

These recommendations are systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances. They should be used as an adjunct to sound clinical decision making.

Guideline Specifications

Disease/Condition(s) Targeted

Acute and sub-acute low back pain
Chronic low back pain
Acute and sub-acute sciatica/radiculopathy
Chronic sciatica/radiculopathy

Category

Prevention
Diagnosis
Evaluation
Management
Treatment

Intended Users

Primary health care providers, for example: family physicians, osteopathic physicians, chiropractors, physical therapists, occupational therapists, nurses, pharmacists, psychologists.

Purpose

To help Alberta clinicians make evidence-informed decisions about care of patients with non-specific low back pain.

Objectives

- To increase the use of evidence-informed conservative approaches to the prevention, assessment, diagnosis, and treatment in primary care patients with low back pain
- To promote appropriate specialist referrals and use of diagnostic tests in patients with low back pain
- To encourage patients to engage in appropriate self-care activities

Target Population

Adult patients 18 years or older in primary care settings.

Exclusions: pregnant women; patients under the age of 18 years; diagnosis or treatment of specific causes of low back pain such as: inpatient treatments (surgical treatments); referred pain (from abdomen, kidney, ovary, pelvis, bladder); inflammatory conditions (rheumatoid arthritis, ankylosing spondylitis); infections (neuralgia, discitis, osteomyelitis, epidural abscess); degenerative and structural changes (spondylosis, spondylolisthesis, gross scoliosis and/or kyphosis); fracture; neoplasm; metabolic bone disease (osteoporosis, osteomalacia, Paget's disease).

For other guidelines or companion documents, please refer to the
TOP Website: www.topalbertadoctors.org



Toward
Optimized
Practice



INSTITUTE OF
HEALTH ECONOMICS
ALBERTA CANADA

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Low Back Pain

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Introduction

This guideline has been adapted from eight “seed” guidelines referenced as G1 through G8 published between 2003 and 2010 for prevention, acute and subacute, and chronic low back pain ([Appendix G](#). “Seed” Guideline References). A supplementary literature search current to December 2010 was conducted for systematic reviews of other interventions not available in the “seed” guidelines ([Appendix E](#) Evidence Source).

Recommendations are based upon reviews of the research literature at the time of publication, and recently published evidence is not necessary incorporated. As always, clinical judgment and experience are always critical factors in considering the application of guideline recommendations for any individual patient.

When considering recommended interventions, it is important to take into account the patient’s expectations and preferences, but do not use his/her expectations and preferences to predict their response to treatments. Discrepancies between patient expectations and preferences and evidence-informed practice could reflect a lack of awareness. This presents an opportunity for dialogue, mutual decision-making, and utilizing educational resources.

The most common type of low back pain is called ‘non-specific low back pain’, and accounts for approximately 90% of cases in primary care settings.¹⁻⁶ Less than 2% of people with low back pain have potentially serious spine conditions that will require surgery or medical intervention.^{6,7}

Between 49% and 90% of people in developed countries will experience at least one episode of low back pain during their lifetime.¹⁻⁵ Low back pain is most common among the working population, particularly men, with peak incidence occurring in people aged between 25 and 64 years.^{5,8} Back pain usually resolves within 2 weeks, but symptoms may linger for up to 2 months.^{5,9,10} However, 24% to 80% of patients will experience further episodes within a year, and over three quarters will have a reoccurrence at some point in their lives.^{5,8,9} A small minority of patients (2% to 7%) will develop chronic low back pain.^{5,9}

A similar prevalence and clinical course for low back pain is reflected in Canadian data.^{11,12} A survey¹³ of 2,400 individuals revealed the lifetime prevalence of back pain in Alberta and Saskatchewan was 83.8%, with 61.8% of respondents reporting back pain in the last year.

The management of low back pain can be complex and costly. In Alberta and Saskatchewan, close to 40% of patients with back pain seek help from a healthcare provider.¹³ Primary care physicians undertake the initial evaluation in 65% of low back pain cases and are often the sole provider for these patients.^{1,14} Thus, primary care practitioners play an important role in the management of patients with low back pain.

Interventions and Practices Considered

*Note: An * indicates a recommendation was revised or a new recommendation was added*

Prevention of Occurrence and Recurrence of Low Back Pain

Patient education	Spinal manipulative therapy or spinal mobilization
Physical activity	Risk factor modification
Shoe insoles/orthoses	Mattresses
Lumbar supports*	Furniture - chairs

Low Back Pain

Interventions and Practices Considered

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Acute and Subacute Low Back Pain

Diagnostic triage*
Emergent cases
Cases requiring further evaluation
Referral to a spinal care specialist
Referral for MRI and possible surgical opinion for radiculopathy*
Laboratory testing
Psychosocial risk factors
Reassessment of patients whose symptoms fail to resolve
Information and reassurance
Advice to stay active
Return to work
Heat or cold packs
Analgesia
Spinal manipulation
Multidisciplinary treatment programs*
Bed rest
Diagnostic imaging
Traction
Therapeutic ultrasound*
Transcutaneous electrical nerve stimulation (TENS)
Oral steroids
Systemic steroids*
Epidural steroids*
Narcotic analgesics (opioids)*
Therapeutic exercise
Acupuncture
Adjuvant therapies: antidepressants and anticonvulsants*
Back schools*
Herbal medicine*
Low-level laser therapy*
Massage therapy*
Modified work duties for facilitating return to work*
Operant conditioning provided by a physiotherapist*
Short-wave diathermy*
Topical non-steroidal anti-inflammatory drugs (NSAIDs)*
Interferential current therapy*
Touch therapies*
Yoga therapy*

