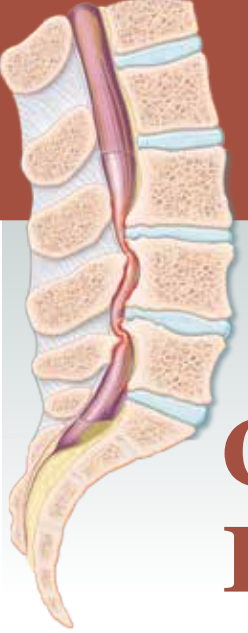

CORE BACK TOOL 2016: New and Improved!

ABSTRACT

Through the redesign of the already successful CORE Back Tool, primary care clinicians now have a more comprehensive, user-friendly approach to clinical decision making for patients presenting with low back pain. The key components of the tool include a high yield history connected to mechanical low back pain patterns, embedded key patient messages, clear listing of appropriate radiological indications, criteria for consultant referrals as well as a management matrix geared to office practice. A clinical case will be used to demonstrate the application of the tool to practice and instruct the reader on the key features.

KEYWORDS: Low Back Pain, Tool, Primary Care Providers, Management

CME Pre-test Quiz

In March 2013, Ontario launched the CORE Back Tool[1] as a key component of its Low Back Pain Strategy. This tool was designed for primary care providers by primary care providers through focus groups that identified the common gaps in practice leading to unnecessary investigations and consultations. Knowledge experts were engaged to formulate an evidence-based approach to low back pain, which supports clinical decision making and enhances health care provider knowledge and

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attitudes. The Centre for Effective Practice managed the tool development from design to delivery and oversaw an online course completed by over 5000 health care providers. Across the country, clinicians stated that the CORE Back Tool was having an important impact on the assessment and management of patients with low back pain in their practices.

Evaluation is an important component of the project and an analysis of usability for clinical practice and focus group feedback confirmed that the tool had hit a needed target but health care providers wanted more clarity of terms, greater connections between key concepts and clear management options. In 2016, Centre for Effective Practice supported and managed a redesign of the CORE Back Tool with embedded referencing, enhanced pattern recognition and the addition of a management matrix.[2]

Reference numbers in the illustrations are from the CORE. References in the text appear at the end of this article. The Tool can be downloaded at http://effectivepractice.org/resources/low-back-pain-core-back-tool/

