goals for treatment and self-management • Patient who is open to implementing new information into their management program • Patient who is on escalating/high doses of pain medications (e.g. opioids)
Not Appropriate for Referral to Pain Specialist Provider
• Presence of red flags (referral to appropriate specialist) • Higher priority problem that requires further investigations (e.g. significant medical pathology) prior to clearance for pain focused program (referral to appropriate specialist)

PCPs may consider prescribing the pharmacological therapies to patients prior to referral to a pain specialist.

The **Cochrane Back Review Group** has described findings from systematic reviews on the evidence for the following pharmacologic treatments for spine pain:

- **Antidepressants:** There is no clear evidence in antidepressants reducing depression in chronic low back pain patients compared to placebo. There is conflicting evidence in antidepressants reducing pain intensity compared to placebo.
- **Non-steroidal anti-inflammatory drugs (NSAIDS):** NSAIDs are effective for short-term symptomatic relief in patients with acute and chronic low-back pain without sciatica, yet no specific type of NSAID is clearly more effective than others.
- **Opioids:** There is some evidence for short-term efficacy of opioids to treat chronic low back pain compared to placebo.

The **Cochrane Back Review Group** has published a set of the summary slides (QuickDecks) that provide a snapshot of evidence on various treatment and prevention measures for back and neck pain to support clinical decision-making. These are available online at: http://www.iwh.on.ca/cbrg-quickdecks

PCPs may consider referring a patient for interventional pain procedures for pain that is unresponsive to conventional pharmacological (acetaminophen, non-steroidal anti-inflammatory medications) and physical therapy.

The referral criteria assume that patients are not responsive to appropriate first line conservative care. Interventional pain procedures should be used as second line treatment.

Criteria for referring patient for Cervical Facet Joint Intra-Articular Injection, and diagnostic and therapeutic (radiofrequency) blockade of the nerve supply to cervical facet joints:

At least six months of continuous neck pain that can be attributed to the facet joint with the following features:

- Predominate axial (i.e. neck dominant and non-radicular) pain in Para spinal area
- Moderate-to-severe pain intensity (> 4/10 score on a numeric rating scale for pain) AND
- No other clear structural cause of neck pain
- Symptoms may typically include associated history of trauma to neck (e.g. whiplash), restriction of motion, and exacerbation of pain on extension, lateral flexion, and rotation and/or alleviation of pain on flexion

Criteria for referring patient for Cervical Epidural* Steroid Injections:

At least one month of predominantly upper limb radicular pain with the following features:

- Pain in a dermatome consistent with the site of pathology on imaging of the spine
- Moderate-to-severe pain intensity (> 4/10 score on a numeric rating scale for pain)

* Epidural steroid injections are not indicated for back or neck dominant pain (i.e. axial pain).

Criteria for referring patient for Lumbar Epidural* or Selective Nerve Root Steroid Injections:

At least one month of predominantly lower limb radicular pain with the following features:

- Pain in a dermatome consistent with the site of pathology on imaging of the spine
- Moderate-to-severe intensity (> 4/10 on a NRS for pain)

* Epidural steroid injections are not indicated for back or neck dominant pain (i.e. axial pain).

Criteria for referring patient for Lumbar Facet Joint Intra-Articular Injection, diagnostic and therapeutic (radiofrequency) blockade of the nerve supply to lumbar facet joints:

At least six months of continuous low back pain referable to the facet joint with the following features:

- Predominate axial (i.e. back dominant and non-radicular) pain in Para spinal area
- Moderate-to-severe pain intensity (> 4/10 score on a numeric rating scale for pain)
- There is no other clear structural cause of low back pain
- Symptoms may typically include restriction of motion, and exacerbation of pain on extension, lateral flexion, and rotation and/or alleviation of pain on flexion

Criteria for referring patient for sacroiliac joint intra-articular injection, diagnostic and therapeutic (radiofrequency) blockade of the nerve supply to sacroiliac joints:

At least six months of continuous low back pain referable to the sacroiliac joint with the following features:

- Non-radicular pain in sacroiliac joint area
- Moderate-to-severe intensity (> 4/10 score on a numeric rating scale for pain)
- There is no other clear structural cause of low back pain
- Symptoms may typically include restriction of motion, and/or exacerbation of pain on extension, lateral flexion, and rotation

Criteria for referring patients for paraspinous intramuscular injections:

Short-term use of these therapies (e.g. up to one week) may help in relieving muscle spasms and facilitation rehabilitation in patients who have persistent, unmanageable neck or low back pain for more than three months that is associated with "trigger points".