Chronic Low Back Pain

Diagnostic tests
Laboratory testing
Physical exercise
Therapeutic exercise
Therapeutic aquatic exercise*
Yoga therapy*
Active rehabilitation
Self-management programs
Massage therapy
Acupuncture
Acetaminophen and NSAIDs*
Muscle relaxants
Antidepressants
Opioids
Herbal medicine*
Behavioural therapy/progressive muscle relaxation
Multidisciplinary treatment program
Injection therapy*
Epidural steroid injections
Referral for surgical opinion on spinal fusion*
Selective serotonin reuptake inhibitors (SSRIs)*
Motorized Traction*
Prolotherapy*
TENS*
Lumbar discography as a diagnostic test*
Therapeutic Ultrasound*
Buprenorphine transdermal system*
Low-level laser therapy*
Spa therapy*
Spinal manipulative treatment or spinal mobilization
Duloxetine*
Intramuscular stimulation*
Interferential current therapy*
Topical NSAIDs*
Touch therapies*

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Appendices

- Appendix A. Red and Yellow Flags
- Appendix B. Medication Table
- Appendix C. Injection Therapies
- Appendix D. Glossary
- Appendix E. Evidence Source
- Appendix F. List of New and Revised Recommendations
- Appendix G. “Seed” Guideline References
- Appendix H. Summary Guideline
- Reference List

Companion Documents

There are nine companion documents to this guideline which are available on the TOP website:

For Clinicians

- (1) Guideline Summary (also available in Appendix H)
- (2) Yellow Flags¹⁵: Clinical Assessment of Psychosocial Yellow Flags
What can be done to help somebody who is at risk
- (3) Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain¹⁶
endorsed by the College of Physicians and Surgeons of Alberta (CPSA)
- (4) Guideline Mobile Version/PDA
- (5) Instructional video: The 3-Minute Primary Care Low Back Examination¹⁷
- (6) Guideline Background Document (Supporting documents and process description)
(coming soon)

For Patients




- (1) Patient information sheets
- (2) Patient booklets¹⁸
- (3) Instructional YouTube videos

Recommendations

Notes:

- *Statements in italics relate to harm. These statements were sourced from the recommendations or elsewhere in the “seed” guidelines*
- An * indicates a recommendation was revised or a new recommendation was added (also listed in Appendix F).
- It is recognized that not all recommended treatment options are available in all communities
- See Appendix D for Glossary and Appendix E for Evidence Source

Summary of criteria to determine the categorization of recommendations:

	<p>Do</p> <ul style="list-style-type: none"> • The Guideline Development Group (GDG) accepted the original recommendation, which provided a prescriptive direction to perform the action or used the term “effective” to describe it. • The GDG supplemented a recommendation or created a new one, based on their collective professional opinion, which supported the action. • A supplementary literature search found at least one systematic review presenting consistent evidence to support the action.
	<p>Do Not Do</p> <ul style="list-style-type: none"> • The GDG accepted the original recommendation, which provided a prescriptive direction not to perform the action; used the term “ineffective” to describe it; or stated that the evidence does “not support” it. • The GDG supplemented a recommendation or created a new one, based on their collective professional opinion, which did not support the action. • A supplementary literature search found at least one systematic review presenting consistent evidence that did not support the action.
	<p>Do Not Know</p> <ul style="list-style-type: none"> • The GDG accepted the original recommendation, which did not recommend for or against the action or stated that there was “no evidence”, “insufficient or conflicting evidence”, or “no good evidence” to support its use. • The GDG supplemented a recommendation or created a new one, based on their collective professional opinion, which was equivocal with respect to supporting the action. • A supplementary literature search found either no systematic reviews or at least one systematic review presenting conflicting or equivocal results or stating that the evidence in relation to the action was “limited”, “inconclusive”, “inconsistent”, or “insufficient”.

Evidence Source Legend

Systematic Review - SR

Randomized Control Trial - RCT

Case Series - CS

Guideline - G

Expert Opinion - EO

For further information on the evidence source see Appendix E.

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Prevention of occurrence and recurrence of low back pain

Summary of Recommendations:

Recommendation	Evidence Source (see legend on P.6)
<p>✓ Patient Education</p> <p>Practitioners should provide information or patient education material on back pain prevention and care of the healthy back that emphasizes patient responsibility and workplace ergonomics.</p> <p>Practitioners should emphasize that acute low back pain is nearly always benign and generally resolves within 1 to 6 weeks.</p> <p>There is insufficient evidence to determine what quantity, intensity, or media is optimal for delivering this information. (See companion documents, patient information sheets: “What You Should Know About Acute Low Back Pain” and “What You Should Know About Chronic Low Back Pain” and patient booklets: “Acute Low Back Pain: So Your Back Hurts ... Learn what works, what doesn’t and how to help yourself” and “Chronic Low Back Pain: So Your Back Hurts ... Learn what works, what doesn’t and how to help yourself”).</p> <p>Patient information and educational material based on a biomedical or biomechanical model (anatomical and “traditional” posture information) can convey negative messages about back pain and are not recommended.</p>	<p>SR (G2, G5)</p>
<p>✓ Physical Activity</p> <p>Physical activity is recommended. There is insufficient evidence to recommend for or against any specific kind of exercise, or the frequency/intensity of training</p>	<p>SR (G5)</p>
<p>✗ Shoe Insoles / Orthoses</p> <p>The use of shoe insoles or orthoses is not recommended for the prevention of low back pain.</p>	<p>RCT (G5)</p>
<p>✗ Lumbar Supports*</p> <p>The use of lumbar supports is not recommended for the prevention of low back pain.</p>	<p>RCT (G3) + SR (IHE database)</p>
<p>? Spinal Manipulative Therapy or Spinal Mobilization</p> <p>No evidence was found to recommend regular spinal manipulative therapy or spinal mobilization for the prevention of low back pain.</p>	<p>RCT (G5)</p>