New and Improved CORE Low Back Tool

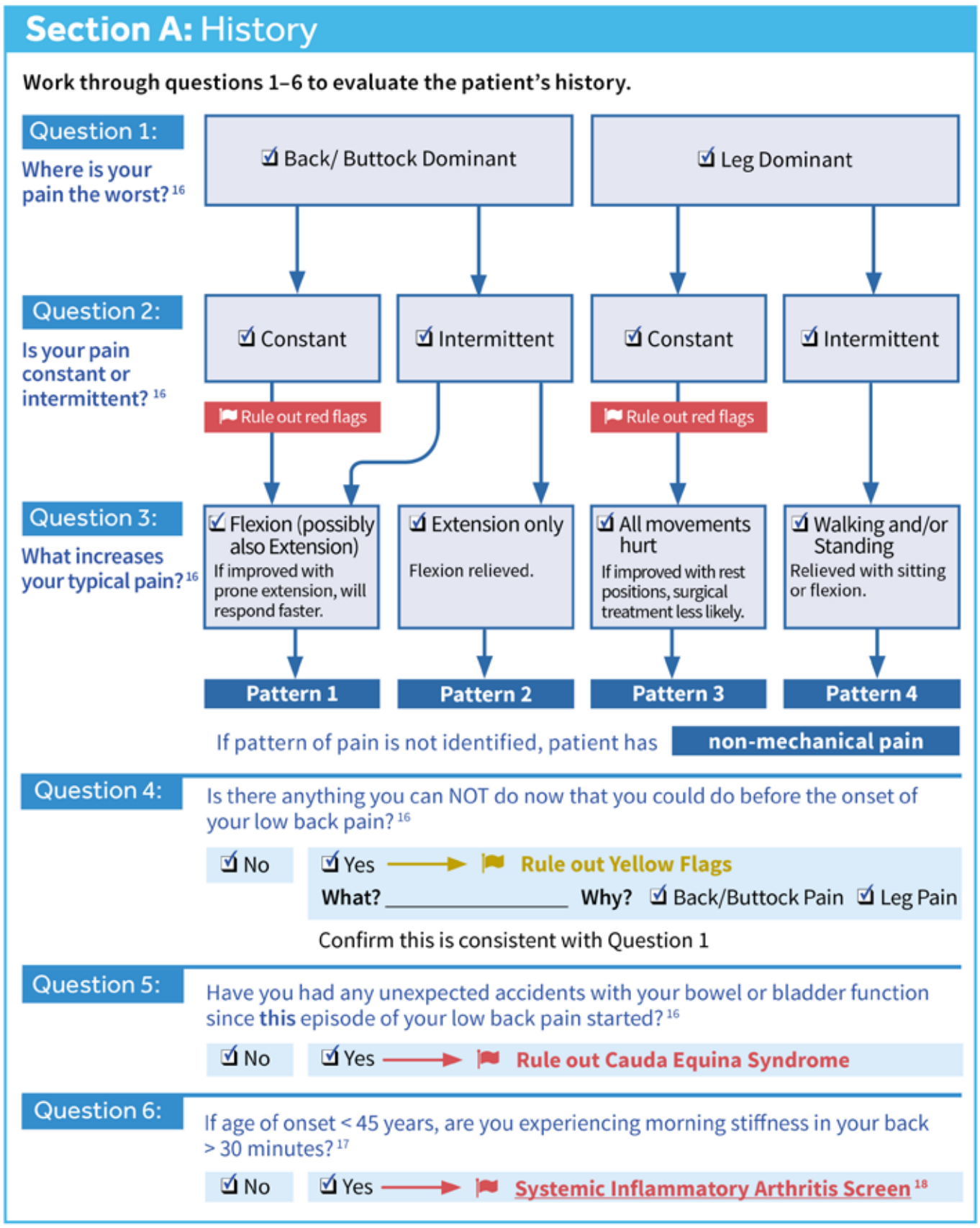
- Evidence-informed approach with inserted references
- Low back pain pattern recognition within history questions
- Appropriate radiological investigations linked to red flags
- Easy-to-ask Yellow Flag questions
- Patient Key Messages embedded into clinical assessment
- One page education summary for primary care providers
- Easy to follow management matrix for office based care.

Case Review:

Mr. Gerry O'Toole is a 43 year old man with a 4 week history of intermittent low back pain that is not responding to the usual OTC analgesics and activity restriction. He works in a sedentary job but is active on the weekends with cycling and golf, both of which have aggravated his pain over the last month. He complains of intermittent right posterior buttock and thigh pain that comes on with prolonged sitting for more than 30 minutes and repeated forward bending. He has noted that the back pain is relieved with walking and arching his back. In the morning, he is stiff in his low back region for about an hour.

What questions would you ask Mr. O'Toole to ascertain if his pain is mechanical?

In taking a targeted history, it is important to explain to your patient that you will be asking



some very direct and targeted questions in order to determine the type of back pain they are experiencing and the best management options. The first question is aimed at determining not only where the pain is presenting but more importantly which pain area is the worst. We call this the dominant pain and there are only two options; back dominant and leg dominant. Back dominant pain encompasses the low back, buttock, hip and groin; it is referred pain from a pain generator in the spine, which may be felt at a distant location.[3,10] Leg dominant pain, most commonly located in the posterior leg, starts around the inferior gluteal fold and can extend into the leg both above and below the knee; it is radicular pain resulting from the direct irritation of a nerve root. It is important to understand that back dominant pain can radiate as far as the foot and that leg dominant pain can be accompanied by back pain.[3,10] It is not just where the pain is located but where the pain is the most intense and disabling that determines dominance.

Determining if the pain is intermittent or constant is very important both for pattern recognition and to identify potential Red Flags. The answer should be fully pursued to obtain a clear answer. To have truly intermittent pain the patient must report times (no matter how brief) when the pain has **completely** disappeared. If pain is constant, you must consider the red flag questions since pain from fracture,

tumour and infection are not intermittent in nature.

The next question determines what increases the typical back pain and more specifically, whether pain is aggravated or eased in lumbar flexion or extension.

In just three questions, you can decide if the pain is probably mechanical and determine the presenting pattern. Mr. O'Toole has intermittent back dominant pain aggravated with flexion activities. His history is consistent with Pattern 1 Mechanical Pain.

