### Program Name:

<table>
<thead>
<tr>
<th>Primary Care Focus on Low Back Pain</th>
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</thead>
<tbody>
<tr>
<td>• Julia Alleyne, BHSc, MD, CCFP, Dip Sports Med, FACSM, MScCH</td>
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<tr>
<td>• John Axler, MD, CCFP, FCFP</td>
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<td>• Katie Hunter, Msc</td>
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<td>• Deborah Kopansky-Giles, BPHE, DC, FCCS(C), FICC</td>
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<tr>
<td>• Sandra Lincoln, BSc(PT), MSc</td>
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<td>• Rhona McGlasson, BScPT, MBA</td>
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<tr>
<td>• Shirlee OConnor, RN(EC), BScN, NP-PHC</td>
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<tr>
<td>• Jess Rogers, BA</td>
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<td>• Judie Surridge, RN, BA</td>
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### Planning Committee:

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- Jess Rogers, BA
- Judie Surridge, RN, BA

### Expert committee

- Julia Alleyne, BHSc, MD, CCFP, Dip Sports Med, FACSM, MScCH
- Hamilton Hall, MD, FRCSC
- Barry Malcolm, MD, FRCSC, MBA
- Ravinder Ohson, MBBS, CCFP, FCFP
- Raja Rampersaud, MD, FRCSC

### Accreditation Information:

This version of the program is unaccredited and intended for informational purposes only. An accredited version is available online at [www.mdBriefCase.com](http://www.mdBriefCase.com) / [www.AdvancingIn.com](http://www.AdvancingIn.com) until October 7, 2015.

### Sponsor:

This case study is supported by an educational grant from: Centre for Effective Practice.
Primary Care Focus on Low Back Pain

Main

Course Objectives:

1. To describe the current evidence based guidelines for the acute, persistent and recurrent low back pain patient.
2. To conduct an efficient high yield evidence-based history and examination for mechanical low back pain patients.
3. To describe the steps for engaging your patient in a self management strategy for improved sustainability of outcomes.
4. To effectively apply the CORE Back Tool and other relevant clinical tools to case based scenarios in order to integrate course learning.
Accreditation

This program meets the accreditation criteria of The College of Family Physicians of Canada and has been accredited for up to **4.0 Mainpro-M1 Credits**. Physicians in all provinces, including Quebec, may claim credit for completing this program. In accordance with the requirements outlined in the College of Family Physicians of Canada's Mainpro® – Accreditation of other CME formats, this online learning activity must be completed within a 4-week time frame.

This program has been funded by the Ministry of Health and Long Term Care (MOHLTC) as part of the Let’s Make Healthy Change Happen initiative. For more information, visit ontario.ca/lowbackpain or www.effectivepractice.org/lowbackpain.

Program available online until: June 1, 2014

Background

**Primary Care Focus on Low Back Pain** is a course designed for primary care providers through the Province of Ontario with the goal of improving patient outcomes, decreasing unnecessary resource utilization and increasing capacity for comprehensive primary care. This course will introduce the CORE Back Tool, which has been designed by engaging primary care providers and specialists in the design process.

This course will be presented in 4 main vignettes:

- Low Back Pain Status Report
- Clinical Assessment of Low Back Pain
- Patient Self Management
- The Clinical Tool Kit

This program was designed by the Centre for Effective Practice and acknowledges the course designer, Dr. Julia Alleyne, who was the educational consultant on the project. The educational curriculum was developed by faculty members Dr. Julia Alleyne and Dr. Hamilton Hall, in consultation with the Education Planning Committee and informed by the development of the Provincial Low Back Pain Toolkit. Included in the toolkit is the **new CORE** (Clinically Organized Relevant Exam) Back Tool & Guide, developed under the clinical leadership of Drs. Julia Alleyne, Hamilton Hall and Raja Rampersaud with the review and advice of the Education Planning Committee and primary care focus groups. All committee members are listed below. (Note that all committee members have completed conflict of interest forms, which are available upon request by email: info@effectivepractice.org).

We strongly encourage organizations and providers to consider hosting or participating in education sessions to provide training on the evidence, skills and approach underpinning this toolkit, prior to using the CORE Tool and complete toolkit.

The CORE Tool and Guide are licensed under a Creative Commons Attribution-Noncommercial-NoDerivs 2.5 Canada License. You are free to Share (copy, distribute and transmit the work) given that you provide attribution, do not use the work for commercial purposes and do not alter, transform or build
upon this work without contacting the Centre for Effective Practice. If you're interested in building upon this work or use the tools for commercial purposes, contact info@effectivepractice.org.

Pre-Test

1. For each of the following rate your level of confidence when assessing a patient with new onset low back pain: 1 Not at all confident to 5 Very Confident

- Screening for Red Flags
- Determining criteria for evidence based imaging
- Determining criteria for surgical referral
- Explaining management strategies to patients

2. How confident are you in assessing and managing a Low Back Pain patient who comes to your office with new onset symptoms of: 1 Not at all confident to 5 Very Confident

- Back Dominant Low Back Pain
- Recurrent Back Dominant Pain with referred leg pain
- Leg Dominant Pain
- Leg Dominant Pain with radicular signs including nerve root irritation

3. What would help you to increase your confidence for any of the above?

4. In the absence of red flags, what are the most common reasons for a referral of a patient with Low Back Pain and/or Leg Pain to a spinal surgeon?

<table>
<thead>
<tr>
<th>Reason</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of chronic back pain not responsive to conservative treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of persistent radiating leg pain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of altered sensation in affected leg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT/MRI indicating any disc pathology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT/MRI indicating clinically relevant nerve root compression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT/MRI indicating spinal cord compression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credible source for patient diagnosis and management plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clarification of work related modifications and restrictions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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The following content is unaccredited and intended for informational purposes only.
Patient would like second opinion on management

Other, please specify: ______________________

5. Which of the following statements best reflects your approach to the care of patients with new onset Low Back Pain in the first 4 weeks?

[I do not see low back pain patients in my practice (skip logic)]

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly agree</th>
<th>Somewhat agree</th>
<th>Neutral</th>
<th>Somewhat disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I recommend bed rest for the first 3-7 days and then activity as advised by a physiotherapist or chiropractor</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I advise my patient to stay as active as they are able to tolerate as this will help reduce their symptoms.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I screen the patient for red flags to determine appropriate need for imaging or surgical referrals</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I often order a lumbar xray if low back pain has been present for at least 3-4 weeks</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I may prescribe short-acting analgesics including opioids for the first 4-6 weeks if severe pain symptoms interfere with function</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>I recommend lumbar supports to my patients who are required to lift or stand at work</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

6. Which clinical tools do you find most helpful in assessment and management of Low Back Pain?

- 3 Minute Back Exam
- Brief Pain Inventory
- CORE Back Tool
- POCKET Red Flag Tool
- Opioid Manager
- 4 Patterns of Mechanical Low Back Pain (e.g. Saskatchewan Tools)
- Clinical Practice Guidelines (e.g. Alberta TOP guidelines)
• Other: (open text comments box)

7. To what extent are you currently using the CORE Back Tool in your practice?
   Not at all   A little   Somewhat   To a great extent   Not applicable
   ○       ○       ○       ○       ○

8. What would help you improve your assessment and management of your Low Back Pain patients?

9. Any other comments about why you are interested in Low Back Pain?

Thank you!
On behalf of the Centre for Effective Practice, we thank you for your feedback.

If you have any other questions or comments about the Low Back Pain Online Module, please contact Katie Hunter at katie.hunter@effectivepractice.org.

We encourage you to visit: www.ontario.ca/lowbackpain or www.effectivepractice.org/lowbackpain

Welcome
• Video: Welcome Video
• Add text under: Dr. Julia Alleyne provides an Introduction to the Low Back Pain Program.

Program Overview
Welcome to our latest vignette series: Primary Care Focus on Low Back Pain
This program consists of four vignettes. You may complete as many vignettes as you choose, however, you are encouraged to complete all vignettes in the order they are listed.

This program has been accredited by the College of Family Physicians of Canada for up to 4 Mainpro-M1 credits.

Instructions to Learner
Each vignette can be accessed by clicking on the images found on the vignette selection page.
The vignette index tab within each vignette section will allow you to access the previous vignette, the vignette selection page, or the next vignette.
Once a vignette is completed, participate in the discussion forum within each vignette to receive accreditation.
The main program navigation bar can be accessed from the vignette selection page.
Vignette Selection

1. Low Back Pain Status Report
   - This vignette provides learners with a better understanding of the evidence supporting the assessment and management of patients with low back pain through a number of interactive case scenarios.

2. Clinical Assessment of Low Back Pain
   - This vignette will prepare the learner to conduct an efficient high yield evidence-based history and conduct a physical examination identifying the common patterns of low back pain presentations.

3. Patient Self Management
   - This vignette introduces the key skills required to effectively incorporate Patient Self Management (PSM) into discussions with patients with low back pain.

4. The Clinical Tool Kit
   - This vignette will review each component of the Provincial Toolkit for Low Back Pain, including the newly developed CORE Back Tool & Guide and provide an interactive opportunity to apply the tools to a case scenario.

Note: The Resource Section contains additional material and links to enhance you learning. We encourage you to take advantage of this section.

Vignette 1: Low Back Pain Status Report

Main

This vignette provides learners with a better understanding of the evidence supporting the assessment and management of patients with low back pain through a number of interactive case scenarios.

Learning objective:

Upon completion of this vignette, the learner will be able to:

- Describe the current evidence based guidelines for the acute, persistent and recurrent low back pain patient.

Gaps and Barriers

Test Yourself

What is your most common barrier to implementing best care for your patients? Choose only one.

- Patient expectations
- Activity management
- Patient education
- Access to spine surgeons
- Access to other specialist
- Access to imaging
Ontario – Gaps and Barriers

- Approximately 90% of MRI back scans will show abnormalities, but will not impact clinical decision making (Orthopaedic Expert Panel, 2010).
- Abnormal findings from imaging results usually cause a higher intensity of care than evidence would suggest is necessary.
- The majority of low back pain patients will benefit from lifestyle changes, which often leads to better outcomes for patients than diagnostic tests.
- 25% of low back pain patients will develop persistent or chronic low back pain and have traditionally utilized more services in imaging, referral and family practice visits.

Practice Tip: Provincial adoption of evidence-based care for low back pain will lead the way to improving patient outcomes and system savings from reduction of unnecessary costs.

Figure. Website for Provincial Low Back Pain Strategy (http://www.effectivepractice.org/lowbackpain)
Low Back Pain - Common Gaps in Primary Care

The literature has identified common barriers to optimal low back pain care that are consistent across health care systems internationally. These common gaps in care can be divided into **Patient, Provider and System**. In the 2010 publication, *Managing Low Back Pain in the Primary Care Setting: The Know-Do Gap*, Scott et al. identified 14 studies in primary care settings where clinical practice was compared to guideline recommendations and consistently found gaps in red flag assessment, diagnostic imaging criteria, activity advice, medications and treatment recommendations. Here are some of the common issues encountered by patient, provider and the health care system when dealing with low back pain issues.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Provider</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of understanding for reason to investigation/refer</td>
<td>Dealing with complex chronic low back pain</td>
<td>Poor communication between patient providers for care</td>
</tr>
<tr>
<td>Desire for funding for physiotherapy</td>
<td>Patient expectations for MRI requests &amp; referrals</td>
<td>Lack of coordinated patient education material</td>
</tr>
<tr>
<td>Lack of self-management strategies</td>
<td></td>
<td>Lack of web resources</td>
</tr>
<tr>
<td>Request for more medications</td>
<td></td>
<td>Lack of consensus on guidelines</td>
</tr>
<tr>
<td>Request for time off work</td>
<td></td>
<td>Lack of common approach between providers assessment and treatment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Common Gaps in Primary Care
Lack of understanding of urgent symptoms versus pain escalation

Acute Low Back Pain – What are the Current Guidelines?