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Prevention of Occurrence and Recurrence of Low Back Pain

Recommendation	Evidence Source (see legend on P.6)
<p>? Risk Factor Modification</p> <p>Although overweight/obesity and smoking are associated with the increased prevalence of low back pain, there is insufficient evidence to recommend modifying these risk factors for the prevention of low back pain.</p> <p>There is insufficient evidence to recommend reducing alcohol consumption for the prevention of low back pain.</p>	<p>SR (G3, IHE Database)</p>
<p>? There is insufficient evidence to recommend for or against the following interventions for preventing low back pain:</p> <ul style="list-style-type: none"> • any specific type of mattress RCT (G5) • any specific type of chair CS (G5) 	

Acute & Subacute Low Back Pain

Summary of Recommendations:

Recommendation	Evidence Source (see legend on P.6)
<p>✓ Diagnostic Triage</p> <p>The first qualified practitioner with the ability to do a full assessment (i.e. history taking, physical and neurological examination, and psychosocial risk factor assessment) should assess the patient and undertake diagnostic triage. (See Appendix A for summary of red and yellow flags and companion documents, “Clinical Assessment for Psychosocial Yellow Flags” and “What can be done to help somebody who is at risk?”).</p> <p>If serious spinal pathology is excluded, manage as low back pain as per the reassessment and treatment recommendations below.</p>	<p>SR (G2, G4)</p>
<p>Ankylosing Spondylitis*</p> <p>Consider a diagnosis of ankylosing spondylitis, particularly in younger adults who, in the absence of injury, present with a history of needing to get out of bed at night and reduced side bending.</p>	<p>SR (G1)</p>

Low Back Pain

Acute & Subacute Low Back Pain

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Recommendation	Evidence Source (see legend on P.6)
<p>✓ Emergent Cases</p> <p>Patients with red flags (See Appendix A for red flag definitions) indicating a high likelihood of serious underlying pathology should be referred for immediate evaluation and treatment to an appropriate resource depending on what is available in your region (e.g. emergency room, relevant specialist.)</p>	EO (G2)
<p>✓ Cases Requiring Further Evaluation</p> <p>Schedule an urgent appointment with a physician if any of the red flags are present. (See Appendix A for red flag definitions.)</p>	EO (G2)
<p>✓ Referral to a Spinal Care Specialist</p> <p>Patients with disabling back or leg pain, or significant limitation of function including job related activities should be referred within 2 to 6 weeks to a trained spinal care specialist such as a physical therapist, chiropractor, osteopathic physician, or physician who specializes in musculoskeletal medicine.</p>	EO (G2)
<p>✓ Referral for MRI and Possible Surgical Opinion for Radiculopathy*</p> <p>If the patient has radiculopathy (leg-dominant pain) that persists after 6 weeks of conservative treatment, consider referral for MRI. If clinical and imaging findings correlate, consider referral to a spinal surgeon.</p>	CS (G8)
<p>✓ Laboratory Testing</p> <p>If cancer or infection is suspected, order the appropriate blood tests. In the absence of red flags, no laboratory tests are recommended.</p>	EO (G2)
<p>✓ Psychosocial Risk Factors</p> <p>Primary care evaluation should include assessment for psychosocial risk factors (‘yellow flags’) and a detailed review if there is no improvement. (See Appendix A for summary of yellow flags and companion documents, “Clinical Assessment for Psychosocial Yellow Flags” and “What can be done to help somebody who is at risk?”). Psychosocial risk factors (yellow flags) include fear, financial problems, anger, depression, job dissatisfaction, family problems, or stress.</p>	SR (G2, G4)

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Acute & Subacute Low Back Pain

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Recommendation	Evidence Source (see legend on P.6)
<p>✓ Reassessment of Patients Whose Symptoms Fail to Resolve</p> <p>Reassess patients whose symptoms are not resolving. Follow-up in 1 week if pain is severe and has not subsided. Follow-up in 3 weeks if moderate pain is not improving. Follow-up in 6 weeks if not substantially recovered. If serious pathology (red flag) is identified, consider further appropriate management. Identify psychosocial risk factors (yellow flags) and address appropriately. (See Appendix A for definitions of red and yellow flags and companion documents “Clinical Assessment for Psychosocial Yellow Flags” and “What can be done to help somebody who is at risk?” for chronicity and increased disability).</p>	G (G2, G4)
<p>✓ Information and Reassurance</p> <p>Educate the patient and describe the typically benign, long-term course of low back pain.</p> <p>Provide education materials that are consistent with your verbal advice to reduce fear and anxiety, and emphasize active self-management. (See the companion documents – “What You Should Know About Acute Low Back” and “Acute Low Back Pain - So Your Back Hurts ... Learn what works, what doesn't and how to help yourself”). Other methods for providing self-care education, such as e-mail discussion groups and videos, are not well studied, but may also be beneficial. (See http://www.ihe.ca/research/lbpvideo/)</p>	SR (G1)
<p>✓ Advice to Stay Active</p> <p>Patients should be advised to stay active and continue their usual activity, including work, within the limits permitted by the pain. Physical exercise is recommended.</p> <p><i>Patients should limit/pace any activity or exercise that causes spread of symptoms (peripheralization). Self-treating with an exercise program not specifically designed for the patient may aggravate symptoms.</i></p>	SR (G1, G2, G4)
<p>✓ Return to Work</p> <p>Encourage early return to work.</p> <p>Refer workers with low back pain beyond 6 weeks to a comprehensive return-to-work rehabilitation program. Effective programs are typically multidisciplinary and involve case management, education about keeping active, psychological, or behavioural treatment, and participation in an exercise program.</p> <p><i>Working despite some residual discomfort poses no threat and will not harm patients.</i></p>	SR (G1, G2)