CLINICAL PEARL

How to ask about the nature of pain

Determining if the pain is intermittent or constant is very important for pattern recognition and for the recognition of possible Red Flags. It needs to be probed to obtain a clear answer.

Does your typical pain ever go away completely even for a short period of time if you are in just the right position or posture? I know the pain will return but is there ever a time when you are totally without pain and not heavily medicated?

Question 4, Is there anything you can NOT do now that you could do before the onset of your low back pain?", is a new question that was added as a valuable insight of patient function or dysfunction. This question can reveal high levels of perceived patient disability which may be indicative of yellow flags; psychosocial risk factors for developing chronicity.[5] Often, we hear our patients describe fear of activity and avoidance strategies and this can be a yellow flag. Another common yellow flag is dependency on passive treatment such as heat, modalities or massage.[9] If yellow flags are identified early then education and reassurance can often promote healthy movement and shorter recovery times. There are patients who exhibit pre-existing or secondary concurrent anxiety or depression who could benefit from cognitive behavioural therapy or other psychosocial intervention(s) and support.[9]

Yellow Flags [21, 22, 24]

Psychosocial Risk Factors for Developing Chronicity

For those with low back pain > 6 weeks or non-responsive to treatment, consider asking:

Questions to ask	Look for
"Do you think your pain will improve or become worse?"	Belief that back pain is harmful or potentially severely disabling.
"Do you think you would benefit from activity, movement or exercise?"	Fear and avoidance of activity or movement.
"How are you emotionally coping with your back pain?"	Tendency to low mood and withdrawal from social interaction.
"What treatments or activities do you think will help you recover?"	Expectation of passive treatment(s) rather than a belief that active participation will help.

A patient with a positive yellow flag will benefit from education and reassurance to reduce risk of chronicity. If yellow flags persist, consider additional resources: Keele StarT Back[4]; The Patient Health Questionnaire for Depression and Anxiety (PHQ-4).[25]

☑ No yellow flags → **Continue reviewing history**

③ 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.

We often ask our patients many questions aimed at ruling out the red flags and sometimes patients are caught off guard by the seriousness of questions that probe for cancer, infection and/or disabling diseases. This can create unnecessary anxiety unless bridged with a framing question or

CLINICAL PEARL

Acute Cauda Equina syndrome is a surgical emergency

Symptoms are:

- Urinary retention followed by insensible urinary overflow
- Unrecognized fecal incontinence
- Distinct loss of saddle/perineal sensation

rationale. In questions 5 and 6, we address two important red flags.

Question 5, "Have you had any unexpected accidents with your bowel or bladder function since the start of this episode of pain?", is targeted at the presence or risk of cauda equina syndrome which should not be missed and requires immediate emergency room referral and MRI if suspected.[8] This question is linked to a short list of descriptive characteristics that you should probe if your patient admits that they have had unexpected bladder or bowel problems. **The question is directed at the current painful event and is designed to overlook longstanding chronic conditions.**

Question 6 , "If age of onset < 45 years, are you experiencing morning stiffness in your back > 30 minutes? ", is aimed at early identification of patients who may have inflammatory and not mechanical spine pain. A patient who experiences prolonged morning stiffness like Mr. O'Toole should be questioned further to see if he has other inflammatory symptoms like joint swelling, local erythema and systemic symptoms.

Identifying red flags in the patient with constant pain, neurological abnormalities or systemic symptoms is very important and in the 2016 CORE Back Tool, we have paired the red flags with the appropriate radiological investigations based on the Canadian Radiological Association recommendations. Therefore, if your patient complains of constant low back pain, the clinician would ask further red flag questions. If the responses raise concerns, refer the patient for the appropriate investigations.[11] In the case of Mr. O'Toole, there are no investigations required since he has intermittent back dominant pain.