Case – Ms. Espina

Ms. Espina is a 42 year old Nurse who noticed the gradual but progressive onset of low back pain 2 weeks ago which she thinks might be related to starting some tennis lessons. She has visited your office today because she is beginning to have some radiating pain into her left buttock and she finds that she cannot sit for longer than 10 minutes before her pain begins to worsen. She has been using some over-the-counter medications and does get relief. She has not noticed any loss of sensation or change in her bladder or bowel control. She is otherwise healthy and has two children aged 12 and 16 years.

What care would you provide for her according to Guideline Recommendations?

What do the Guidelines Say?

TOP Alberta, Towards Optimizing Practice, issued Low Back Pain guidelines that were seeded by 7 of the international guidelines and provide quick and easy synopsis of information for the provider and the patient. Take a look at the website to help you decide what is best for Ms. Espina.

Guideline Recommendations

Practice Tip: The guidelines for management of acute low back pain pertain to the first 4-6 weeks of symptoms and recommend the following:

- History, Physical, Neurological Assessment
- Screen for Red and Yellow Flags
- No Imaging unless Red Flags are present
- Educate, Exercise, Activity Prescription
- Self-care Strategies
- Consider Analgesics

Red Flags

Red flags are risk factors for serious pathology that may indicate the need for investigations, referrals or management for conditions other than mechanical low back pain. It is prudent to screen for red flags on all first visits for low back pain and on any follow-up visits where the patient is not responding to treatment without a reason.

Practice Tip: In remembering the red flags, you may want to use the mnemonic NIFTI.
**N- Neurological**  
**I – Infection**  
**F- Fracture**  
**T- Tumour**  
**I - Inflammatory**

**Test Yourself**
Which one of the following are examples of red flags for low back pain? Choose only one.

a) Referred pain below the knee with intermittent tingling  
b) Waking at night with positional pain and morning stiffness  
c) Urinary retention followed by insensible urinary overflow  
d) Recurrent bladder infection with stress incontinence

**Sub- Acute Low Back Pain – What are the Current Guidelines?**

**Case – Mr. Ryggard**
Mr. Ryggard is a 39 year old, sedentary office worker, who has come to see you for the 4th visit related to his low back pain which started 10 weeks ago. He states that he is experiencing “good days and bad days” and complains of a dull ache across his lumbar area which can vary from a 3-9/10 on a pain scale. He has recently started some massage therapy which gives him temporary relief. He has found that he needs regular medication to deal with his pain and is spending more time lying down when he is not at work. He thinks that some time off would help improve his pain and discomfort.

What care would you provide for him according to Guideline Recommendations?

**What do the Guidelines Say?**
Sub-acute low back pain occurs when a patient has experienced symptoms of low back pain for 6-12 weeks even if they previously had an episode, which resolved and then some time later re-occurred. Often, in sub-acute low back pain, patient self-management is not consistent and the primary care provider needs to focus on emphasizing the key messages for optimal management.

**Practice Tip: Key Messages for Your Patient**

- Your examination today does not demonstrate that there are any red flags present to indicate serious pathology, but if your symptoms persist for > 6 weeks, schedule a follow-up appointment.  
- Imaging tests like X-rays, CT scans and MRIs are not helpful for recovery or management of acute or recurring low back pain unless there are signs of serious pathology.  
- Low back pain is often recurring and recovery can happen without needing to see a healthcare provider. You can learn how to manage low back pain when it happens and use this information to help you recover next time.  
- You may need pain medication to help you return to your daily activities and initiate exercise more comfortably. It is activity, however, and not the medication that will help you recover more quickly.
If you are feeling symptoms of sadness or anxiety, this could be related to your condition and could impact your recovery: schedule a follow-up appointment.

Guideline Recommendations
The New Zealand Yellow Flags Guidelines describe the psychosocial risk factors for development of chronic pain in low back pain patients. Traditionally, the identification of chronic low back pain has been delayed and treatment has been less effective. Within the current guidelines, it is recommended that early identification of risk factors for chronicity should be built into the assessment and management of low back pain in the acute and sub-acute stages so that appropriate counselling, medication and education can be initiated to improve outcomes.

There are four key areas to assess:

- Belief that Back pain is harmful
- Fear-avoidance of activity
- Tendency to low mood or withdrawal
- Reliance on passive treatment for recovery

Download the Alberta TOP Yellow Flags Summary (PDF)

Test Yourself
Which of the following would not be a “yellow flag” question for patient interview?

a) How do you manage your pain in day-to-day activities?
b) Have you found that your mood has changed as you are dealing with low back pain?
c) Would you describe your work environment as positive or negative for your back condition?
d) Do you have any dependents that you are responsible for?

Recurrent or Persistent Low Back Pain – What are the Current Guidelines?

Case – Ms. Coluna
Ms. Coluna complains of a 10 month history of low back pain which is described as initially having recurrent “ups and downs” with some pain-free days but now complains of constant pain for the last 3 months. She is frustrated and has tried physiotherapy, chiropractic care and massage. She states that she had tried each type of treatment for at least 2-3 visits but her pain remains unresolved. She has been given a home exercise program but is confused because sometimes it hurts her and sometimes it helps her so she has stopped doing it. She would like to try a new type of “electrical traction” therapy that a neighbour said had helped her.

What care would you provide for him according to Guideline Recommendations?

What do the Guidelines Say?
This stage of back pain relates to as early as 6 weeks and up to 12 months since the episode onset. This group of patients is more complex and often challenging to manage in family practice. The frustration of
both patient and provider can lead to ordering of unnecessary diagnostic tests or referrals in an attempt to find pathology to explain the persistence. Yet, in the absence of red flags despite escalating pain and decreasing function, there is no indication for investigation or referral. Often, we feel that a lack of treatment response at this stage can be reason for investigation but, more correctly, this would only be the case if there was failure to respond to evidence based compliant conservative care of at least 12 weeks.

The 2007 American College of Physicians and the American Pain Society issued a publication entitled “Diagnosis and Treatment of Low Back Pain: A Joint Clinical Practice Guideline”. The table available here from this guideline, provides an overview of evidence-based active rehabilitation treatment. The evidence for treatment effectiveness is still emerging for some modalities but this guide is correct in principle that “active” care being exercise, patient education and activity management has yielded much better outcomes than “passive “ care such as prolonged modalities, lumbar supports or traction.

Here are two excellent guidelines for assessing appropriate goal-specific therapy. **Think of the last patient who asked you about a particular therapy to try, now take a look through the resources and see if it is evidence-based.**


**Diagnosis and Treatment of Low Back Pain: A Joint Clinical Practice Guideline from the American College of Physicians and the American Pain Society (2007)**

**Chronic Low Back Pain- What are the Current Guidelines?**

**Case – Mr. Slabinski**

Mr. Slabinski has been dealing with low back pain for 12 months. He has learned to modify his activities and he chooses to garden to maintain his activity. He takes daily acetaminophen and will sometimes combine with ibuprofen for increased effectiveness. He uses occasional massage for reduction of intermittent muscle tension and wants to avoid any medications that might be addictive. He has visited your office to learn more about possible medication options.

What care would you provide for him according to Guideline Recommendations?

**What do the Guidelines Say?**

Chronic Low Back pain does not mean Chronic Pain Syndrome.

The difference is that Chronic Low Back Pain will have a mechanical component and is localized to the lumbar patterns of pain but the nature of pain is more frequent, higher intensity and there are seldom episodes of full relief for any length of time. These patients require medications, self-management and exercise to maintain their quality of life as they can become discouraged and depressed.
Chronic Pain Syndrome, on the other hand, is a psychosocial disorder that occurs in some patients with chronic non-cancer pain in which symptoms of the pain can incapacitate the patient and pain signals can be altered through the brain affecting sleep patterns, sensitivity and mood stability.

Chronic Low Back Pain patients strive for stability in their pain and functional capacity but they can experience exacerbations and onset of new low back pain symptoms. Therefore, never forget to screen for red or yellow flags when symptoms become unstable in any way.

**Download the Patient Education Handout from the Alberta TOP Guideline (PDF)**

**Test Yourself**
Which of the following medication regimes for pain management would be supported by the current guidelines? Choose one.

a) Daily low dose muscle relaxants to a maximum of three doses per day during the first 4 weeks of an acute low back pain episode.

b) Trial of gabapentin medication if pain is escalating and not well controlled with non-opioid analgesics

c) Trial of short acting opioids in patient with acute onset radicular leg pain who cannot work due to constant and high intensity pain

d) Topical diclofenac applied three times a day to low back area in patient who is unable to tolerate systemic non-steroidal medications due to recent gastric ulcer and has low grade but recurrent symptoms of back pain.

**Introducing the CORE Back Tool**
The Centre for Effective Practice undertook an evaluated process to determine appropriate clinical tools for primary care assessment and management of Low Back Pain. This included the use of an integrated knowledge translation process to collaborate with providers by doing an inventory of current tools, employing a needs assessment through focus groups, consulting an expert group, review with a curriculum education committee and employing focus groups for usability testing.
The key questions that the primary care focus groups were asked were:

- Can this tool be realistically implemented in Real Time for primary care?
- Is this tool relevant for primary care?
- Will this tool assist clinical decision making for improved patient outcomes?
The results of the process was the development of the Clinically Oriented Relevant Exam (CORE) Low Back Pain Tool in response to the needs identified by primary care providers to integrate multiple existing tools and evidence into a comprehensive single tool for use in practice. The tool includes sections on: high yield history, red flags, yellow flags, radiology and surgical referral criteria, physical assessment, patient education and management.

We will be referring and integrating the tool into our clinical teaching in the remaining few vignettes so that you are comfortable implementing this into your practice.

**Download the CORE Back Tool (PDF)**

**Discussion Forum**

1. In patients with acute low back pain, would you prescribe muscle relaxants? If so, what dose and for how long? If not, why not?
2. How do you reassure patients that investigations and especially MRI is not needed for best practice when many other conditions are managed with lots of investigations?
Resources

Guidelines


Patient Handouts

Chronic Pain Patient Education Handout (Alberta TOP Guideline)

Tools

Clinically Oriented Relevant Exam (CORE) Low Back Pain Tool

DN4 Questionnaire

Opioid Manager

Learn more about the Provincial Low Back Pain Strategy at ontario.ca/lowbackpain or http://www.effectivepractice.org/lowbackpain.

Vignette 2: Clinical Assessment of Low Back Pain

Main

This vignette will prepare the learner to conduct an efficient high yield evidence-based history and conduct a physical examination identifying the common patterns of low back pain presentations.

Learning objective:

Upon completion of the vignette, the learner will be able to:

- Conduct an efficient high yield evidence-based history and examination for mechanical low back pain patients.
Introduction

In 1987, the Quebec Task Force on Spinal Disorders proposed a diagnostic classification to help make clinical decisions, evaluate quality of care, assess prognosis, and conduct research. The conclusions of initial literature review and research stated that “distinct patterns of reliable clinical findings are the only logical basis for back pain categorization and subsequent treatment.”

There has been much international research and publication supporting an approach to low back pain where mechanical pain patterns are differentiated into four patterns; two back dominant and two leg dominant. The leg pain is differentiated as being referred pain without neurological signs in the back dominant cases or radicular pain with signs of nerve root involvement in the leg dominant cases where there may be irritant pain or conduction loss of sensory or motor function.

More than 90% of back pain seen in family practice is the result of minor alterations in spinal mechanics. It is rarely the result of malignancy, infection, systemic illness or major trauma. Most back pain is mechanical, that is pain directly related to movement or position. The pain arises from a structural element or elements within the spine. The precipitating abnormality is so minor and structurally insignificant that, in the overwhelming majority of cases, it cannot be precisely identified. This vignette will present a clinical approach to identifying the mechanical patterns of low back pain based on history, physical examination and evaluation of treatment response.