- There are no other clear structural cause of neck or low back pain

Box 5f. Osteoporosis Specialist Referral Criteria

Patients with any of the following general osteoporosis related factors (see Table 15) may benefit from referral to a physician with expertise in osteoporosis.[34]

Table 15. Referral Criteria to Pain Specialist Provider

Appropriate for Referral to Osteoporosis Specialist Provider
• Fracture or significant ongoing loss of bone mineral density despite good adherence while on first-line therapy • Intolerance of first- and second-line therapies • Any secondary cause of osteoporosis that is outside the expertise of the primary care physician • Extremely low bone mineral density. Referral is also recommended for patients with persistent spine pain, progressive kyphotic deformity, or additional fractures following an index osteoporotic spine fracture.

Specific guidance with respect to screening and primary care management of osteoporosis is out of scope for this QBP.

For further information please refer to the **Canadian Clinical Practice Guidelines for the Diagnosis and Management of Osteoporosis**[34] or access related clinical tools and resources online at: https://osteoporosis.ca/tools/.

Appendix B: Low Back Pain Imaging Pathway

This appendix contains content from the initial Non-Emergent Integrated Spine Care QBP Clinical Handbook in September 2017, which included a Low Back Pain Imaging Pathway.

The Low Back Pain Imaging Pathway has been developed by the Provincial Diagnostic Imaging Appropriateness Panel for Musculoskeletal and Spine. The project Sponsors were Dr. Jeff A. Bloom, Lee Fairclough, Dr. Raja Rampersaud, Catherine Wang, Dr. Larry White and the Joint Department of Medical Imaging Mount Sinai Hospital, University Health Network, and Women's College Hospital Toronto, Canada. The membership of the expert panel is:

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Low Back Pain Imaging Pathways based on dominant clinical presentation are as follows:

Low Back Pain Imaging Pathway Summary

Subcategory and Descriptions	Imaging Recommendation
1. Back-dominant pain	
• No leg symptoms • Normal neurological exam • Manageable No red flags	**Imaging is not indicated*** Link to References
2. Back-dominant pain	
• Unmanageable; recurrent; progressive • Chronic (≥3 months) • Normal neurological exam • No red flags • No yellow flags	**Imaging is not indicated*** Link to References
3. Back-dominant pain with yellow flags	
• Yellow flags are psychosocial barriers that mayhinder recovery in a patient with low back pain • No red flags	**Imaging is not indicated*** Link to Reference *Imaging can detect abnormalities that are not clinically relevant, prompting negative back behaviour and hindering recovery[6].* Link to Reference

Subcategory and Descriptions	Imaging Recommendation
4. Leg-dominant pain	
• Intermittent or constant • Manageable • No red flags	**Imaging is not indicated*** Link to References
5. Leg-dominant pain	
• Unmanageable due to severity or duration • Functionally significant neurologic deficit • Failure to resolve (6-12 weeks) • No red flags	**Imaging is indicated and Referral for surgical consultation** MRI preferred; if contraindicated or not available, then CT Link to References
Rationale	
*Imaging for low back pain without indication of serious underlying conditions is not associated with improved outcome [1,2]. Such imaging reveals a high prevalence of clinically irrelevant and misleading findings [2-5]. Link to References	

Back Pain with Red Flags

Subcategory and Descriptions	Imaging Recommendation
Suspected cancer	X-ray & MRI** ** X-ray alone is not indicated as a diagnostic tool due to high false negative rate
Suspected spinal infection	X-ray & MRI** ** X-ray alone is not indicated as a diagnostic tool due to high false negative rate
Suspected fracture	Fragility → X-ray High-Energy → X-ray & CT
Suspected inflammatory disease	Rheumatology consultation

Severe/progressive neurologic deficit	Emergent management: MRI & consultation to surgery | or immediate referral to ED
Cauda equina syndrome	Emergent management: MRI 7 consultation to surgery | or immediate referral to ED