Red Flags (check if positive)

The acronym **NIFTI** can help you remember red flags. [21,22,42,43]

Indication	Investigation ①
☑ **Neurological:** diffuse motor/sensory loss, progressive neurological deficits, cauda equina syndrome	Urgent MRI indicated
☑ **Infection:** fever, IV drug use, immune suppressed	X-ray and MRI
☑ **Fracture:** trauma, osteoporosis risk/ fragility fracture	X-ray and may require CT scan
☑ **Tumour:** hx of cancer, unexplained weight loss, significant unexpected night pain, severe fatigue	X-ray and MRI
☑ **Inflammation:** chronic low back pain > 3 months, age of onset < 45, morning stiffness > 30 minutes, improves with exercise, disproportionate night pain	Rheumatology Consultation and Guidelines

Acute Cauda Equina syndrome is a surgical emergency. [23]

Symptoms are:

- ☑ Urinary retention followed by insensible urinary overflow
- ☑ Unrecognized fecal incontinence
- ☑ Distinct loss of saddle/perineal sensation

☑ No red flags ② → **Continue reviewing history**

① **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. [14,41]

② 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. [14,41]

The recommended physical examination is designed to confirm or refute the suspected mechanical patterns identified on history while ensuring that there are no undetected signs of sinister pathology. The movements of spinal flexion and extension are assessed to determine the effect they have on pain levels. The degree of movement is not useful for initial interpretation but may be recorded to demonstrate progress on follow-up. Repeated prone extension is a movement that can be helpful to establish a treatment strategy in Pattern 1 patients, back dominant pain aggravated in flexion.

The neurological examination should be thorough enough to identify both normal and abnormal findings. Normal findings are critical to support the pattern diagnosis and justify the rationale for not ordering investigations or making surgical referrals. The neurological examination should include; deep tendon reflexes, myotomal testing from L4 to S1 and correlated dermatomal testing. **It is imperative to include at least one upper motor neuron test** to ensure that there are no spinal cord or central nervous system abnormalities **and a test of saddle sensation** in the mid-line between the upper buttocks to screen for cauda equina syndrome.[8] In addition, it is pertinent to take the hips through a full passive range of motion to ensure that the trochanter, groin or thigh pain is not referred from the hip.

Section B: Physical Examination [19]

NOTE: **Bolded green-coloured tests** are the suggested minimum requirements of the exam.		Additional Findings	Abnormal	
			L	R
Gait	Heel Walking (L4-5) Toe Walking (S1)			
Standing	**Movement testing in flexion** **Movement testing in extension** Trendelenburg test (L5) Repeated toe raises (S1)			
Sitting	**Patellar reflex (L3-4)** Quadriceps power (L3-4) Ankle dorsiflexion power (L4-5) **Great toe extension power (L5)** **Great toe flexion power (S1)** **Plantar response, upper motor test**			
Kneeling	Ankle reflex (S1)			
Lying	Supine **Passive straight leg raise (SLR)** Passive hip range of motion Prone Femoral nerve stretch (L3-4) Gluteus maximus power (S1) **Saddle sensation testing (S2-3-4)** Passive back extension (patient uses arms to elevate upper body)			

The initial management matrix is an easy-to-follow table of evidence based treatment advice linked to resources. The principle of practice is to decrease pain through effective medication use and recovery positioning while increasing activity through daily living and exer-

cise.[4] Short acting opioids may be used briefly for intense constant leg dominant pain associated with a nerve radiculopathy. Otherwise best practice for pain medications includes acetaminophen and non-steroidal anti-inflammatories.[7] The recovery movements and positions are non-weight bearing and in the direction that reduces or eliminates the pain, a "directional preference".[3,10] For example, flexion aggravated back patterns will be eased with repetitive prone extensions and extension aggravated low back pain will be relieved with flexed positions such as a knees-to-chest curl. It is important to encourage the patient to start any daily activities that do not aggravate the symptoms. Offering suggestions on functional activities should start at the first visit. The patient is an important partner in recovery and, if suitable, can begin self-management strategies with

Section C: Initial Management[16,19,26]