Low Back Pain

Acute & Subacute Low Back Pain

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Recommendation	Evidence Source (see legend on P.6)
<p>✓ Heat or Cold Packs</p> <p>Superficial heat (application of heating pads or heated blankets) is recommended for the short term relief of acute low back pain. Clinical experience supports a role for superficial cold packs and alternating heat and cold as per patient preference. <i>Heat or cold should not be applied directly to the skin, and not for longer than 15 to 20 minutes. Use with care if lack of protective sensation.</i></p>	SR (G1)
<p>✓ Analgesia</p> <p>Prescribe medication, if necessary, for pain relief preferably to be taken at regular intervals. First choice acetaminophen; second choice NSAIDs.</p> <p>Only consider adding a short course of muscle relaxant (benzodiazepines, cyclobenzaprine, or antispasticity drugs) on its own, or added to NSAIDs, if acetaminophen or NSAIDs have failed to reduce pain.</p> <p><i>Serious adverse effects of NSAIDs include gastrointestinal complications (e.g. bleeding, perforation and increased blood pressure). Drowsiness, dizziness, and dependency are common adverse effects of muscle relaxants. (See Medication Table in Appendix B.)</i></p>	SR (G1, G2b, G4, G7, IHE Database)
<p>✓ Spinal Manipulation</p> <p>Patients who are not improving may benefit from referral for spinal manipulation provided by a trained spinal care specialist such as a physical therapist, chiropractor, osteopathic physician, or physician who specializes in musculoskeletal medicine.</p> <p><i>Risk of serious complication after spinal manipulation is low (estimated risk: Cauda Equina Syndrome less than 1 in one million). Current guidelines contraindicate manipulation in patients with severe or progressive neurological deficit.</i></p>	SR (G1, G4)
<p>✓ Multidisciplinary Treatment Programs For Subacute Low Back Pain*</p> <p>For subacute low back pain (duration 4 to 8 weeks), intensive interdisciplinary rehabilitation (defined as an intervention that includes a physician consultation coordinated with a psychological, physical therapy, social, or vocational intervention) is moderately effective.</p> <p>Functional restoration with a cognitive-behavioral component reduces work absenteeism due to subacute low back pain in occupational settings.</p>	SR (G1)

Low Back Pain

Acute & Subacute Low Back Pain

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Recommendation	Evidence Source (see legend on P.6)
<p>✘ Bed Rest</p> <p>Do not prescribe bed rest as a treatment.</p> <p>If the patient must rest, bed rest should be limited to no more than 2 days. Prolonged bed rest for more than 4 days is not recommended for acute low back problems. Bed rest for longer than two days increases the amount of sick leave compared to early resumption of normal activity in acute low back pain.</p> <p><i>There is evidence that prolonged bed rest is harmful.</i></p>	<p>SR (G2, G4, G7)</p>
<p>✘ Diagnostic Imaging</p> <p>For acute low back pain (no red flags), diagnostic imaging tests, including X-ray, computed tomography (CT), and magnetic resonance imaging (MRI) are not indicated.</p> <p><i>In the absence of red flags, routine use of X-rays is not justified due to the risk of high doses of radiation and lack of specificity.</i></p>	<p>SR (G1, G4, G8)</p>
<p>✘ Traction</p> <p>Do not use traction. Traction has been associated with significant adverse events.</p> <p><i>Passive treatment modalities such as traction should be avoided as monotherapy and not routinely used because they may increase the risk of illness behaviour and chronicity.</i></p> <p><i>The following adverse effects from traction were reported: reduced muscle tone, bone demineralization, and thrombophlebitis.</i></p>	<p>SR (G1, G4, G7)</p>
<p>✘ Therapeutic Ultrasound *</p> <p>Do not use therapeutic ultrasound for acute or subacute low back pain.</p>	<p>RCT (G1) + SR (IHE database)</p>
<p>✘ Transcutaneous Electrical Nerve Stimulation (TENS)</p> <p>TENS is not recommended for the treatment of acute low back pain.</p>	<p>SR (G1, G4)</p>
<p>✘ Oral steroids</p> <p>Do not use oral steroids for acute low back pain.</p>	<p>EO (G2)</p>

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Acute & Subacute Low Back Pain

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Recommendation	Evidence Source (see legend on P.6)
<p>✘ Systemic Steroids*</p> <p>Systemic corticosteroids (intramuscular injection) are not effective for the treatment of patients with acute low back pain and a negative result on a straight-leg-raise test.</p>	<p>RCT (G1)</p>
<p>✘ Epidural Steroids In The Absence Of Radiculopathy</p> <p>Do not use epidural steroid injections for acute low back pain without radiculopathy.</p>	<p>SR (G4)</p>
<p>? Epidural Steroids In The Presence Of Radiculopathy*</p> <p>It may be helpful to use epidural steroid injections for patients with radicular pain for longer than 6 weeks who have not responded to first line treatments.</p> <p>Fluoroscopy improves/verifies accuracy. Even in the most experienced hands, epidural injections can be misplaced.</p> <p><i>Adverse effects are infrequent and include headache, fever, subdural penetration and more rarely epidural abscess and ventilatory depression.</i></p>	<p>SR (G4)</p>
<p>? Narcotic Analgesics (Opioids)*</p> <p>There is insufficient evidence to recommend the use of opioids in the treatment of acute low back pain. However clinical experience suggests the use of opioids may be necessary to relieve severe musculoskeletal pain. If used, opioids are preferable for only short term intervention. Ongoing need for opioids is an indication for reassessment.</p> <p><i>In general, opioids and compound analgesics have a substantially increased risk of side effects compared with acetaminophen alone.</i></p>	<p>SR (G1, G2b, G7, IHE Database)</p>
<p>? Therapeutic Exercise</p> <p>There is insufficient evidence to recommend for or against any specific kind of exercise, or the frequency/intensity of training. Clinical experience suggests that supervised or monitored therapeutic exercise may be useful following an individualized assessment by a spine care specialist. For patients whose pain is exacerbated by physical activity and exercise, refer to a physical therapist, chiropractor, osteopathic physician, or physician who specializes in musculoskeletal medicine for therapeutic exercise recommendations.</p> <p><i>Patients should discontinue any activity or exercise that causes spread of symptoms (peripheralization). Self-treating with an exercise program not specifically designed for the patient may aggravate symptoms.</i></p>	<p>SR (G2, G4, IHE Database)</p>