The vignette will prepare the learner to:

1. Conduct an efficient high yield evidence-based history for low back pain patients.
2. To conduct the physical examination identifying the common patterns of low back pain presentations

References:


Current Clinical Care, January 2013, Educational Supplement, Back Pain Management

Introduction (cont’d)

Dr. Hamilton Hall, Spine Surgeon, has devoted his career to the refinement of mechanical back pain patterns and the identification of the key history and physical findings that define them. In this video segment, he will explain each of the patterns and how they present in the clinical scenario.
Patient History

Question 1

Although you may open the patient visit with questions related to the purpose of the visit and the patient’s experience with their symptoms, you should quickly move into a few high yield questions that allow you to identify if the patient symptoms are consistent with mechanical low back pain or if screening questions for red flags are needed.

Question 1: “Where is your pain the worst?”

You mission is to determine if the pain is back or leg dominant. This is a key factor in pattern recognition as it immediately identifies the back dominant patients who are least likely to benefit from referrals and investigations and the leg dominant patients who may require more intervention. Often we mistakenly use the intensity of pain as the triggering factor for ordering imaging or making a referral to a specialist. This question shifts our focus appropriately to the location of the dominant region of pain.

Back Dominant symptoms are worse in the low back, buttocks, coccyx, groin and/or around the outer aspects of the hips.

Leg Dominant symptoms are worse around and below the inferior gluteal fold in the lowest portion of the buttock and in the thigh, calf, and/or foot.

One common point of confusion is the location of the leg pain. Referred back dominant pain can spread all the way to the foot while radicular leg dominant pain may stop in the thigh. Whether the pain extends above or below the knee is not relevant. The determining factor is whether the pain is most troublesome or intense in the back, buttocks and around the trunk or whether it is predominant in any part of the leg.

Patients frequently have pain in both the back and leg; but with careful questioning, it is possible to determine which site predominates. This can be challenging, but distinguishing the site of dominant pain is essential for pattern recognition.

This question can be further explained to the patient in the following manner to emphasize the need to determine the worst pain area.

Examples:

“I know you have pain in both your back and your leg, but which pain is the most disabling, the most severe or the most worrisome.”

“I realize that your goal is to get rid of all your pain, but I can start with only one area, so if it can be only one, which area of pain, back or leg, would you choose to get rid of?”
“I have a back pain pill and a leg pain pill and I can only give you one. Which pill do you want?”

**Question 2**

**Question 2: “Is your pain constant or intermittent?”**

Many patients will describe their pain as constant because they are highly aware of it and it is interfering with their usual activities. Sometimes patients perceive intermittent pain to be less important and they want to emphasize to the clinician the degree of discomfort that they are experiencing. It is always important to acknowledge the patient’s pain with empathy and understanding.

But an accurate assessment of the character of the pain is essential and the global classification of the pain as “constant” is not sufficient. This question must be very clear and specific. It is best asked in two parts:

A) “Is there ever a time during the day or a position or movement you can use when your pain stops, even for a brief moment and even though it may quickly return?”

B) “When your pain stops, does it disappear completely; is it totally gone?”

The importance of this question is related to determining if the pain is likely mechanical or if it could be a red flag to serious pathology. **Truly intermittent back dominant pain is never the result of spinal malignancy, fracture or an infection.** Therefore, although sinister pathologies are rare, constant pain should trigger the clinician to ask the “red flag” questions.

**Test Yourself**

Which of the following questions would help you determine whether your patient’s mechanical pain is intermittent or constant?

a) If you are taking your narcotic pain medication consistently, is your pain relieved?

b) When you sleep at night, do you wake with pain?

c) Is there ever a particular position or activity that takes your pain away?

d) Does acupuncture treatment take away your pain?

**Question 3**

**Question 3: “Does bending forward make your typical pain worse?”**

This deliberately direct question helps the clinician narrow the probable pattern quickly to Pattern 1 or Pattern 3. Pattern 1 is back dominant, aggravated with flexion and can be constant or intermittent. Pattern 3 is leg dominant, worse in flexion and always constant.

In a more general way the question can be phrased this way:
“What movements or positions aggravate your pain?”

Test Yourself
Which of the following activities **would you not describe** as a flexion position?

A) Lying on stomach  
B) Sitting  
C) Snow Shovelling  
D) Sit-ups

Patient History
In summary, with these three questions you can quickly identify which is the likely mechanical pattern that your patient is experiencing.

**Question 1**
- If their pain is back dominant, then you are looking at Pattern 1 or 2.  
- If their pain is leg dominant you are looking at Pattern 3 or 4.

**Question 2**
- If their pain is back dominant and constant then you are looking at Pattern 1. Any constant back dominant pain requires you to review the red flags to ensure there is no serious pathology.  
- If their pain is back dominant and intermittent then you are looking at Pattern 1 or 2  
- If their pain is leg dominant and constant they you are looking at Pattern 3. This is sciatica.  
- If their pain is leg dominant and intermittent then you are looking at Pattern 4. This is usually neurogenic claudication.

**Question 3**
- If their pain is aggravated with flexion, then you are looking at Pattern 1 or 3, depending on whether the symptoms are back or leg dominant.  
- If their pain is not aggravated by flexion you are looking at Pattern 2 or 4, depending on whether the symptoms are back or leg dominant.

Insert: “slides for 4 patterns” on an automatic progression with approximately 2 seconds per animation.

**Download printable overview of 4 patterns (PDF)**

**Practice Tip:**
When the questions do not create a pattern then you are dealing with non-spinal or non-mechanical pain.

**Always ask questions 4 and 5** even if no other red flags are raised to ensure that you do not miss a Cauda Equina Syndrome, the only genuine surgical emergency or systemic inflammatory disease, the commonest of the non-mechanical red flag conditions. They can be combined with a history of mechanical low back pain.
Questions 4 and 5
The first three questions establish a probable pattern. The next two questions address the only urgent surgical red flag and the most common non-mechanical cause of low back pain.

Question 4: “Have you had any unexpected changes in your bowel or bladder function since this episode of your back/leg pain began?”

Urinary retention followed by insensible overflow and unrecognized fecal incontinence are indicative of an Acute Cauda Equina Syndrome, a surgical emergency. Asking the question in this way avoids confusion with long standing and unrelated urinary or GI problems.

Question 5: “If you are 45 years old or younger, are you experiencing stiffness in your back lasting longer than 30 minutes after you get out of bed?”

This question is aimed at identifying younger patients who have a higher likelihood of an inflammatory systemic arthritic condition. If the patient’s morning stiffness, an inability to move easily through their daily activities, is prolonged for more than 30 minutes then it would be prudent to ask other identifying questions for inflammatory arthritis before proceeding with a mechanical back pain diagnosis. This can lead to changes in medical management, investigations and referrals.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Inflammatory</th>
<th>Non-Inflammatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint pain</td>
<td>With activity and at rest</td>
<td>With activity</td>
</tr>
<tr>
<td>Joint swelling</td>
<td>Soft tissue</td>
<td>Bony</td>
</tr>
<tr>
<td>Local erythema</td>
<td>Sometimes</td>
<td>Absent</td>
</tr>
<tr>
<td>Local warmth</td>
<td>Frequent</td>
<td>Absent</td>
</tr>
<tr>
<td>Morning stiffness</td>
<td>&gt;30 minutes</td>
<td>&lt;30 minutes</td>
</tr>
<tr>
<td>Systematic symptoms</td>
<td>Common, especially fatigue</td>
<td>Absent</td>
</tr>
</tbody>
</table>


Patient History (cont’d)
Listen to Dr. Hall speak about the High Yield history to reinforce the rationale for using these questions and practical tips on how to ask the questions effectively.

<table>
<thead>
<tr>
<th>Left Screen</th>
<th>Right Screen</th>
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<tbody>
<tr>
<td>Section A (History) of CORE Back Too</td>
<td>INSERT VIDEO: High Yield History (3:07)</td>
</tr>
</tbody>
</table>
Dr. Hall will now interview a patient in a clinical situation using the high yield history questions.

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<tr>
<th>Left Screen</th>
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</thead>
<tbody>
<tr>
<td>Section A (History) of CORE Back Tool</td>
<td>INSERT VIDEO: Back Pain History (3:45)</td>
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</table>

### Physical Examination

The diagnosis of a mechanical pattern of low back pain is made with the high yield history questions. The physical examination supports or refutes the proposed pattern. A concordant physical examination is confirmation of the history. The components are selected in response to the patient’s history and the clinicians need to eliminate red flags.

The CORE Tool organizes the key components of the clinical examination into positions of standing, sitting, supine lying and prone lying. The examination can be conducted in any order that the clinician or patient prefers and can be adapted to the positions of comfort for the patient.

#### Insert CORE Tool: Section C

The examination begins with observation. Assess the patient’s preferred positions of comfort, gait, activity level and general demeanour to ensure that they correspond with the history. Looking at the back note any discolouration, scars, deformities or protective postures.

Palpation of the spine in the mechanical syndromes is not diagnostic and can be misleading. The anatomy of the spine and its complex neuromuscular components do not allow local palpation to identify disc pathology, joint irritation or mobility, muscle or ligament strain or sprain.

**Physical Examination (cont’d)

#### Standing

**A) Movement**

In standing, have the patient bend forward (flexion) and backward (extension). Ask the patient if they have any typical pain while standing erect and then ask what bending forward and bending backward does to the typical pain. Do the movements aggravate or ease their pain. The range of movement is not diagnostic but may predict pain severity and functional level. Pain on side flexion and rotation are not specific to any mechanical pattern and do not contribute to pattern recognition.

**B) Neurology**

- Motor testing includes L4, L5 and S1 L4 and L5 Heel Walking (Ankle dorsiflexors)
In the low back examination this is usually a test for L5 since it is much more frequently involved than L4 (40% to 10% respectively). The patient walks on their heels for 5 steps and the clinician observes the quality of the movement to look for muscle fatigue causing the foot to drop.

- **S1 – Toe Walking, Raises on Toes (Ankle plantar flexors)**
  The patient walks on their toes for 5 steps and the clinician observes the quality of the movement to look for muscle fatigue causing the heel to drop to the floor.

- **L5 Trendelenburg (Hip abductors)**
  The patient has a positive test if, when standing on one leg, the pelvis sinks on the opposite side. The test is for the leg on which the patient is standing and a normal response produces the same pelvic position for both legs.


**Physical Examination (cont’d)**

<table>
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<th>Left Screen</th>
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<tbody>
<tr>
<td>CORE Tool : Section C: Standing</td>
<td>INSERT VIDEO: Standing Examination. (2:00)</td>
</tr>
</tbody>
</table>

**Clinical Pearls**
In assessing mechanical patterns the most important aspect of lumbar movement in flexion and extension is:

1) Measuring the degrees of movement when pain occurs

Incorrect: The measurement of degrees associated with pain does not determine the mechanical pattern. Whether a patient has pain at 30 degrees of flexion or 60 degrees of flexion does not change the pattern although it may provide insight to the severity of the pain and the need for enhanced pain management.

2) Identifying the movements which aggravate or ease pain symptoms

Correct: The purpose of movement observation in flexion and extension is to determine if there is a directional preference for the production or reduction of the patient’s typical pain. This information confirms the mechanical pattern and suggests which management strategies will be required.

3) Measuring the range of movement by estimating percentage of range achieved

Incorrect: Many clinicians document that a patient was able to demonstrate half range or one-quarter range on assessment. This information can be useful for monitoring progress but it will not assist the clinician with determining the mechanical pattern.