Red Flags

Subcategory & Descriptors	**Imaging Recommendation**
Low back pain with red flags	**Imaging is indicated**
Suspected cancer	Referral for x-ray (standing views) and MRI *X-ray alone is not indicated as a diagnostic tool due to high false negative rate
Suspected spinal infection	Referral for x-ray (standing views) and MRI *X-ray alone is not indicated as a diagnostic tool due to high false negative rate
Suspected fracture	a) Fragility → Referral for X-ray b) High=Energy → Referral for X-ray & CT
Suspected inflammatory disease	Referral for Rheumatology consultation
Severe/progressive neurologic deficit	Emergent management required: 1) Urgent imaging with MRI and immediate consultation to surgery, or 2) Immediate referral to Emergency Department
Cauda equina syndrome	Emergent management required: 1) Urgent imaging with MRI and immediate consultation to surgery, or 2) Immediate referral to Emergency Department

1. Back-Dominant Pain, Manageable

Subcategory & Descriptors	Imaging Recommendation	Future Considerations
Back-dominant pain • No leg symptoms or leg symptoms less severe than back • Normal neurological exam • Manageable • No red flags	**Imaging is not indicated** Link to References *Imaging for low back pain without indication of serious underlying conditions is not associated with improved outcome [1,2]. Such imaging reveals a high prevalence of clinically irrelevant and misleading findings [2-5].* Link to References	Clinical reassessment to rule out progression or change in pattern of pain
Additional Recommendations		
Patient Education, Multidisciplinary Approach, Supportive Resources Additional Resources Recommended Exercises, Other Supportive Material Communication Tips		

2. Back-Dominant Pain, Unmanageable

Subcategory & Descriptors	Imaging Recommendation	Future Considerations
• Unmanageable; recurrent; progressive • Chronic (≥3 months) • Normal neurological exam • No red flags • No yellow flags	**Imaging is not indicated** Link to References *Imaging for low back pain without indication of serious underlying conditions is not associated with improved outcome [1, 2]. Such imaging reveals a high prevalence of clinically irrelevant and misleading findings [2-5].* Link to References	If patient does not demonstrate good response to adequate attempt of conservative management (~6-12 weeks), **consider x-ray** – standing views. Consider referral (where possible) to specialized multi-disciplinary assessment and management clinic.

		Cross sectional imaging (CT, MRI) not indicated.
Additional Recommendations		
Patient Education, Multidisciplinary Approach, Supportive Resources Additional Resources Recommended Exercises, Other Supportive Material Communication Tips		

3. Back-Dominant Pain with Yellow Flags

Subcategory & Descriptors	Imaging Recommendation	Future Considerations
Back-dominant pain with yellow flags • Yellow flags are psychosocial barriers that may hinder recovery in a patient with low back pain • No red flags **Examples:** • Belief that pain and activity will cause physical harm • Excessive reliance on rest, time off work or dependency on others • Persistent low or negative moods, social withdrawal • Problems at work, poor job satisfaction • Unsupportive/dysfunctional or dependent family relationships • Over exaggeration/catastrophizing of pain symptoms	**Imaging is not indicated** Link to References *Imaging can detect abnormalities that are not clinically relevant, promoting negative back behaviour and hindering recovery [6].* *Imaging for low back pain without indication of serious underlying conditions is not associated with improved outcome[1-2]. Such imaging reveals a high prevalence of clinically irrelevant and misleading findings[2-5].* Link to References	Clinical reassessment to rule out progression or change in pattern of pain. Consider scheduling review to reassess barriers and encourage use of additionally recommend resources. Consider referral (where possible) to specialized multi-disciplinary assessment and management clinic.
	Additional Recommendations	
	Patient Education, Multidisciplinary Approach, Supportive Resources Additional Resources Recommended Exercises, Other Supportive Material	

Source: Clinically Organized Relevant Exam (CORE) Back Tool	Communication Tips

4. Leg-Dominant Pain, Manageable

Subcategory & Descriptors	Imaging Recommendation	Future Considerations
Leg-dominant pain • Intermittent or constant • Manageable • No red flags	**Imaging is not indicated** Link to Reference *Imaging for leg-dominant low back pain without indication of serious underlying conditions is not associated with improved [1, 2]. Such imaging reveals a high prevalence of clinically irrelevant and misleading findings [2-5].* Link to Reference	Clinical reassessment to rule out progression or change in pattern of pain
Additional Recommendations		
Patient Education, Multidisciplinary Approach, Supportive Resources Additional Resources Recommended Exercises, Other Supportive Material Communication Tips		