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Recommendation	Evidence Source (see legend on P.6)
<p>? Multidisciplinary Treatment Programs For Acute Low Back Pain*</p> <p>No evidence was found to support recommending interdisciplinary rehabilitation for acute low back pain (pain <4 weeks).</p>	SR (G1)
<p>? There is insufficient evidence to recommend for or against the following interventions for acute or subacute low back pain:</p> <ul style="list-style-type: none"> • acupuncture SR (G7, IHE Database) • adjuvant therapies: antidepressants and anticonvulsants* EO (G1) • back schools* SR (G1) • herbal medicine* SR (IHE Database) • low-level laser therapy* RCT (G1) + SR (IHE database) • massage therapy* SR (G1, IHE Database) • modified work duties for facilitating return to work* RCT (G1) • operant conditioning provided by a physiotherapist* SR (IHE Database) • short-wave diathermy* RCT (G1) + SR (IHE database) • topical NSAIDs* SR (IHE Database) <p>No evidence from SR(s) was found to support recommending the following interventions for acute or subacute low back pain:</p> <ul style="list-style-type: none"> • interferential current therapy* EO (GDG) • touch therapies* EO (GDG) • yoga therapy* EO (GDG) 	

Chronic Low Back Pain

Summary of Recommendations:

Recommendation	Evidence Source (see legend on P.6)
<p>✓ Diagnostic Tests</p> <p>In chronic low back pain, X-rays of the lumbar spine are very poor indicators of serious pathology. Hence, in the absence of clinical red flags spinal X-rays are not encouraged. More specific and appropriate diagnostic imaging should be performed on the basis of the pathology being sought (e.g. DEXA scan for bone density, bone scan for tumours and inflammatory diseases). However, lumbar spine X-rays may be required for correlation prior to more sophisticated diagnostic imaging, for example prior to an MRI scan. In this case, the views should be limited to standing AP and lateral in order to achieve better assessment of stability and stenosis. Oblique views are not generally recommended. CT scans are best limited to suspected fractures or contraindication to MRI.</p> <p>In the absence of red flags, radiculopathy, or neurogenic claudication, MRI scanning is generally of limited value.</p> <p><i>Oblique view X-rays are not recommended; they add only minimal information in a small percentage of cases, and more than double the patient’s exposure to radiation.</i></p>	EO (GDG)

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Recommendation	Evidence Source (see legend on P.6)
<p>✓ Laboratory Testing</p> <p>If cancer or infection is suspected, order the appropriate blood tests. In the absence of red flags, no laboratory tests are recommended.</p>	<p>EO (GDG)</p>
<p>✓ Physical Exercise</p> <p>Patients should be encouraged to initiate gentle exercise and to gradually increase the exercise level within their pain tolerance.</p> <p>Sophisticated equipment is not necessary. Low cost alternatives include unsupervised walking and group exercise programs, such as those offered by chronic disease management programs. The peer support of group exercise is likely to result in better outcomes, giving patients improved confidence and empowering them to manage with less medical intervention.</p> <p>When exercise exacerbates the patient’s pain, the exercise program should be assessed by a qualified physical therapist or exercise specialist.</p> <p>If exercise persistently exacerbates their pain, patients should be further assessed by a physician to determine if further investigation, medication, treatment, or consultation is required.</p> <p><i>Some studies reported mild negative reactions to exercise programs, such as increased low back pain and muscle soreness in some patients.</i></p>	<p>SR (G6)</p>
<p>✓ Therapeutic Exercise</p> <p>A client-specific, graded, active therapeutic exercise program is recommended.</p>	<p>EO (GDG)</p>
<p>✓ Therapeutic Aquatic Exercise*</p> <p>Therapeutic aquatic exercise is recommended for chronic low back pain.</p>	<p>SR (IHE Database)</p>
<p>✓ Yoga Therapy*</p> <p>There is some evidence that Viniyoga and Iyengar types of yoga can be helpful in the treatment of chronic low back pain.</p> <p>No evidence was found to support recommending other types of yoga.</p> <p><i>It is important to find an instructor who has experience in working with individuals who have LBP to avoid further injury.</i></p>	<p>SR (IHE Database)</p>

Low Back Pain

Chronic Low Back Pain

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- *See Appendix D for Glossary and Appendix E for Evidence Source*