4) Observing the paraspinal spasm and pelvic alignment associated with movement

Incorrect: Muscular spasm and body mal-alignment is often the result of compensation secondary to pain or strain. This observation may be useful for monitoring progress but it will not assist you determining the mechanical pattern.

Physical Examination (cont’d)

Sitting

Neurology

In the sitting position, you can test the patient’s deep tendon reflexes and motor power.

To test the reflexes, the patient’s lower leg and foot must be free to move. To test muscular power the examiner needs to gain sufficient mechanical advantage to overcome the patient’s normal strength.

For patients for whom it is really too painful to sit in a chair for examination, these tests can all be adapted to the lying position.

L3 and L4
• Patellar deep tendon reflex
  o This is tested easily with a reflex hammer tap to the patellar tendon below the knee with the patient seated and lower leg hanging free.
• Quadriceps power
  o This is tested with patient seated and the knee held in an extended position against downward pressure from the examiner using both strength and body weight.

L4 and L5 (primarily a test for L5)
• Ankle dorsiflexion power
  o This is tested with the patient seated, foot on floor, and the forefoot held in an elevated position against downward pressure from the examiner using both strength and body weight.

L5
• Extensor hallucis longus power
  o This is tested with the patient seated, foot on floor and the great toe held in an elevated position against downward pressure from the examiner.

S1
  o Flexor hallucis longus power
    o This is tested with the patient seated, foot on floor, and the great toe held curled as the examiner tried to straighten it.
  o Ankle deep tendon reflex
    o This can be tested in sitting by striking the Achilles tendon. This can also be tested very easily in the kneeling position on the chair seat with the ankle off the seat edge.

Upper Motor Neuron Test
  o Conducting an upper motor neuron test is mandatory to ensure that any neurological symptoms or signs are not emanating from the spinal cord. The presence of any upper motor finding negates a mechanical lumbar pattern.
  o The plantar response (Babinski reflex), can be performed in sitting or lying. A positive test is elevation of the great toe and fanning of the other toes.
  o Clonus can also be used and more than 5 repetitive beats is generally considered abnormal.

Physical Examination (cont’d)

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<tbody>
<tr>
<td>Core Tool : Section C: Sitting</td>
<td>INSERT VIDEO: Sitting Examination. (2:00)</td>
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</table>
### Clinical Pearls

<table>
<thead>
<tr>
<th>Interpreting tendon reflex response</th>
<th>Interpreting muscle power testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = no response; always abnormal</td>
<td>0 – No contraction</td>
</tr>
<tr>
<td>1+ = a slight but definitely present response; may or may not be normal **</td>
<td>1 – Flicker of contraction, no movement</td>
</tr>
<tr>
<td>2+ = a brisk response; normal</td>
<td>2 – Full range of motion without gravity</td>
</tr>
<tr>
<td>3+ = a very brisk response; may or may not be normal **</td>
<td>3 – Full range of motion with gravity</td>
</tr>
<tr>
<td>4+ = a tap elicits a repeating reflex (clonus); always abnormal</td>
<td>4 – Full range of motion, minimal resistance</td>
</tr>
<tr>
<td>5 – Full range of motion, maximal resistance</td>
<td>** The interpretation of a 1+ or 3+ as normal is determined clinically by the patient’s overall reflex response and any associated findings such as concurrent myotomal or conduction abnormalities.</td>
</tr>
</tbody>
</table>

Note: True myotomal weakness is a smooth giving way as the patient is trying to resist but unable. Immediate giving way or cogwheel release may be pain inhibition or have non-organic origins.


### Physical Examination (cont’d)

#### Supine

**A)** **Movement and other tests**

The hip joint should be checked passively to ensure that low back pain is not actually originating from the hip, usually from an osteoarthritic joint. Passive flexion and internal rotation will reproduce the patient’s typical pain. In addition, you may check the peripheral pulses or perform an abdominal examination when suggested by history.

**B)** **Neurology**
In the supine position, test for nerve root irritation with the straight leg raise test. This identifies sciatic nerve root irritation related to levels L4, L5, S1, S2.

Let’s focus on getting the Straight Leg Raise...straight!

The Straight Leg Raise is a passive test. The patient lies with the leg to be tested extended. The other hip and knee are flexed. This rotates the pelvis and significantly reduces hamstring stretch, a frequent source of a false positive test.

The examiner passively lifts the affected leg in an attempt to reproduce or exacerbate the patient’s typical leg dominant pain. This would be considered a positive test and is recorded as “abnormal” on the tool. The reproduction of back pain is not relevant and would be considered a negative test. Although the finding should be noted it is a reflection of mechanical back pain and not indicative of nerve root irritation (radiculopathy).

The degree of leg elevation that triggers the reproduction of the typical leg dominant pain does not determine if the test is positive or negative. Obviously, pain produced when lifting the leg 30 degrees is more clinically significant than pain occurring at 80 degrees, but both constitute a positive result. Straight leg raising is a test of nerve root irritation/inflammation and is positive only in Pattern 3, true sciatica.

Reference: Current Clinical Care, January 2013, Educational Supplement, Back Pain Management

Clinical Pearls

A Well Leg Lift is a passive straight leg raise performed on the unaffected leg. If this causes the typical leg pain to be reproduced in the symptomatic side, not the well side, than the test is positive and indicates a greater degree of nerve root irritation. It is only a test of the severity of the irritation.

If while lifting the affected leg and producing the anticipated increase in the typical leg dominant pain, the patient experiences pain radiating to the other unaffected leg, this is a true “crossover” sign. That is, lifting one leg produces bilateral symptoms. This phenomenon suggests nerve root irritation from a centrally placed lesion near the cauda equina. This is a very worrisome sign since central compression
can affect the lower sacral roots (S2, 3, 4) leading to an **Acute Cauda Equina Syndrome**, a surgical emergency.

**Physical Examination (cont’d)**

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<th>Left Screen</th>
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<tbody>
<tr>
<td>Core Tool : Section C: Supine</td>
<td>INSERT VIDEO: Supine Examination. (1:30)</td>
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</tbody>
</table>

**Clinical Pearls**

**Which of the following statements is true?**

- **A)** The straight leg raise is initiated by the patient to 70 degrees and then the clinician passively moves the leg to its limit.

  Incorrect: The straight leg raise is a fully passive test. Actively raising the leg requires the patient to exert effort and muscle contraction in the low back, abdomen and thigh that distort the results. A patient with genuine acute sciatica will not be able to initiate the movement.

- **B)** The straight leg raise can be done in a sitting position as long as it is done passively.

  Correct: The lying position is often preferred since the spine is stable and controlled therefore eliminating potential posture changes that might trigger mechanical pain. However if it is done passively, and correctly interpreted as a reproduction of the typical leg dominant pain, it is appropriate to conduct the test in sitting. Many clinicians will do both and compare results for consistency. This is only valid if the opposite hip and knee are flexed in the supine position to place the pelvis in the same rotation found in sitting.

- **C)** If the history suggests leg pain but the straight leg raise is completely negative, even to 90 degrees, the clinician must dorsiflex the foot passively in the elevated position to provoke a potential sciatic irritation further.

  Incorrect: The history is the key. If the patient has a history of leg dominant pain and if the history is accurate, the SLR must be positive. If there is no pain on full straight leg raising then you must carefully review the history. The patient may have back dominant pain with substantial referred (not radicular) leg pain.

Once the typical leg pain has been exacerbated the pattern is confirmed. Hurting the patient again with ankle dorsiflexion, pressure in the popliteal fossa or by flexing the hip and knee to 90 degrees and then extending the knee is unnecessary and unkind.

Very rarely the acute root irritation in Pattern 3 may be transient. In these unusual cases the patient will always have a recent onset profound neurological deficit.
D) It is not helpful to do a well leg raise to determine the degree of nerve root irritation for pain management strategies.

Incorrect: It is a helpful comparison to do with patients and if positive, it does indicate a higher degree of nerve root irritation often requiring more pain medication and frequent changes of position. The test will be positive only when the sciatica in the affected leg is sufficient to prevent the patient from even fully extending the knee or limits the SLR to a few degrees of elevation.

Physical Examination (cont’d)
Prone
A) Neurology

As primary care clinicians, we don’t often use the prone position for examination but in the low back patient this position is very useful for determining the mechanical back pain syndrome and for completing the neurological examination to ensure that we don’t miss a key sensory loss sign. If you feel that your patient’s mobility limits them getting into the prone position, you may want to use a step stool by the examination bed or even have a yoga mat in the office so that you can have them prone on the floor since this is often a position for exercise or recovery.

In the prone position, the examination includes:

- femoral nerve stretch test (L3 and 4),
- power test for the gluteus maximus (S1)
- saddle sensation testing (S2, 3, 4)
- prone passive back extension movement test.

The femoral nerve stretch is similar in principle to the straight leg raise test. It is a passive test that stretches the femoral nerve (L2, 3, 4) to determine if there are nerve root irritation symptoms present. The examiner lifts the patient’s extended leg into further extension to try and reproduce their typical leg dominant pain which would be in the anterior distal thigh. Extending the lumbar spine frequently produces low back pain. This is a mechanical response and, while it may be quite painful, is not a positive test. This test is optional and may be reserved for the patient whose dominant symptom is constant anterior thigh pain. As an alternative to prone position, it can be done with the patient in side lying position also.
This test is most accurate when the knee is extended so that the quad muscle is relaxed to avoid a false positive.

S1

Hip Extension: In the prone position, the patient repeatedly tenses and relaxes their buttocks. With palpation the examiner will note loss of power or muscle tone on the affected side within 5 or 6 repetitions.

S2, 3, 4

Saddle Sensation: Every low back exam must include a check for saddle sensation. Sensation in the perineum is subtended by the same sacral nerves that supply the bladder and bowel. This is essential to ensure that you never miss a patient with an Acute Cauda Equina Syndrome.

- The best high-yield test to ensure that the sacral segments are intact is to test light touch in the midline at the top of the gluteal fold which is easily accessible in prone lying below the belt line.
- If sensation is altered and you suspect a sacral nerve abnormality, carefully review the bowel and bladder function, check for a crossover sign, test sensation in the rest of the perineal area and perhaps perform a rectal examination to determine rectal sphincter tone. Urgent referral may be indicated.
This manoeuvre is a key determinant in determining treatment for Pattern 1 mechanical low back pain. It is conducted if the patient has back dominant pain that is aggravated in flexion, a necessary component of Pattern 1. Standing extension may reduce the pain but can occasionally increase it. The treatment approach is decided by movement in the prone position, taking the weight off the spine. If the test reduces the pain the same movement can become the mechanical treatment. The patient is either Prone Extension Positive (relieves pain) or Prone Extension Negative (pain is unchanged or increased).

**Pattern 1 Prone Extension Positive** (PEP)

Pain is reduced after the patient correctly performs five prone passive back extensions. Raise the upper body by pushing up with the arms. Move the hands far enough forward to be able to fully extend the arms and lock the elbows while the hips remain down. There is a “directional preference”.

**Pattern 1 Prone Extension Negative** (PEN)

Pain is either unchanged or increased after the patient correctly performs five prone passive back extensions. There is no “directional preference”.