5. Leg-Dominant Pain, Unmanageable

Subcategory & Descriptors	Imaging Recommendation
Leg-dominant pain • Unmanageable due to severity or duration • Functionally significantly neurologic deficit • Failure to resolve (6-12 weeks)	**Imaging is indicated and Referral for surgical consultation** MRI preferred; consider CT if MRI is contraindicated or unavailable Link to Reference

• No red flags	
Additional Recommendations	
Patient Education, Multidisciplinary Approach, Supportive Resources Additional Resources Recommended Exercises, Other Supportive Material Communication Tips	

Appendix C: Spine QBP Development Framework and Stakeholder Engagement

This appendix contains content from the initial Non-Emergent Integrated Spine Care QBP Clinical Handbook in September 2017, including:

- MOH Evidence-Based Framework for Spine Care (previously Section 3.5 in the 2017 handbook)
- Clinician and Patient Engagement (previously Section 3.7 in the 2017 handbook)

MOH Evidence-Based Framework for Spine Care

The evidence-based framework in Figure 1 was used to identify a QBP for non-emergent spine patients that has the potential to improve quality of care, standardize care delivery across the province and show increased cost efficiency. The following five perspectives of the framework were considered:

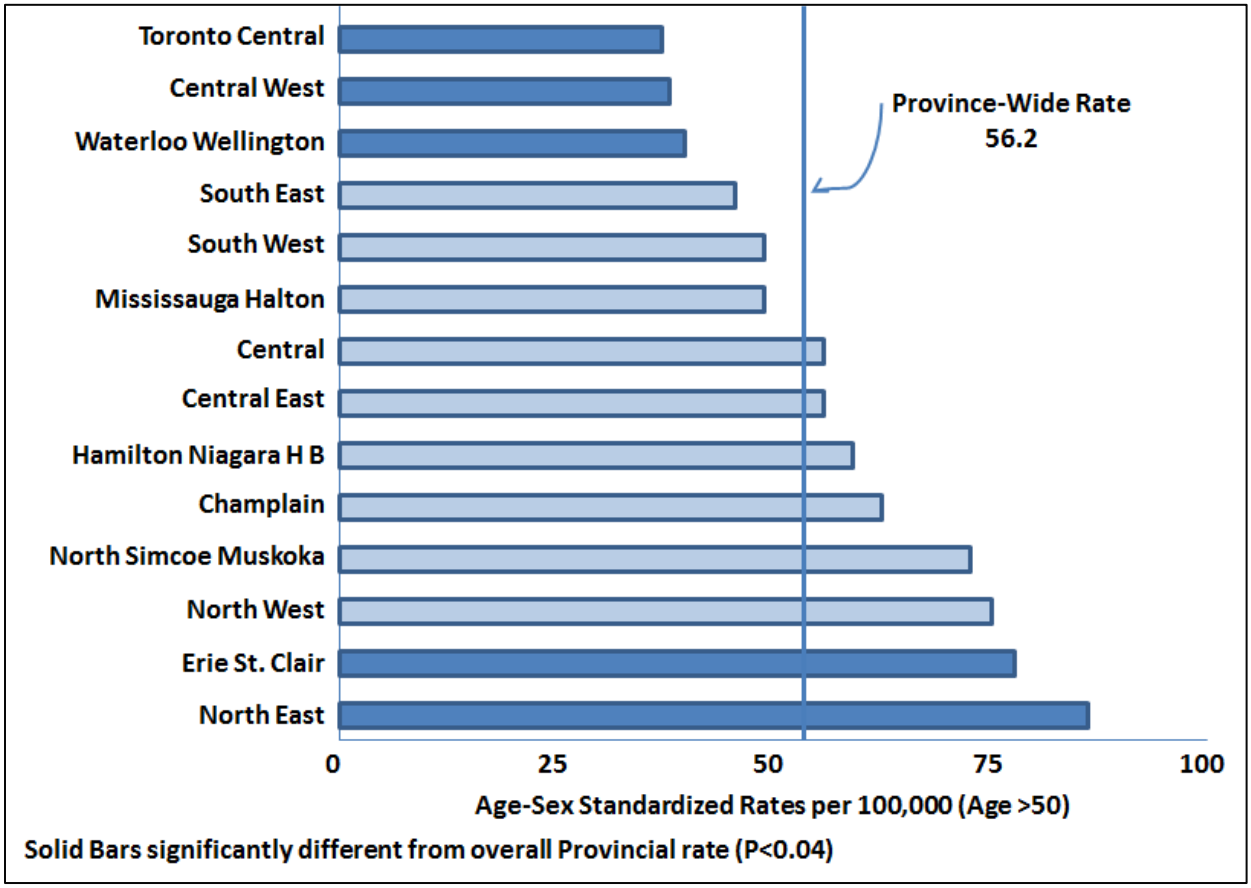
Practice Variation

Current models for spine care in Ontario are fragmented. An integrated approach to assessment, treatment, and management for spine pain and other associated spine symptoms is lacking despite the roles of providers and referral guidelines being well understood.[15] [16] [35] [36] [37] [38] [39]

It is known that:

- Referral patterns to specialists for spine surgery as well as advanced imaging poorly reflect current clinical practice guidelines.[40] [41] [42] [43]
- The efficacy and outcomes of increasing available tests and treatments for spine symptoms is unclear.[44] [45] [46] [47]
- Wide variations exist in spine interventions.[48] [49] Disease prevalence and community resources have not been found to be related to surgical rates.[50] In Ontario, surgical rates for degenerative disease of the lumbar spine show significant variability across LHINs and do not correlate with disease prevalence or community resources (see Figure 10).

Figure 10. Surgical Rates for Degenerative Disease of Lumbar Spine by LHIN (Year 2002-2006)



Availability of Evidence