	Pattern 1	Pattern 2	Pattern 3	Pattern 4	Non-Mechanical Pain
Commonly Called[27]	Disc Pain	Facet Joint Pain	Compressed Nerve Pain	Symptomatic Spinal Stenosis (Neurogenic Claudication)	☑ Non-spine related pain
Medication[5,6,7] ④	☑ Acetaminophen ☑ NSAID	☑ Acetaminophen ☑ NSAID	☑ May require opioids if 1st line pain meds not sufficient ⑤	☑ Acetaminophen ☑ NSAID	↓ Consider other etiologies prior to pain medications ↓ Consider internal organ pain referral such as kidney, uterus, bowel, ovaries
Recovery Positions[28]					
Starter Exercises[29]	Repeated prone lying passive extensions (i.e. hips on ground, arms straight). 10 reps, 3 x day	Sitting in a chair, bend forward and stretch in flexion. Use hands on knees to push trunk upright. Small frequent repetitions through the day	"Z" lie (see image above) **Caution:** exercise will aggravate the pain so start with pain reducing positions	Rest in a seated or other flexed position to relieve the leg pain	
Exercises	ISAEC[35]; HealthLink BC[34]; SASK Pattern 1[30]	ISAEC[35]; HealthLink BC[34]; SASK Pattern 2[31]	ISAEC[35]; HealthLink BC[34]; SASK Pattern 3[32]	ISAEC[35]; HealthLink BC[34]; SASK Pattern 4[33]	☑ **Spine pain does not fit mechanical pattern**
Functional Activities[36]	☑ Encourage short frequent walking ☑ Reduce sitting activities ☑ Use extension roll for short duration sitting	☑ Encourage sitting or standing with foot stool ☑ Reduce back extension and overhead reach	☑ Change positions frequently from sit to stand to lie to walk	☑ Use support with walking or standing. Use frequent sitting breaks	↓ Consider centralized pain medications (i.e. anti-depressants, anti-seizure, opioids) ↓ Consider pain disorder
Follow-up	☑ **2–4 weeks** if referred to therapy, or prescribed medication ☑ **PRN** if given home program and relief noted in office visit	☑ **2–4 weeks** if referred to therapy, or prescribed medication ☑ **PRN** if given home program and relief noted in office visit	☑ **2 weeks** for pain management and neurological review	☑ **6–12 weeks** for symptom management and determination of functional impact	
Self Management[37-40] ⑥	Once pain is reduced, engage patient for self management goals	Self management can be initiated in 1st or 2nd session with most patients	Patient is not usually suitable for self management due to high pain levels and possible surgical intervention	Self management can be initiated in 1st or 2nd session with most patients	

ISAEC = Inter-professional Spine Assessment and Education Clinics; **SASK** = Saskatchewan Spine Pathway Group Healthy Back Exercises

④ **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.[14,22,41]

⑤ **Short acting opioid medication may be used for intense pain** such as leg dominant constant symptoms related to nerve radiculopathy.[14,22,41]

⑥ **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.[14,22,41]

SUMMARY OF KEY POINTS

1. Mechanical Patterns are a logical way to conceptualize, assess and manage low back pain.
2. If pain does not fit a mechanical pattern, the patient may have non-spine referred pain from organs or a chronic pain disorder.
3. Radicular (nerve) pain will have a positive straight leg raise (SLR) with reproduction of the typical leg dominant pain and possible abnormal neurological signs.
4. Initial patient management should include goals of reducing pain and increasing activity.

the clinician facilitating goal setting and realistic steps to recovery.

With the CORE Back Tool 2016, assessment and management will follow a logical sequence and you will be able to identify the patients who are appropriate for surgical consultation, referral for rehabilitation or further specialist evaluations. Some patients may experience a prolonged recovery or recurrent pain but with the embedded key message and references, clinicians will be armed with the necessary information to assist patients through the attack.

In summary, Mr O'Toole is a patient with Pattern 1, back dominant, intermittent pain that does not require any imaging or referrals. He would benefit from more education, productive modifications of his daily routine including activities such as frequent walks and repeated prone extensions to mobilize his spine in a non-painful direction, simple self-administered pain relieving modalities and supplemental first-line analgesic medication.[7]

Section D: Referrals (if required)

☑ **Rehabilitation referral**

Rehabilitation Referral Criteria (4–12 treatments)
- ☑ Absence of red flags
- ☑ Pain is managed well so that patient can tolerate treatment
- ☑ Pain has mechanical directional preference – varies with movement, position or activity
- ☑ Patient is ready to be an active partner in goal setting and self management

☑ **Surgical referral**

Surgical Referral Criteria[23]
- ☑ 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

☑ **Specialist referral**
- ☑ Physiatry
- ☑ Cognitive Behavioural Therapy
- ☑ Pain specialist
- ☑ Multidisciplinary Pain Clinic
- ☑ Rheumatologist
- ☑ Other: _____

☑ **Imaging (Refer to red flags)** ☑ **Laboratory tests (Refer to red flags)**

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CME

Post-test Quiz

Members of the College of Family Physicians of Canada may claim MAINPRO-M2 Credits for this unaccredited educational program.

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