**Best Results:**

- Have the patient lie prone and ask for a pain level (0 no pain – 10 the worst the typical pain becomes). If the pain is **significantly** increased with prone lying, you may decide to abandon the rest of the test as the patient is already PEN. Slight to moderate increases are not a contraindication.
- Provide verbal instructions first, then ask patient to perform the movement.
- Ensure that the arms are fully extended and the **elbows are straight and locked while the pelvis is still on the bed**. If the pelvis lifts, extend the arms further above the head and shoulders so that the elevation is reduced. The arms must fully extend and the pelvis remain on the mat.
- Have the patient repeat the movement correctly 5 times and then ask for a pain level.
Physical Examination (cont’d)

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<tr>
<td>Core Tool : Section C: Prone</td>
<td>INSERT VIDEO: Prone Examination. (2:30)</td>
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</table>

Clinical Pearls:
Which of the following back dominant scenarios would fit a mechanical pattern of Pattern 1 PEN?

a) Flexion aggravated, standing extension partially relieved, prone extension relieved fully

b) Flexion aggravated, standing extension fully relieved, straight leg raise reproduces back pain

c) Extension aggravated, standing flexion relieved, prone extension aggravated

d) Extension aggravated in standing and in prone lying, flexion aggravated in standing but not aggravated as much as with extension

Case Interpretation

Let’s summarize our clinical findings on this patient. Please mark True or False by each of the following statements:

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>The patient described his pain as intermittent, back dominant with buttock pain</td>
<td></td>
</tr>
<tr>
<td><strong>Answer: True.</strong> The patient described back pain and buttock pain and this is classified as back rather than leg dominant.</td>
<td></td>
</tr>
<tr>
<td>The patient described his pain as intermittent, leg dominant pain with back pain</td>
<td></td>
</tr>
<tr>
<td><strong>Answer: False.</strong> Leg dominant pain is located at the gluteal fold or below and is rated as being more intense and present more frequently than any back pain that is experienced. This was not true with this patient.</td>
<td></td>
</tr>
<tr>
<td>The patient described his pain as being worse with flexion activities.</td>
<td></td>
</tr>
<tr>
<td><strong>Answer: True,</strong> the patient described increased discomfort with sitting and bending. On physical examination, he had more pain when bending forward and while standing inflexion. Even if a patient continues to have pain with</td>
<td></td>
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</tbody>
</table>
standing extension, you are looking for which movement aggravates their pain and which produces some relief.

The patient described his pain as being worse with extension activities.
**Answer: False.** The patient described his pain as being worse with flexion activities. You may want to replay the history and standing examination video sequences.

The patient examination demonstrated neurological deficits on sacral sensation testing.
**Answer: False.** The patient has normal upper motor, lower motor and sensory responses on examination in the sitting and supine video sequences.

The patient’s straight leg test was positive reproducing back pain.
**Answer: False.** A positive straight leg raise must reproduce the patient’s typical radiating leg pain not just back pain. This test is conducted passively with the opposite leg resting in flexion to ease any hamstring tightness.

The patient pain was relieved with prone extension movement.
**Answer: True.** In the prone lying position, the patient performed repeated spine extension movement which alleviated his low back pain. This is called prone extension positive (PEP).

---

**Case Interpretation (cont’d)**

Please download and complete the CORE tool on this patient. This will give you a chance to interpret the examination and anticipate your management strategy.

**Download the CORE Tool to be completed (PDF)**

*Note: this tool has been formatted to be completed electronically.*

**Competing the Core Tool**

<table>
<thead>
<tr>
<th>Left Panel</th>
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<tbody>
<tr>
<td>Completed CORE Back Tool For Vignette 2</td>
<td>INSERT VIDEO: Completed Core Tool video with Hamilton Hall (3 min 15 seconds)</td>
</tr>
</tbody>
</table>
Discussion Forum

1. The 5 high yield questions are used for identifying mechanical patterns of back pain. Are there other questions you find useful for advising management strategies?

2. How would you adapt the physical examination to an older person with limited mobility?

Resources

Videos
Description of the 4 patterns of Low Back Pain
Description of the High Yield History Questions
Taking a High Yield History with a Patient
Part 1: Conducting a Physical Examination - Standing
Part 2: Conducting a Physical Examination - Sitting
Part 3: Conducting a Physical Examination - Lying Supine
Part 4: Conducting a Physical Examination - Lying Prone
Application of the CORE Back Tool to a Patient Case

Articles

Current Clinical Care, January 2013, Educational Supplement, Back Pain Management


Tools
CORE Back Tool

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The following content is unaccredited and intended for informational purposes only.
Vignette 3: Patient Self-Management

Main
This vignette introduces the key skills required to effectively incorporate Patient Self Management (PSM) into discussions with patients with low back pain.

Upon completion of this vignette, the learner will be able to:

- Describe the steps for engaging your patient in a self management strategy for improved sustainability of outcomes.

Introduction: Definitions and Concepts

This lesson introduces the key skills required to introduce Patient Self Management (PSM) into your practice. The Personal Action Planning (PAP) Clinical Tool will be used as a model for practice implementation. While this tool can be used for other clinical conditions, the purpose of this vignette is to apply the theory and clinical tool to low back pain practice.

Patient Self Management (PSM) has been embraced by a number of health organizations throughout the world, including the American Medical Association (Physician resource guide to patient self-management support), the Health Council of Canada (Self-management support for Canadians with chronic health conditions: A focus for primary health care). As well, organizations in Australia, China, provincial ministries of health in Canada, and the Stanford Chronic Disease Self-Management Program have all implemented and used Self-Management in practice. Most of the programs have focused on chronic conditions such as diabetes, mood disorders and cardiovascular disease. However, the current international low back guidelines all support the use of active self-management with appropriate back education as a key recommendation in the clinical guidelines.

“Around 90% of the care a person needs to manage a chronic disease must come directly from the patient. Evidence is growing that self-management interventions, such as self-monitoring and decision making, lead not only to improvements in health outcomes and health status, but also to increased patient satisfaction and reductions in hospital and emergency room costs.”


The Continuum of Patient Activation
|-------------------|-------------------------|-------------------------|

The process of activating patients to be **aware, involved and engaged** in their own care is a partnership where the health care provider and the patient each play a unique role. The health care provider remains an expert in the diagnosis and prescription of evidence-based treatment. However, the patient is an expert in knowing what will work in their lives, their fears, their barriers and their experience.

**Patient Education** is the process of providing medical and health information from the health care provider to the patient and family with the goal of learning condition specific facts that will frame treatment recommendations. This is often in the form of a one-way fact sheet whether written, verbal or electronic. Some patient education interventions will be more interaction utilizing patient risk assessment, questions and answers or group discussion groups. Patient education can occur in a one-to-one interaction with a provider, in a group setting in a medical facility or in the community or individually in a more self-directed manner.

**Patient Self-Monitoring** is a task(s) that the patient is given by the provider that allows the patient to gather information about themselves in-between medical visits for the purpose of monitoring treatment response, symptom changes or emergence of new issues. This information is then shared with the provider at medical visits so that the provider can have a broader perspective of the condition response and symptom development before recommending the next steps in the investigation or management process. Some examples would include log books for recording pain levels with activity, home blood pressure instruments and food diaries. Self-monitoring can be followed in a health care provider visit, a telephone call and even web-based systems where both patient and provider have secure and confidential access.

**Can you describe Patient Self Management?**

<table>
<thead>
<tr>
<th>What is the definition?</th>
</tr>
</thead>
</table>

**What is Patient Self-Management**

Historically, clinicians treat patients as the subject of care. Care is something 'done to or for them'. A more recent view treats the patient as a partner in their own care. Patients come with their own knowledge of self and in many ways are expert in their selves and their conditions. By coupling this knowledge with the knowledge clinicians have, patients and clinicians can be partners in their care. Some describe this as a form of collaborative care.


Patients know themselves, their capabilities and limits. Indeed, they are experts in their own lives!
“If physicians view themselves as experts whose job is to get patients to behave in ways that reflect that expertise, both will continue to be frustrated...Once physicians recognize patients as experts on their own lives, they can add their medical expertise to what patients know about themselves to create a plan that will help patients achieve their goals.”

Funnell & Anderson  JAMA 2000;284:1709

Given the scarcity of clinical resources, the effectiveness of clinicians is greatly enhanced by partnering with the patient (and their families) to devise a course of action that is created by the patient and agreed to by the patient. The key to success is to promote:

- Patient Self Efficacy
- Patient Autonomy
- Integration of motivational interviewing

Test Yourself
1. What is Patient Self Management? Choose one.
   a) Patient Self Management is another name for patient education where the patient is taught how to manage their health.
   a) Patient Self Management is the individual’s ability to manage their symptoms, treatment, physical and social consequences and lifestyle changes inherent in living with a health condition.
   b) Patient Self Management is synonymous with disease self monitoring as this increases the role of the patient in their own care.
   c) Patient Self Management is a process for the patient to take control and advocate for themselves without the need for a health care provider.

Motivational Interviewing
What is the clinician’s role?

Clinicians provide:

- Options for the patient to select a behaviour to change
- Facilitation of goal setting by asking questions that allow the patient to develop details for their plan
- Assistance with problem-solving barriers that the patient identifies
- Interest and support for follow-up
- Positive acknowledgement of any measure of success

How is this best achieved?

Motivational Interviewing is a scientifically tested method of counselling developed by Miller and Rollnick and applied mostly as an intervention strategy in the treatment of lifestyle issues and chronic conditions. It has been described by Miller and Rollnick as “directive, client-centred counselling style for eliciting behaviour change”.

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The key elements are:

- Compassion
- Acceptance
- Partnership
- Evocation

Reading the linked article will help you understand the power of motivational interviewing and the potential to facilitate your patient developing lifestyle strategies that benefit multiple health conditions. That is the unique power of patient self management and motivation interviewing- the skills are generalizable to many conditions and common applications include:

- Nutrition
- Physical activity
- Stress management
- Medication management

Can you use motivational interviewing in your practice? The following article contains some ideas and research on the effectiveness.


Selecting the right Patients for Self-Management

Think of an average clinic day with your usual patients. Who would you choose as the best candidate for patient self management? Is it the patient who knows a lot, is motivated, asked for your help or is the patient who has a new diagnosis and needs more skills to manage their condition? We know that the patients who are probably not ideal are those who have a language barrier, have acute unstable medical conditions or are unable to set goals due to developmental delay or low insight.

Mr. Dorn is a 56 year old gentleman who has had mechanical low back pain for 10 months. His symptoms are back dominant and aggravated with prolonged sitting of greater than an hour. He is able to relieve his symptoms completely if he does a 30 minute walk each day but he is seldom able to find the time to achieve this goal. He uses acetaminophen as required for pain management and has found that using a heating pad in his chair at work allows him to sit longer but he is still stiff when he gets up.

He has completed a course of physiotherapy for 8 sessions which he found helpful although he has gotten out of the routine of doing his exercises. His benefits have run out so he is not interested in more treatment.

He is overweight with a BMI of 42 and he smokes 10 cigarettes a day. He has been told that he has moderate osteoarthritis in his left knee and occasionally has intermittent swelling. He is married with 2 sons aged 8 and 10 years old. He has come to your office today to see if there is anything else that you can do to help relieve his low back pain.

Test Yourself

2. Based on Mr. Dorn’s case, which of the following statements are correct?
a) Mr. Dorn is not a good candidate for patient self-management as he is demonstrating a moderate risk of his symptoms becoming chronic.

b) Mr. Dorn is not a good candidate for patient self-management because progress will only be made if he can participate in his plan on a daily and consistent basis.

c) Mr. Dorn is not a good candidate for patient self-management as he has multiple health concerns (knee osteoarthritis, smoker and overweight) which will confuse the ability to set a clear and detailed goal.

d) Mr. Dorn is not a good candidate for patient self management because when asked what goal he would like to work on to address his health concern, he answers that he is not ready to work on any behavioural changes.

Personal Action Planning Tool

| INSERT VIDEO: Patient Self Management Tool | Personal Action Planning Tool |

Goal Setting

Patient self management is a process that can be assisted by the guidance of a clinical tool like the personal action planning tool.