This QBP is built on the existing practice evidence base in Ontario and involves a broad range of practitioners across the full continuum of care. It expands on the following work:

- The Ministry has endorsed the **Clinical Practice Guidelines for Evidence-Informed Primary Care Management of Low Back Pain** for Ontario primary care physicians. The guideline offer evidence-informed decisions about care of patients with non-specific, non-malignant low back pain. It provides PCPs recommendations on prevention, assessment and management of acute, subacute, and chronic low back symptoms.[16] https://actt.albertadoctors.org/CPGs/Pages/Low-Back-Pain.aspx
- The Centre for Effective Practice has developed the **Clinically Organized Relevant Exam (CORE) Back Tool** which guides the PCP to recognize common mechanical back pain syndromes and screen for other conditions where management may include investigations, referral and specific medications. This is a focused examination for

clinical decision-making in primary care:[51]
https://cep.health/media/uploaded/CEP_CORE_Back_2016.pdf

- The Ministry has endorsed the **Low Back Pain Toolkit** developed by the Centre for Effective Practice to assist with the assessment and management of patients with low back pain in primary care settings. It includes a new tool designed to meet the needs of PCPs by bringing together existing tools and evidence into a one-page easy to use summary/charting tool (see link to CORE Back Tool above): http://www.health.gov.on.ca/en/pro/programs/ecfa/docs/lb_tk_overview_bw.pdf
- The **Financial Services Commission of Ontario (FSCO) Minor Injury Guideline** has been recently developed by the Ontario Protocol for Traffic Injury Management (OPTIma) Collaboration to prescribe evidence-based treatment for common injuries after motor vehicle accident for use by insurers and health care providers. Evidence included review of neck pain beyond non-motor vehicle accidents. Therefore the guidelines are broadly applicable to neck pain: https://www.fsco.gov.on.ca/en/auto/Documents/2015-cti.pdf

Feasibility/Infrastructure for Change

Established groups in Ontario can champion implementation of this QBP. Implementation of the QBP will be supported by the Provincial Neurosurgery Ontario, the QBP Clinical Expert Advisory Group, and the Bone and Joint Health Network

The QBP is built on the Ontario Ministry's Low Back Pain Strategy,[52] which aims to improve access and quality of care through:

- **Primary care education tools** to enhance the knowledge of providers and patients, and give them access to approaches and tools that will support high quality care for patients with low back pain: http://www.health.gov.on.ca/en/pro/programs/ecfa/action/primary/lb_edutools.aspx
- **Inter-professional Spine Assessment and Education Clinic (ISAEC)** pilot program to offer a more streamlined and evidence-based access to specialists and diagnostic imaging services where it is deemed appropriate. Patients will be better supported to effectively manage their spine symptoms and receive targeted and effective therapies as needed: https://www.lowbackrac.ca/
- **Primary care low back pain pilot program** to support inter-professional primary care teams to provide better patient care through more effective treatment and management of their symptoms: http://www.health.gov.on.ca/en/pro/programs/ecfa/action/primary/lower_back.aspx

- Evidence-based amendments to the **Schedule of Benefits**, improving access to patients with lower back complaints who are in most need of diagnostic services: http://www.health.gov.on.ca/en/pro/programs/ecfa/action/primary/lb_sob.aspx

The QBP leverages data sources to support implementation.

- OHIP data was used to examine primary care practice utilization patterns for non-urgent spine disorders and identify patient groups appropriate for the integrated non-emergent spine pathways. Diagnostic codes were identified by the Expert Panel to capture spine symptoms in primary care and in emergency departments.
- DAD and NACRS data sources can be used to identify inpatient and outpatient surgical spine procedures provided in hospital settings.

Cost Impact

The burden on the Ontario health system is significant due to delays in accessing care, inappropriate referrals and testing, and unresolved symptoms for patients.

In Canada, the annual medical expenditure related to low back complaints is estimated to be up to $12 billion.[53] Low back pain is the 3rd leading cause of disability adjusted life years in North America.[54]

In 2013/14, there were over 800,000 patients who presented to primary care with a diagnosis code for neck or low back symptoms (OHIP diagnosis codes 722, 724, 847).

- This represents 9.6% of the adult Ontario population. In addition, these visits for neck and low back complaints in primary care represent 3.3% of all primary care visits recorded.
- These volumes are felt to under represent the burden of neck or low back complaints. The volumes reflect scenarios where the diagnosis codes were utilized to identify neck and low back complaints as the primary reason for visit. It does not reflect the scenario where a patient presents with multiple conditions including spine complaints where the spine aspects of the visit are not coded.
- It is believed that for subsequent primary care visits, neck or low back symptoms may not be captured as the primary cause for the visit.

The wait times for spinal surgery are not meeting provincially set targets.

- For lumbar laminectomies/discectomies in 2014/15, 22% of patients did not receive surgery within the Wait 2 target [Combined Priority 3 of 8 weeks and Priority 4 Wait 2 target of 26 weeks [iv]].
- Similarly, for anterior cervical discectomy and fusions 15% of patients did not receive surgery within the Wait 2 target, and 24% of patients did not receive care within Wait 2 target for other spinal surgeries [Combined Priority 3 of 8 weeks and Priority 4 Wait 2 target of 26 weeks].

In Ontario, new models of care to improve referral practices and associated pre-surgical consultation imaging are expected to result in a savings of up to $25 million annually.[55]

- In Ontario, there is a move to standardize practice for diagnostic test ordering (e.g. x-ray, CT, MRI) for low back patients (see MOH **Schedule of Benefits**[56] and Low Back Pain Imaging Pathway in Appendix B). This work will increase appropriateness and access to imaging tests by defining clear indications for diagnostic testing for low back complaints: http://www.health.gov.on.ca/en/pro/programs/ecfa/action/primary/lb_sob.aspx
- The first two years of the ISAEC pilot has resulted in a 32% reduction in spine-related imaging from PCPs involved in the pilot compared to their peers over the same time period.[57]

Impact on Transformation

This QBP will support appropriate resource utilization through the development of protocols for appropriate primary care and community-based management, diagnostics, day surgery and inpatient surgery, and specialist referral for spine care.

The QBP uses shared-care principles across the entire continuum of spine care to support delivery of the right care by the right people at the right time and to engage patients as active partners in care to improve their outcomes.