Recommendation	Evidence Source (see legend on P.6)
<p>✓ Active Rehabilitation</p> <p>An active rehabilitation program includes:</p> <ul style="list-style-type: none"> • Education about back pain principles • Self-management programming (see Self-Management Programs recommendation) • Gradual resumption of normal activities (including work and physical exercise) as tolerated • Therapeutic exercise (see Therapeutic Exercise recommendation) 	<p>EO (GDG)</p>
<p>✓ Self-Management Programs</p> <p>Where available, refer to a structured community-based self-management group program for patients who are interested in learning pain coping skills. These programs are offered through chronic disease management and chronic pain programs. Self-management programs focus on teaching core skills such as self monitoring of symptoms to determine likely causal factors in pain exacerbations or ameliorations, activity pacing, relaxation techniques, communication skills, and modification of negative ‘self talk’ or catastrophizing. These programs use goal setting and ‘homework assignments’ to encourage participants’ self confidence in their ability to successfully manage their pain and increase their day-to-day functioning. Most community-based programs also include exercise and activity programming which are also recommended.</p> <p>Where structured group programs are not available, refer to a trained professional for individual self-management counselling.</p>	<p>G (G6)</p>
<p>✓ Massage Therapy</p> <p>Massage therapy is recommended as an adjunct to an overall active treatment program.</p>	<p>SR (G6)</p>
<p>✓ Acupuncture</p> <p>Acupuncture is recommended as a stand-alone therapy or as an adjunct to an overall active treatment program.</p> <p><i>No serious adverse events were reported in the trials. The incidence of minor adverse events was 5% in the acupuncture group.</i></p>	<p>SR (G6)</p>

Low Back Pain

Chronic Low Back Pain

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Recommendation	Evidence Source (see legend on P.6)
<p>✓ Acetaminophen and Non-Steroidal Anti-Inflammatory Drugs* (NSAIDs)</p> <p>Acetaminophen and NSAIDs are recommended. No one NSAID is more effective than another.</p> <p>A proton pump inhibitor (PPI) should be considered for patients over 45 years of age when offering treatment with an oral NSAID/COX-2 inhibitor.</p> <p><i>NSAIDs are associated with mild to moderately severe side effects such as: abdominal pain, bleeding, diarrhea, edema, dry mouth, rash, dizziness, headache, tiredness. There is no clear difference between different types of NSAIDs. (See Medication Table in Appendix B.)</i></p>	<p>SR (G6, IHE Database)</p>
<p>✓ Muscle Relaxants</p> <p>Some muscle relaxants (e.g. cyclobenzaprine) may be appropriate in selected patients for symptomatic relief of pain and muscle spasm.</p> <p><i>Caution must be exercised with managing side effects, particularly drowsiness, and also with patient selection, given the abuse potential for this class of drugs. (See Medication Table in Appendix B.)</i></p>	<p>SR (G6)</p>
<p>✓ Antidepressants</p> <p>Tricyclic antidepressants have a small to moderate effect for chronic low back pain at much lower doses than might be used for depression.</p> <p>Possible side-effects include drowsiness and anticholinergic effects. (See Medication Table in Appendix B.)</p>	<p>SR (G6, IHE Database)</p>
<p>✓ Opioids</p> <p>Long-term use of weak opioids, like codeine, should only follow an unsuccessful trial of non-opioid analgesics. In severe chronic pain, opioids are worth careful consideration. Long acting opioids can establish a steady state blood and tissue level that may minimize the patient’s experience of increased pain from medication withdrawal experienced with short acting opioids.</p> <p>Careful attention to incremental changes in pain intensity, function, and side effects is required to achieve optimal benefit. Because little is known about the long-term effects of opioid therapy, it should be monitored carefully.</p> <p><i>Opioid side-effects (including headache, nausea, somnolence, constipation, dry mouth, and dizziness) should be high in the differential diagnosis of new complaints.</i></p> <p>A history of addiction is a relative contraindication. Consultation with an addictions specialist may be helpful in these cases.</p> <p>Consult the Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain endorsed by the CPSA. http://nationalpaincentre.mcmaster.ca/opioid/ (Also see Medication Table in Appendix B.)</p>	<p>SR (G6, IHE Database)</p>

Low Back Pain

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Recommendation	Evidence Source (see legend on P.6)
<p>✓ Herbal Medicine*</p> <p>The following herbal medicines can be considered as treatment options for acute exacerbations of chronic low back pain:</p> <ul style="list-style-type: none"> • An aqueous extract of Harpagophytumprocumbens (also called Devil’s Claw, grapple plant, wood spider) at a standardized daily dosage of 50 mg harpagoside, • A combination of extract of Salix daphnoides and Salix purpurea (also called purple willow, red willow) at a standardized dosage of 240 mg salicin/day and • A plaster of Capsicum frutescens (also called bird pepper, hot pepper, red chili, spur pepper, Tabasco pepper) <p><i>Devil’s Claw was associated with the following adverse events: repeated coughs, tachycardia, and gastrointestinal upset. Use of Capsicum frutescens plaster was associated with inflammatory contact eczema, urticaria, minute haemorrhagic spots, vesiculation or dermatitis, sensation of warmth locally and pruritis.</i></p> <p><i>Patients should be advised to read the product ingredients to ensure they are getting the correct amount and correct product mentioned in the recommendation. It is important to be aware that a product could list on the label different extracts of the same active ingredient (e.g. Devil’s Claw and wood spider).</i></p> <p><i>Devil’s Claw, Salix and Capsicum frutescens are currently regulated by Health Canada. (See http://www.hc-sc.gc.ca/dhp-mps/prodnatur/applications/licen-prod/lnhpd-bdpsnh-eng.php)</i></p>	<p>SR (IHE Database)</p>
<p>✓ Behavioural Therapy/Progressive Muscle Relaxation</p> <p>Where group programs are not available, consider referral for individual cognitive behavioural treatment provided by psychologist or other qualified provider.</p>	<p>SR (G6)</p>
<p>✓ Multidisciplinary Treatment Program</p> <p>Referral to a multidisciplinary chronic pain program is appropriate for patients who are significantly affected by chronic pain and who have failed to improve with adequate trials of first line treatment. Get to know the multidisciplinary chronic pain program in your referral area and use it for selected cases of chronic low back pain.</p>	<p>SR (G6)</p>