The concept of using brevity and patient self management action planning together evolved because of the need for an efficient and effective process to facilitate patient-centred goal setting in time-pressured clinical settings. Based on evidence from multiple theoretical frameworks, including self-management support research, behavioural psychology, and motivational interviewing, the concept of brief action planning was first developed by Dr. Steven Cole MD in 2002.
Facilitator’s Role

The key elements that a facilitator must be aware of for effective motivational interviewing are:

- **Goal Setting**
  - S.M.A.R.T.
  - Commitment Statement
- **Overcoming Barriers**
  - Behavioural Menu (Offering ideas for behaviour change if needed)
- **Applying the confidence scale**
  - Applying a confidence scale to predict success
  - Problem-solving low confidence
  - Setting Follow-up

**Goal Setting (cont’d)**

The role of the clinician is to facilitate patient goal setting so that the patient can develop a detailed plan of action. This is often linked to patient education where the clinician in previous visits may have spent
time educating patients on the importance of exercise, stress management, weight management or pain management.

One framework for goal setting is called SMART Goals – Specific, Measurable, Achievable, Relevant and Timed.

**Specific** goals are focused and detailed versus vague or general goals. Goals should be **measurable** where outcomes or progress can be easily evaluated and recorded or charted. Goals should be ‘within reach’ and **achievable**; but yet, not too difficult or too easy to attain. Goals should be **relevant** to the patient’s interests, health, wellbeing and recovery. Goals should have clear and realistic **time frames**. Goals without deadlines or time targets can be overlooked and are at higher risk for failure.

Patients are much more likely to follow through with the action required to achieve these goals when they participate directly in establishing them; rather than have someone else (e.g. a clinician) establish goals on their behalf.

SMART goals form the basis for a clear **commitment** from the patient. After goals have been established, the clinician or coach elicits a final “commitment statement”. The strength of the commitment statement predicts success on a personal action plan. We are more likely to believe and do what we hear ourselves say!

Can you write a detailed goal for yourself so that you can see what it feels like?

<table>
<thead>
<tr>
<th>Is there anything that you would like to do for your Health? What is it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you like to do it?</td>
</tr>
<tr>
<td>Where will you do it?</td>
</tr>
<tr>
<td>When would you like to do it?</td>
</tr>
<tr>
<td>How often will you do it ?</td>
</tr>
<tr>
<td>Can you tell me in your words what you have committed to doing for your health?</td>
</tr>
</tbody>
</table>

**Overcoming Barriers**

Patients may create barriers for a number of reasons possibly related to their personal circumstances, their family commitments or their work situations. Socioeconomic factors such as financial instability, low education level or psychosocial factors can be part of the complexity of dealing with barriers. In clinical practice, we often interpret barriers as “patient resistance” and we may lack the skills or time to address them.
Within the patient self-management philosophy, the patient must identify the goal that they want to work on and when they cannot come up with a goal, we offer them a menu of options to choose from but; we don’t choose for them. This means that they can assess their situation and any barriers that might be in the way and make their choices.

A behaviour menu is a set of appropriate behaviours that can lead to effective goal setting. There are a number of ways to share these ideas with your patients:

**Ask permission to share ideas**

“Would it be ok with you if I shared some ideas that have worked for other patients I work with?”

**Offer several brief suggestions or ideas**

“Some patients I work with have tried exercise, stress management or even reducing their sitting time…”

**Ask if the patient has his / her own idea**

“Would you like to make a plan around any of these, or perhaps you have an idea of your own that would work for you?”

---

**Test Yourself**

3. Mr. Dorn has decided that he wants to try and prevent the recurrent of low back pain by starting an exercise program. He feels that this is something that he has heard from his family doctor and from a neighbour who has been dealing with recurrent low back pain. He is not sure what to do but knows that he is ready for a fitness type plan.

Which one of the following is an example of a behavioural menu?

a) Providing Mr. Dorn with some exercise instructions specific to the spine
b) Sharing some ideas that have worked for other patients with back pain
c) Giving Mr. Dorn a list of community resources for fitness classes
d) Allowing Mr. Dorn to keep a diary of his daily physical activities.

---

**Applying the Confidence Scale**

The Personal Action Planning tool includes a confidence scale from 0 (not at all confident) to 10 (very confident).
It is important to understand how confident the patient is in being able to achieve the goals they have set. Confidence is a predictor of success and those who are confident believe that they can achieve their goals. This is called self-efficacy. Higher self-efficacy is associated with healthier behaviours and better outcomes. The number \( \frac{7}{10} \) or higher is assessed as Confident.

On the other hand, if a patient has low self-confidence, below 7, we must respect the right of the individual to not change and acknowledge that ambivalence regarding change. This is an important part of the process and the rating may indicate that the goal and plan are not yet suitable or even that the individual is not yet ready.


**Applying the Confidence Scale (cont’d)**

If patients have low confidence (less than 7) then one needs to use Problem Solving skills to engage the patient further. (See figure at right.)

---

**Figure from:** Kathy Reims, Damara Gutnick, Connie Davis and Steven Cole. Brief Action Planning: A White Paper. January 2013. Centre for Comprehensive Motivational Interventions: Hope, BC. Available at: www.centreCMI.ca

This may include using a behavioural menu or resetting the goal.
For example:

Mr Dorn chose to initiate a walking program for 30 minutes every day after work around 6pm. His confidence level was 3 and he stated that he really did not think that he could consistently spare 30 minutes a day.

**Provider:** Is there anything that you could do to improve your confidence level?

**Patient:** Well, realistically, I would probably walk on Tuesdays and Thursdays because my wife picks the kids up from the babysitter on those days.

**Provider:** Okay. So tell me how your plan would look now?

**Patient:** I am going to start my walking program with just 2 days a week because I know I will be able to fit it into my schedule on Tuesday and Thursdays. I am going to walk 30 minutes after work on those days. I will see how I do and once I get started, I may even walk more.

**Provider:** Great, how confident do you feel on a scale of 0-10 that you will be able to succeed at your revised goal.

**Patient:** 8 out of 10!

**Setting a Follow-up**

The process of setting a Follow-up is very important as it allows the patient to continue to refine and revise their goals until they are more independent in the process of self-management. There are learning in “no success” and “partial success” as well as rewards in “success”
3 Key Questions
In the CORE Back tool we abbreviate the process to 3 key questions:

Key Messages

Now that you have learned some patient self management skills, try it with your next patient and see how easily you can work it into your practice. On average, the process takes 2-4 minutes, that’s all!

Key Messages:

- The patient drives the process and the clinician facilitates
- Motivation Interviewing principles are the foundation
- Very successful in chronic conditions for sustained behavioural outcomes
• Emerging literature in Low Back Pain suggests that Patient Education is key to the ability for a patient to self manage

Discussion Forum

1. How would you approach a patient with low back pain who is interested in exercise but cannot consistently find the required time?
2. How would you approach a patient with low back pain who has come up with a goal specific plan but identifies their confidence level as a 3 out of 10?

Resources

Tools

Personal Action Planning for Patient Self Management Tool.

Videos

List all videos included in the module

Articles

Bodenheimer et al. Patient Self-management of Chronic Disease in Primary Care, JAMA, November 20, 2002—Vol 288, No. 19 2469


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Vignette 4: Clinical Toolkit

Main
This vignette will review each component of the Provincial Toolkit for Low Back Pain, including the newly developed CORE Back Tool & Guide and provide an interactive opportunity to apply the tools to a case scenario.

Upon completion of the vignette, learners will be able to:
- Effectively apply the CORE Back Tool and other relevant clinical tools to a case based scenario in order to integrate course learning.

Overview of the Tool Kit
The Toolkit for Low Back Pain consists of the CORE Back Tool and accompanying Guide plus 4 Supporting Tools and 9 Reference Tools. The purpose of the toolkit is to provide the primary care provider with one point-of-care tool, CORE, and then additional supporting tools for more in-depth screening or management and an array of reference tools to customize your patient education options. Clinical tools have been proven to be useful for the implementation of evidence based information into clinical practice. All of the tools have been informed by primary care focus groups and tested through in-person education sessions with primary care providers to ensure that they are relevant, useful and applicable to primary care patient visits.
The CORE Back Tool

The CORE tool will guide the primary care clinician in recognizing common mechanical back pain syndromes while screening for other conditions where further investigations and referrals may be required. The CORE Guide is an easy-to-follow explanation of each section of the tool so the clinician can understand the rationale and the key messages, as well as when this information is pertinent to clinical practice and what resources support the recommendations.

The CORE tool is designed for primary care clinical decision-making and not as a detailed rehabilitation treatment tool. It is expected that the primary care clinician will be able to deliver education and exercise for patient self-management but if goal-specific rehabilitation is required then a referral to a therapist may be indicated.

Download the CORE Tool (PDF)
Download the CORE Guide (PDF)

[INSERT JULIA’S VIDEO INTRODUCING THE CORE TOOL]

Section A: History

The clinical history is focused on 5 questions. Each question helps the provider determine if their presentation is one of mechanical back pain (90% of patient presentations) or a more serious pathology where investigation and referrals are required.
For more information on how to ask these questions, please see Vignette 2 and/or the videos in the resources section.

**Test Yourself**

Which of the following questions would lead you to the red flags for screening?

1. Where is your pain the worst?
2. Is your pain intermittent or constant?
3. Do you have tingling in your legs?
4. Does bending backward increase your pain?

**Section B: Red Flag Screening**

Question 4 identifies the key question for Cauda Equina, a surgical emergency and Question 5, identifies inflammatory back pain as a systemic rheumatologic condition which is the most common of the non-mechanical type of low back pain accounting for 5% of all back pain.

**Practice Tip:**

**Question 4** (Have you had any unexpected accidents with your bowel or bladder function since this episode of your low back/leg pain started?) and

**Question 5** (If age of onset < 45 years, are you experiencing morning stiffness in your back > 30 minutes?) relate directly to red flag screening.
For a reminder of how to ask your 5 high yield questions, re-visit section A of the CORE back tool.

The Red Flag box is an organized method of cueing the practitioner to questions to identify serious pathology if the patient does not easily fall into a pattern of mechanical back pain or if the patient is not responsive to evidence-based treatment.

N-I-F-T-I is the acronym for:

- Neurological
- Infection
- Fracture
- Tumour
- Inflammatory

Lastly, if there are no red flags, be sure to tick the box (no red flags) indicating that you have considered the possibilities as this will be a good record for future and a medical-legal requirement since this is guideline-recommended as a usual standard of care.

### B. SCREENING

Table: Red Flags (check if positive)

- Neurological: diffuse motor/sensory loss, progressive neurological deficits, cauda equina syndrome
- Infection: fever, IV drug use, immune suppressed
- Fracture: trauma, osteoporosis risk
- Tumour: hx of cancer, unexplained weight loss, significant unexpected night pain, significant fatigue
- Inflammation: chronic low back pain > 3 months, age of onset < 45, morning stiffness > 30 minutes, improvement with exercise, disproportionate night pain

![Figure 3. Section B (Red Flags) of CORE Back Tool](image-url)
Most radiology reports will show abnormalities that are related to normal aging of the spinal structures but are not often the cause of specific low back symptoms. Many patients are pain free with high levels of function yet, if imaged, the results would indicate degenerative changes including disc bulging, canal narrowing (stenosis) and osteophyte development. These degenerative changes documented in a report can often confuse the patient and the clinician and change of the focus of clinical management to disability instead of symptom control and increased function.

“Diagnostic imaging is indicated for patients with low back pain only if they have severe progressive neurologic deficits or signs or symptoms that suggest a serious or specific underlying condition. In other patients, evidence indicates that routine imaging is not associated with clinically meaningful benefits but can lead to harms. Implementing a selective approach to low back imaging, as suggested by the American College of Physicians and American Pain Society guideline on low back pain, would provide better care to patients, improve outcomes, and reduce costs.”