Implementation of best practices through the QBP clinical pathways will standardize care delivery, support appropriate referrals from primary care to specialists (e.g. surgeons,

[iv] Wait 2 is the wait time from decision to treat by the care team until the surgical intervention is performed. Priority 3 patients have moderate pain symptoms; symptoms moderately impact ability to perform usual work day; there is low probability that treatment delay will adversely affect physical or cognitive abilities; occasional unscheduled health care encounters. The target Wait 2 time for these patients is 8 weeks. Priority 4 patients have mild or occasional pain symptoms; elective indication for surgery; symptoms have minimal impact ability to perform usual work day; there is low probability that treatment delay will adversely affect physical or cognitive abilities. The target Wait 2 time for these patients is 26 weeks.

rheumatologists, pain specialists, psychologists/ psychiatrists) and reduce unnecessary wait times for services (e.g. MRI).

Clinician and Patient Engagement

Clinician Engagement

A Clinical Expert Advisory Group (Expert Panel) was convened to develop the Non-Emergent Integrated Spine Care QBP Clinical Handbook.

The Expert Panel membership included primary care physicians, nurse practitioners, physiotherapists, chiropractors, radiologists, spine surgeons, physiatrists, anesthesiologists, rheumatologists, psychologists, health system researchers, hospital administrators, health coding and costing experts and Ministry representatives. Members provided clinical, administration, and provincial perspectives on spine care.

The Expert Panel sought input from stakeholders in the field when appropriate.

- The Provincial Neurosurgery Ontario Advisory Board (PNO) provided provincial perspectives to guide considerations for QBP implementation. PNO is comprised of representatives from each of the province's adult and paediatric neurosurgical centres, as well as representatives from Critical Care Services Ontario, CritiCall Ontario, Rehabilitation Services, Local Health Integration Networks, and Health Quality Ontario.
- Focus groups with PCPs from across Ontario were held to understand primary care perspective on best practices outlined in the QBP. Participants included family physicians, chiropractors, physiotherapists, and nurse practitioners who offered both urban and rural geographic perspectives on the provision of care for neck and low back complaints.

Patient Engagement

To support a patient-centred approach for best practice pathway development, patients were asked about their experience receiving neck and low back care via patient surveys and focus groups.

Patients were recruited from a broad range of primary care settings including:

- Center for Effective Practice
- Ontario Nurse Practitioner Led Clinic Leads
- Canadian Memorial Chiropractic College

- ISAEC referral network
- QBP Expert Panel member network

The patient survey asked about patients' experiences living with neck or back pain symptoms, treatments received and outcomes, and ability to access care. Survey responses were received from 203 patients from across Ontario: 35% of responses were received from chiropractic clinics, 25% from family practices, and 20% from surgical practices. Provider settings for 20% of responses were unknown. Focus groups were conducted with 16 survey respondents (7 male; 9 female). Half were 65 years of age or younger.

Findings from survey responses and focus groups showed the following:

Neck and low back symptoms greatly impacted patients' ability to perform activities of daily living (ADL) and their overall quality of life. Because of their symptoms, patients were unable to walk short distances, had limited activity, dressed more slowly, and had worrying thoughts about safely engaging in physically active, the ability for their pain to improve and taking part in things that they used to enjoy.

Patients try a variety of treatment options including self-management care, supervised exercise programs, over the counter medications, allied health professionals (chiropractor, physiotherapists), alternative providers (e.g. acupuncture), prescription medication, steroid injections, surgery etc.

Patients rely more on advice from a health care provider compared to a friend/relative or web, print, and media. Patients seek advice from their health care provider on the following: expected length of time to recover, when to seek medical help, ways to reduce and control pain, and activities that they should be doing or avoiding.

Patients value:

- The need for OHIP coverage for chiropractic, physiotherapy, and massage therapy services. Patients expressed concern that the lack of coverage and costs for non-OHIP insured services was a barrier to effective treatment.
- An interdisciplinary approach to care for their neck and low back symptoms.
- Shared communication between health care professionals across the care continuum to avoid the patient acting as the messenger
- Focus on patient education: patients need to better understand their condition, to have a plan ('road map') of their treatment and to "take ownership" of managing their symptoms

- Reduction in waiting time for spine treatment. Patients felt that wait times were too long for imaging, spine surgery, and specialist pain treatment.

These survey and focus group findings were used to incorporate the patient's perspectives into the development of the best-practice pathways.

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