Low Back Pain

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Recommendation	Evidence Source (see legend on P.6)
<p>✓ Injection Therapy*</p> <p>The following injection therapies may be beneficial for carefully selected patients (see Appendix C) with a clinical diagnosis of pain originating from the lumbar facet joints:</p> <ul style="list-style-type: none"> • Intra-articular facet joint blocks • Medial branch blocks (studies show benefit for up to 6 weeks, and sometimes longer) • Medial branch neurotomy (studies demonstrate pain relief lasting longer than 3 months) <p>The clinical diagnosis of facet joint pain lacks specificity and may be best determined by a trained spinal care specialist.</p> <p><i>The most commonly reported adverse events are:</i></p> <ul style="list-style-type: none"> • <i>Facet joint interventions: haematoma, steroid side effects, accidental dural puncture and infection.</i> • <i>Radiofrequency denervation: increased pain (usually temporary) due to neuritis, and cutaneous dysaesthesias.</i> 	<p>SR (IHE Database)</p>
<p>✓ Epidural Steroid Injections</p> <p>For patients with leg pain, epidural steroid injections can be effective in providing short-term and occasional long-term pain relief. Fluoroscopy improves/verifies accuracy. Even in the most experienced hands, epidural injections can be misplaced.</p> <p><i>Transient minor complications include: headache, nausea, pruritis, increased pain of sciatic distribution, and puncture of the dura.</i></p>	<p>SR (G6)</p>
<p>✓ Referral for Surgical Opinion on Spinal Fusion*</p> <p>Consider referral for an opinion on spinal fusion for patients who:</p> <ul style="list-style-type: none"> • Have completed an optimal package of care including a combined physical and psychological treatment program (usually 6 months of care); and • <u>Still</u> have severe low back pain for which the patient would consider surgery, particularly if related to spinal stenosis with leg pain. <p>Offer anyone with significant psychological distress appropriate treatment for this before referral for an opinion on spinal fusion.</p> <p>Refer the patient to a specialist spinal surgical service if spinal fusion is being considered. Give due consideration to the possible risks in that patient. Counsel the patient that surgery may not be an option in his/her case.</p>	<p>EO (GDG)</p>
<p>✗ Selective Serotonin Reuptake Inhibitors (SSRIs)*</p> <p>Do not offer SSRIs for treating chronic low back pain. They may, however, be indicated for co-morbid depression.</p>	<p>SR (IHE Database)</p>
<p>✗ Motorized Traction*</p> <p>Do not use motorized traction for chronic low back pain.</p>	<p>SR (IHE Database)</p>

Low Back Pain

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Recommendation	Evidence Source (see legend on P.6)
<p>✘ Prolotherapy as a Sole Treatment*</p> <p>Prolotherapy is not recommended as a sole treatment for chronic low back pain.</p>	SR (G6)
<p>✘ Transcutaneous Electrical Nerve Stimulation (TENS) as a Sole Treatment*</p> <p>TENS is not recommended as a sole treatment for chronic low back pain.</p>	SR (G6)
<p>? Lumbar Discography as a Diagnostic Test*</p> <p>There is insufficient evidence to recommend for or against the use of lumbar discography as a diagnostic test.</p>	SR (IHE Database)
<p>? Prolotherapy as an Adjunct Treatment*</p> <p>Prolotherapy may be useful for carefully selected and monitored patients who are participating in an appropriate program of therapeutic exercise and/or manipulation/mobilization.</p> <p><i>The most commonly reported adverse events were temporary increases in back pain and stiffness following injections. Some patients had severe headaches suggestive of lumbar puncture, but no serious or permanent adverse events were reported.</i></p>	EO (G6)
<p>? Transcutaneous Electrical Nerve Stimulation (TENS) as an Adjunct Treatment*</p> <p>TENS may be useful as an adjunct in select patients for pain control to reduce the need for medications. A short trial (2 to 3 treatments) using different stimulation parameters should be sufficient to determine if the patient will respond to this modality.</p> <p><i>Skin irritation is a common adverse event.</i></p>	EO (G6)
<p>? Therapeutic Ultrasound*</p> <p>There is insufficient evidence to recommend for or against the use of therapeutic ultrasound for chronic low back pain.</p> <p>Based on expert opinion, this modality is overused relative to any potential therapeutic benefit.</p>	SR (IHE Database)

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Recommendation	Evidence Source (see legend on P.6)
<p>? There is insufficient evidence to recommend for or against the following interventions for chronic low back pain:</p> <ul style="list-style-type: none"> • low-level laser therapy* • spa therapy* • spinal manipulative treatment or spinal mobilization <p>No evidence from SR(s) was found to support recommending the following interventions for chronic low back pain:</p> <ul style="list-style-type: none"> • buprenorphine transdermal system* • duloxetine* • intramuscular stimulation* • interferential current therapy* • topical NSAIDs* • touch therapies* 	<p>SR (IHE Database)</p> <p>SR (IHE Database)</p> <p>SR (G6, IHE Database)</p> <p>EO (GDG)</p> <p>EO (GDG)</p> <p>EO (GDG)</p> <p>EO (GDG)</p> <p>EO (GDG)</p> <p>EO (GDG)</p>

Red Flags

(adapted from G2, G4, G6, G7, G8, EO (GDG))

Definitions

Emergency - referral within hours

Urgent - referral within 24 - 48 hours

Soon - referral within weeks

Depending on the clinical situation, consider communicating with the specialist consultant to determine the urgency and timelines for referral.

While patient is waiting to be seen by specialist: general advice is analgesia, rest and activity avoidance. Advise patient tests are needed to clarify the diagnosis but that results may be inconclusive.