**Read More:**


**Test Yourself**

Which of the following patients would you order an MRI on if they failed to respond to evidence-based conservative treatment?

a) Ms. Ado has back dominant constant pain that is aggravated by flexion and is not relieved in prone lying extension. She is taking intermittent analgesia and states that exercise is difficult to do.
b) Ms. Brown has leg dominant constant pain that is aggravated by flexion and is not relieved by extension and demonstrates a positive Trendelenburg sign, positive straight leg raise and a weakness in the anterior tibialis muscle group.

c) Mr. Gandy has back dominant pain with referred leg pain that is worse on flexion compared to extension and can only get relief with prone lying extension.

d) Mr. Narona has leg dominant pain that is aggravated with walking and relieved with sitting or bending forward. He has been able to modify his activities and reduce his use of analgesia.

Section B: Surgical Criteria

<table>
<thead>
<tr>
<th>Surgical Referral (check if positive)</th>
<th>No Surgical Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Emergency Room Referral</strong></td>
<td></td>
</tr>
<tr>
<td><em>Acute cauda equina syndrome is a surgical emergency. Symptoms are:</em></td>
<td></td>
</tr>
<tr>
<td>- Urinary retention followed by insensible urinary overflow</td>
<td></td>
</tr>
<tr>
<td>- Unrecognized fecal incontinence</td>
<td></td>
</tr>
<tr>
<td>- Distinct loss of saddle/perineal sensation</td>
<td></td>
</tr>
<tr>
<td><strong>Surgical Referral</strong></td>
<td></td>
</tr>
<tr>
<td>- Failure to respond to evidence based compliant conservative care of at least 12 weeks</td>
<td></td>
</tr>
<tr>
<td>- Unbearable constant leg dominant pain</td>
<td></td>
</tr>
<tr>
<td>- Worsening nerve irritation tests (SLR or femoral nerve stretch)</td>
<td></td>
</tr>
<tr>
<td>- Expanding motor, sensory or reflex deficits</td>
<td></td>
</tr>
<tr>
<td>- Recurrent disabling sciatica</td>
<td></td>
</tr>
<tr>
<td>- Disabling neurogenic claudication</td>
<td></td>
</tr>
</tbody>
</table>

Figure 5. Section B (Surgical Referral) of CORE Back Tool

There is only one surgical emergency – Acute Cauda Equina Syndrome. Patients with urinary retention followed by overflow, unrecognized fecal incontinence and/or distinct loss of saddle/perineal sensation should be told to go to the emergency room immediately. The primary care provider should make a call to the emergency room for immediate triage. These patients will require emergency imaging and surgical assessment and often surgery is done within 12 hours of presentation and no later than 24-48 hours for optimal results.

The tool lists other reasons for surgical referral but not to the emergency room. These include:

- Failure to respond to evidence-based compliant conservative care of at least 12 weeks
- Unbearable constant leg dominant pain
- Worsening nerve irritation tests (SLR or femoral nerve stretch)
- Expanding motor, sensory or reflex deficits
- Recurrent disabling sciatica
- Disabling neurogenic claudication

Section B: Yellow Flags

Insert image

Figure 6. Section B (Barriers/Yellow Flags) of CORE Back Tool

Yellow flags are indications of psychosocial risk factor for the development of chronic low back pain. The yellow flags are not a psychiatric diagnosis but do indicate if the patient is reliant on passive treatment, avoids activities and movement for fear of pain, demonstrates some social withdrawal or low mood or lacks a supportive work and home environment. If the yellow flags are positive and the patient has not responded to treatment after 6 weeks, then the clinician may choose to use the StarT Back Tool to identify if the patient has a low, medium or high risk of developing chronic pain in order to choose the most appropriate treatment strategy at the earliest possible time for intervention.

Review the New Zealand Yellow Flags Guidelines for some examples of questions you may wish to ask your patients to help you identify the Yellow Flags.

Test Yourself

Ms. Jonah has had back dominant low back pain for 3 weeks. She states that she is fearful of exercise as it may hurt her back more. She is tearful in the office and states that she would like to go back to work but worries that she will not be able to do her duties. Which of the following options would you try with her?

a) Refer her to a psychologist for cognitive behavioural therapy.
b) Give her some relaxation tapes to reduce her worry.
c) Provide her with education on “hurt versus harm” to improve her level of activity.
d) Refer her to a psychiatrist as she may have clinical signs of depression.

Section C: Physical Examination

The history leads the clinician to develop their differential diagnosis based on their patient’s symptoms. The examination is conducted to support or refute your clinical diagnosis (history) and each test should be interpreted within your clinical thinking. The body diagrams can be shaded according to the patient history so that the clinician accurately records the areas of pain and can compare them in future visits.

Figure 7. Section C (Physical Examination) of CORE Back Tool

The physical examination section is laid out as a guideline for organizing your examination. The examination components are divided into the patient’s positions of standing, sitting, kneeling, and prone and supine lying so that the examiner can easily adjust the examination to the patient’s positions.
However, if your patient cannot sit and you wish to do the full examination in the lying position, then you can adjust your tests to that position. The highlighted examination components are the minimum requirements for best practice to ensure that the clinician does not miss an important element. The other tests can be conducted to clarify a clinical picture or provide the clinician with a comprehensive approach to assessment.

The chart for documentation allows the clinician to record if a test is abnormal or normal but also to document the findings.

**Test Yourself**
How would you record the following clinical test and patient response?

On passive straight leg raise, the patient complains of reproducible low back pain at 45 degrees.

a)  

<table>
<thead>
<tr>
<th>Test</th>
<th>Normal</th>
<th>Abnormal</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight Leg Raise</td>
<td></td>
<td>X</td>
<td>Low Back Pain at 45 degrees</td>
</tr>
</tbody>
</table>

b)  

<table>
<thead>
<tr>
<th>Test</th>
<th>Normal</th>
<th>Abnormal</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight Leg Raise</td>
<td></td>
<td>X</td>
<td>Pain at 45 degrees</td>
</tr>
</tbody>
</table>

c)  

<table>
<thead>
<tr>
<th>Test</th>
<th>Normal</th>
<th>Abnormal</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive Hip Flexion</td>
<td></td>
<td>X</td>
<td>Low Back Pain at 45 Degrees</td>
</tr>
</tbody>
</table>

d)  

<table>
<thead>
<tr>
<th>Test</th>
<th>Normal</th>
<th>Abnormal</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive Hip Rotation</td>
<td></td>
<td>X</td>
<td>Hip Pain at 45 Degrees</td>
</tr>
</tbody>
</table>

For more information on physical assessment, please see related physical exam videos from vignette 2.

**Section D: Assessment**
Insert image: “Section D”

Figure 8. Section D (Assessment) of CORE Back Tool
This section would be like your “A” in S-O-A-P charting format. In this section, you will commit to a pattern of mechanical back pain or identify that your patient has non-spine related pain or spine pain that does not fit a mechanical pattern. Occasionally, a patient may have more than one pattern occurring at the same time. For example, you may have a patient with Pattern 4 Neurogenic claudication evidenced by the fact that their leg pain is worse with walking and relieved with flexion. However, with prolonged sitting flexion, they also develop back pain and have symptoms consistent with Pattern 1. The use of pattern numbers is often helpful for clinicians to identify and discuss the mechanics of treatment, however you may wish to describe the symptom dominance and aggravating positions to the patient.

Section E: Patient Education

During your assessment, you may be able to advise the patient on the best positions for recovery and scheduled rest by demonstrating or explaining the positions. The following articles clearly outline the management of low back pain through positions and exercise.

- The latest in Back Pain Management: Managing Back Dominant Pain
- The latest in Back Pain Management: Managing Leg Dominant Pain

For Pattern 1, back dominant pain aggravated with flexion and relieved with extension, a “sloppy push-up” or prone extension position will relieve pain. This patient will improve their sitting tolerance with an extension roll in the curve of their lumbar spine.

For Pattern 2, back dominant pain aggravated with extension, this syndrome is less common but will relieve quickly with sitting in a flexed position with hands on the ankles and then placing hands on the knees to assist to return to neutral.

For Pattern 3, leg dominant pain aggravated by flexion, this patient will likely have to be lying for relief and then may be able to tolerate the “z” position with legs elevated on a chair. They often will get worse if left in this position for too long so their “dose” of the position has to be determined by the response of their pain to the position.

Pattern 4, leg dominant pain aggravated by extension will respond to sitting or bending forward and leaning on a shopping cart or podium. Activity modification and core stability is the best conservative treatment for this group.

Test Yourself

Based on reading the 2 articles in The latest in Back Pain Management, what would you suggest for the following patient?
Ms. Sloka is a 43 year old office worker with a 3 week history of low back pain with occasional radiation to her left buttock and posterior thigh. Forward flexion aggravates her pain to a 5/10 and standing extension does reduce her pain but only to a 2/10. Prone lying extension relieves her pain to 0/10 after 2 repetitions. Her neurological examination is normal.

a) Take her off work so that she does not aggravate her condition by sitting.

b) Start a core stability program to increase her control and overall strength for activity.

c) Advise an x-ray since she is having leg pain and if normal, advise her to walk more for pain relief.

d) Advise her to do the prone extension movements frequently through the day and to reduce her sitting and to sit with a lumbar roll.

Section F, G, and H.
Section F is an abbreviated Patient Self Management tool and this has been taught in Vignette 3.

Figure 10. Section F (Goal Setting & Patient Self Management) of CORE Back Tool

Section G is an opportunity to document your treatment plan and use any applicable boxes. You may wish to access the reference tools for medication management or patient education materials.

Figure 11. Section G (Recommendations) of CORE Back Tool

Section H is to document advice on follow-up and chart any additional information.

Figure 12. Section H (Follow-up) of CORE Back Tool

The patient Key Messages is a checklist of patient-friendly phrases that reinforce the guideline-based key messages for optimal management.

Figure 13. “Key Messages for Your Patient” from CORE Back Tool

STarT Back Screening Tool

The Keele STarT Back Screening Tool (SBST) is a brief validated tool, designed to screen primary care patients with low back pain for prognostic indicators that are relevant to initial decision making. This tool is suitable when the Yellow Flags are positive and the patient has not responded to care in the first 4-6 weeks of a low back pain episode.
Figure 14. The Keele StarT Back Screening Tool

This tool allocates patients to different treatment pathways based on their prognosis (low, medium, or high risk of poor outcome). This model is aimed at identifying the patients who require more comprehensive psychosocial intervention earlier in the development of their symptoms to avoid or reduce the impact of persistent disabling symptoms and improve patient outcomes.

Figure 15. Scoring System from The Keele StarT Back Screening Tool

<table>
<thead>
<tr>
<th>Low Risk</th>
<th>Medium Risk</th>
<th>High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal Treatment</td>
<td>Psychoeducation on Hurt versus Harm, Activity Promotion, and Pain Management</td>
<td>Cognitive Behavioural Therapy for management of anxiety and mood symptoms</td>
</tr>
</tbody>
</table>

Download Keele StarT Back Screening Tool (PDF)

Read more: Keele University. StarT Back Screening Tool Website. Available at: http://www.keele.ac.uk/sbst/
Opioid Risk Assessment Tool
The Opioid Manager is a comprehensive tool that has been developed for the Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain. Within this tool is the Opioid Risk Assessment tool that allows a clinician to identify if their patient has an increased risk of addiction with opioid use. This is a safe and effective way of determining best medication choices and informing the patient of risk of dependency.

Primary care providers may have already obtained some of the required patient information through their cumulative patient profile and some questions need to be specifically answered with current information. This tool is best administered through a discussion with the patient and not as a self-administered patient questionnaire. If a clinician decides to proceed with opioid prescription, then the full Opioid manager is available with dosage guidelines, patient contracts and recommendations on short and long term use.

Download Opioid Risk Tool (PDF)

Patient Self Management
The Personal Action Planning tool incorporates goal setting and action planning to engage the patient as a partner in their recovery to play an active role in deciding what lifestyle behaviours to attempt to improve. This is best applied in the case of Low Back Pain when patient education on key messages and evidence-based treatment has occurred.

The vignette on Patient Self Management addresses the theory and practice of this tool. The CORE Back Tool has a 3-question starter for initiating discussion and reminding the clinician of the components for success. The supporting tool, Personal Action Planning, has a more detailed format where the patient’s decisions and plan can be documented and followed up on future visits. This is a sample of a patient self management tool; there are many others with similar core values that clinicians may already be successfully using.

Download Personal Action Planning Tool (PDF)

For more information on patient self management, please see related patient self-management videos from vignette 3.

If you haven’t yet completed vignette 3, this would be a good time to plan to review the vignette.

Module 3 contains an in-depth learning experience on patient self management. Upon completion of this vignette, the learner will be able to describe the steps for engaging your patient in a self management strategy for improved sustainability of outcomes.

Estimated time for completion: 45-60 minutes.

Patient Education Selector Guide
Patient education is recognized as a key component of successful management of low back pain. However, every patient is different in what type of material is best suited to their comprehension,
learning style and memory capacity. Some patients prefer material that contains pictures and simple phrases while others like descriptive paragraphs that take a reader through many concepts. For this reason, we have identified the common low back patient education material that is currently used most often in Canadian health care settings and we will let you and your patient select the appropriate patient education format. In the Patient Education Selector Guide, you will find a brief overview of the materials as well as a link to the sites where they are available.

The Saskatchewan Ministry of Health adopted the four patterns of mechanical low back pain in 2010 and developed patient education handouts for each pattern that provides photographs and descriptions of the advised exercises and positions. Patients find the hand-outs clear and easy to understand. In addition to the pattern specific exercises, the Saskatchewan site also provides a general information sheet including posture, exercise and lifestyle changes.

The Back Book is a publication from the United Kingdom that has been adopted by the Workplace Safety and Insurance Board (WSIB) for Ontario. It was initially published in 1996 and the 8th edition was released in 2011. Since March of 2012, it has been distributed by the WSIB Ontario to all new low back pain claimants upon injury to increase patient awareness of principles for recovery and for the worker to discuss with their health care professional. This 20 page small booklet is written in simple and straightforward language and covers the essential key messages related to pain management, anxiety and muscle tension, role of activity and prevention of chronic pain.

“So Your Back Hurts” was released by the Institute for Work and Health in 2009. This 28 page booklet is aimed at acute low back pain and provides the patient with information on modifying activity and work to maintain movement.

Alberta has released Low Back Pain guidelines through their Towards Optimizing Practice (TOP) website. These guidelines are seeded in the international guidelines and have been packaged into Patient Handouts on acute and chronic low back pain. The key messages have been incorporated and they are presented in one-page formats.

Download Patient Education Inventory Tool (PDF)

The Tool Kit
The image below illustrates the links between various sections of the CORE Back Tool and related supporting and reference tools, available for additional information.
Case Study

Now that you are familiar with the tools, we would like to give you the opportunity to apply the principles to a real patient case. Given the case details, your job will be to fill out the CORE tool on this patient. Once you have completed this, you will be able to download a CORE Tool completed by Drs Alleyne and Hamilton to compare your answers.

Download the CORE Tool to be completed (PDF)

Note: this tool has been formatted to be completed electronically.

Mr. Bob Stekel, 61 years old, has already had several episodes of low back pain over the last 10 years. Several months ago he noticed that in addition to his back pain, his legs were starting to hurt occasionally but now his leg pain seems more frequent. The pain, which occurs mainly in his left posterior thighs, begins whenever he walks for longer than a few minutes—the farther he goes, the more his legs ache, forcing him to sit down. Within a few minutes, his leg pain disappears completely and he can start walking again. His pain is the least in the morning and he does not feel any stiffness, numbness or tingling.

He has noticed that he can’t manage his pain and it is different than before so he has come to see you for advice. He states that he was walking in the grocery store when he noticed that his pain became very sharp and spread down his “good leg”. He had to grasp the cart and lean forward to complete his shopping. He has not been able to figure out what triggered his pain and he visited a massage therapist to relieve his spasm which only gave him temporary relief.
Bob has noticed that he has put on 15 pounds of additional weight in the last few months and he is concerned that this may lead to other health problems because both his parents had high blood pressure and Bob is a smoker. He has cut down to 1 pack a day but has not been able to reduce any further. He has had a few episodes of loss of control of his bladder but he thinks this may be due to his prostate which was enlarged on his last check-up with his doctor.

He had an MRI and X-ray about 4 years ago that described his spine as degenerative with stenosis and some bulging discs.

On examination, forward flexion produces some mild low back discomfort but no leg pain. Extension produces some low back pain that radiates into the left leg when it is repeated or prolonged. Neurological examination for DTR, myotomes and dermatomes are normal. Straight Leg raise produces mild back pain. Femoral nerve stretch produces low back pain. Prone lying extension position is difficult to maintain as Bob becomes very uncomfortable with low back pain spreading into the buttock. Upper motor neuron testing is normal.

“My back pain is a nuisance, but it’s the leg pain that keeps me from doing the things I want to do. I can’t go shopping with my wife without stopping every few minutes to sit and rest. When I am not active my legs feel fine, but as soon as I get going I am in trouble again. Should I go to the Emergency room if it happens again?”

What does the CORE tool look like for Bob? Please complete the CORE tool based on the case scenario above.

Download the CORE Tool to be completed (PDF)

Discussion Forum

Now that you’ve completed your CORE tool, download an example of the CORE tool completed by Drs Alleyne and Hall to compare your answers.

Completed CORE Back Tool (PDF)

1. Are there any elements in these tools, which a patient could complete while in the waiting room?
2. Of the resources listed in the patient education, select your favourite. What are the benefits and barriers of that tool?
Resources

**Provincial Toolkit for Primary Care Providers**

Overview of Toolkit
Clinically Organized Relevant Exam (CORE) Back Tool
CORE Back Guide
Opioid Risk Tool
Personal Action Planning Tool
Patient Education Inventory Tool
StarT Back Screening Tool

**Video**

Introducing the Core Back Tool

**Guidelines**

Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain

**Articles**


**Other**

Completed Correct CORE Tool (based on case scenario provided in vignette 4)
Reference Tools for Additional Support

For Providers
- Pharmacy Tables: St. Michael’s Hospital, Department of Family and Community Medicine:
  - Acute and Subacute Low Back Pain (LBP) - Pharmacological Alternatives
  - Acute and Subacute Low Back Pain (LBP) - Topical and Herbal Products
  - Evidence Summary for Management of Non-specific Chronic Low Back Pain (POCKET)
  - Opioid Manager Switching Opioids Form (also available in French)

For Patients
- Back Book (UK) (available for online viewing only or for purchase at: www.tsoshop.co.uk)
- Back Exercises for All 4 Patterns (Saskatchewan):
  - Pattern #1 Patient Education
  - Pattern #2 Patient Education
  - Pattern #3 Patient Education
  - Pattern #4 Patient Education
- General Recommendations for Maintaining a Healthy Back: Patient Information (Saskatchewan)
- So Your Back Hurts... (POCKET)
- What You Should Know About Acute Pain (TOP)
- What You Should Know About Chronic Pain (TOP)

Low Back Pain: POST Survey
POST-Survey: 1 month after completion of the pre-test

1. For each of the following rate your level of confidence when assessing a patient with new onset low back pain:

<table>
<thead>
<tr>
<th></th>
<th>Not at all confident</th>
<th>Not confident</th>
<th>Neutral</th>
<th>Confident</th>
<th>Very Confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screening for Red Flags</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Determining criteria for evidence based imaging</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Determining criteria for surgical referral</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Explaining management strategies to patients</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

2. How confident are you in assessing and managing a Low Back Pain patient who comes to your office with new onset symptoms of:

<table>
<thead>
<tr>
<th></th>
<th>Not at all Confident</th>
<th>Not Confident</th>
<th>Neutral</th>
<th>Confident</th>
<th>Very Confident</th>
</tr>
</thead>
</table>
3. What would help you to increase your confidence for any of the above?

4. In the absence of red flags, what are the most common reasons for a referral of a patient with Low Back Pain and/or Leg Pain to a spinal surgeon?

<table>
<thead>
<tr>
<th>Reason</th>
<th>YES</th>
<th>NO</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of chronic back pain not responsive to conservative treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of persistent radiating leg pain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of altered sensation in affected leg</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT/MRI indicating any disc pathology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT/MRI indicating clinically relevant nerve root compression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT/MRI indicating spinal cord compression</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credible source for patient diagnosis and management plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clarification of work related modifications and restrictions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient would like second opinion on management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other, please specify:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4b. Are there any other common reasons for a referral of a patient with Low Back Pain and/or Leg Pain to a spinal surgeon?

5. Do you see low back pain patients in your practice?

   Yes/No

5b. Which of the following statements best reflects your approach to the care of patients with new onset Low Back Pain in the first 4 weeks?
<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Somewhat agree</th>
<th>Neutral</th>
<th>Somewhat disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I recommend bed rest for the first 3-7 days and then activity as advised by a physiotherapist or chiropractor</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>I advise my patient to stay as active as they are able to tolerate as this will help reduce their symptoms.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>I screen the patient for red flags to determine appropriate need for imaging or surgical referrals</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>I often order a lumbar xray if low back pain has been present for at least 3-4 weeks</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>I may prescribe short-acting analgesics including opioids for the first 4-6 weeks if severe pain symptoms interfere with function</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>I recommend lumbar supports to my patients who are required to lift or stand at work</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

6. Which clinical tools do you find most helpful in assessment and management of Low Back Pain?

- 3 Minute Back Exam
- Brief Pain Inventory
- CORE Back Tool
- POCKET Red Flag Tool
- Opioid Manager
- 4 Patterns of Mechanical Low Back Pain (e.g. Saskatchewan Tools)
- Clinical Practice Guidelines (e.g. Alberta TOP guidelines)
- Other: (open text comments box)

7. To what extent are you currently using the CORE Back Tool in your practice?

   Not at all  A little  Somewhat  To a great extent  Not applicable
8. What would help you improve your assessment and management of your Low Back Pain patients?

9. What type of patients do you most often use the CORE Back tool with?
   - First visit
   - Recurrent low back pain episodes,
   - Chronic management.
   - I do not use the CORE Back Tool

10. How likely are you to recommend the CORE Back Tool to a colleague?
    0  1  2  3  4  5  6  7  8  9  10
    Not at all likely                               Very likely

11. To help us better understand the applicability of the CORE Back Tool in Primary Care please give us your perspective:

<table>
<thead>
<tr>
<th></th>
<th>To no extent 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>To a great extent 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the CORE Back Tool relevant to primary care?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Will the CORE Back Tool assist clinical decision making for improved patient outcomes?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can this tool be realistically implemented in real time for primary care?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Any Comments on the CORE Back Tool specifically?

13. Have the online module(s) impacted your approach to Low Back Pain (knowledge, skills and/or attitudes)?
    Yes
    No

14. How likely are you to recommend the online module(s) to a colleague?
    0  1  2  3  4  5  6  7  8  9  10
    Not at all likely                               Very likely

15. Did you implement changes in your practice as a result of the online module(s)?
    Yes/No
16. If yes, what specific change(s) did you implement?

17. If you have not changed your practice as a result of this program, did you find the program to be irrelevant to your practice?

    Yes/No

    If 'yes', please explain.

18. Have you encountered specific barriers to implementing change?

    Yes/No

    If 'yes', please explain.

19. Any other comments:

Thank you!

On behalf of the Centre for Effective Practice, we thank you for your feedback.

If you have any other questions or comments about the Low Back Pain Online Module, please contact Katie Hunter at katie.hunter@effectivepractice.org.

We encourage you to visit www.ontario.ca/lowbackpain or www.effectivepractice.org/lowbackpain.