- Cauda Equina Syndrome (sudden onset of new urinary retention, fecal incontinence, saddle(perineal) anesthesia, radicular (leg) pain often bilateral, loss of voluntary rectal sphincter contraction)- **EMERGENCY** referral to ER
- Severe unremitting (non-mechanical) worsening of pain (at night and pain when laying down), consider infection or tumor – **URGENT** referral to ER for pain control – will need prompt investigation
- Significant trauma – consider fractures – check for instability and refer **URGENTLY** to spinal surgery, if indicated
- Weight loss, fever, history of cancer or HIV – consider infection or tumor – refer **URGENTLY** for MRI Scan and to spinal surgery, if indicated
- Use of IV drugs or steroids – consider infection or compression fracture – **URGENT** investigation required. In case of suspected infection, consider blood work (CBC, ESR and CRP). If blood work is positive, proceed to MRI, if available. In case of suspected compression fracture, proceed to standing AP and lateral X-rays. Risk factors for compression fractures include: severe onset of pain with minor trauma in patients ≥ 50 years of age (higher risk >65 years of age), history of prolonged corticosteroids intake, or structural deformity.
- Widespread neurological signs – consider tumor or neurological disease – investigate further and refer **SOON** if indicated
- Patient over 50, but particularly over 65, with first episode of severe back pain. If other risk factors for malignancy are present (history of cancer/carcinoma in the last 15 years, unexplained weight loss, failure of conservative care (4 weeks)), investigate further, refer **SOON** as indicated.

Yellow Flags¹⁵

Yellow Flags indicate psychosocial barriers to recovery that may increase the risk of long-term disability and work loss. Identifying any Yellow Flags may help when improvement is delayed. There is more about “[Clinical Assessment of Psychosocial Yellow Flags](#)” and “[What can be done to help somebody who is at risk?](#)” in the companion documents to this guideline. Yellow Flags include:

Yellow flag	Intervention
Belief that pain and activity are harmful	Educate and consider referral to active rehab including CBT
‘Sickness behaviours’ (like extended rest)	Educate and consider pain clinic referral
Low or negative moods, social withdrawal	Assess for psychopathology and treat
Treatment beliefs do not fit best practice	Educate
Problems with claim and compensation	Connect with stakeholders and case manage
History of back pain, time-off, other claims	Follow-up regularly refer if recovering slowly
Problems at work, poor job satisfaction	Engage case management through disability carrier
Heavy work, unsociable hours (shift work)	Follow-up regularly refer if recovering slowly
Overprotective family or lack of support	Educate patient and family

Appendix B Medication Table

Low Back Pain

The medications presented are those for which systematic review(s) (SRs) were identified by literature search. Some drugs in the table are recommended based on the GDG expert opinion. Other drugs are sometimes used for neuropathic and musculoskeletal pain.

These recommendations are systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances. They should be used as an adjunct to sound clinical decision making.

Pain Type	Medication	Dosage Range	Contraindications/Precautions	Side Effects	Ongoing monitoring
Acute low back pain or flare-up of chronic low back/spinal pain ^{19,24}	1st line^(a) - Acetaminophen	Up to 1000mg QID (max of 3000 mg / day)		Negligible.	See Acetaminophen below.
	2nd line^(a) - NSAIDs ^(b)	Up to 800mg TID (max of 800mg QID) Up to 50mg TID	These are time limited strategies typically several days to a week and rarely up to a month. Monitor judiciously.	See NSAIDs below.	See NSAIDs below.
	Add: Cyclobenzaprine for prominent muscle spasm	10 to 30 mg per day; Greatest benefit seen within one week; therapy up to 2 weeks may be justified.		Sedation, dry mouth.	Related to the TCAs but without robust evidence to support long term use.
	If taking controlled release (CR) opioids add a short-acting opioid or increase CR opioid by 20 - 25% ^(c)	See opioids below.		See opioids below.	See opioids below.
Chronic low back/spinal pain ^{19-21,23,25}	1st line^(a) Acetaminophen	Up to 1000mg QID (max of 3000mg/day)	Liver disease. Concomitant long term use with NSAIDs may inc. risk of ulcers.	Negligible.	Primarily liver toxicity with long term, high dose consumption. Increased risk of high BP associated with long term use.
	2nd line^(a) NSAIDs ^(b)	Up to 800mg TID (max of 800mg QID) Up to 50mg TID	Elevated risk of GI complications; coagulation defects.	Primarily GI, possible fluid retention or CNS effects such as dizziness or fatigue at higher doses.	Patients may need gastric protection with a PPI. Monitor for CV risk factors and renal function if long term use.
	3rd line Tricyclics (TCA)	10 to 100mg HS	Start low & go slow; TCAs have positive effects on sleep architecture.	Drowsiness, anti-cholinergic effects.	Precautions in patients with pre-existing cardiac abnormalities and glaucoma.
	3rd line Weak Opioids	30 to 60mg every 3 to 4 hours CR Codeine - 50 to 100mg Q8h, may also be given Q12h.	10% of patients do not respond to codeine.	Constipation, nausea, CNS side effects.	Monitor constipation.
	4th line - Tramadol ^(e)	Slow titration; max of 400 mg/day <u>Note:</u> Monitor total daily acetaminophen dose when using tramadol-acetaminophen combination.	Slow titration then convert to a CR product. Possible loss of analgesia when combined with high dose opioid. Caution if adding to TCAs or SNRIs.	Dizziness, drowsiness, asthenia, gastrointestinal complaints.	Hepatic and/or renal dysfunction or pre-existing seizure risk.
	5th line Strong Opioids (CR)	15 to 100 mg BID 3 to 24 mg BID 10 to 40 mg BID-TID 25 to 50 mcg/hr Q3days	Assess addiction potential. Use an opioid agreement. Observe and assess for a dose-response relationship.	Anticipate constipation and nausea; treat accordingly CNS side effects. Tolerance occurs.	Pain, function, behaviour. Monitor for end-of-dose failure; some patients may require Q8h dosing for oral CR opioids.
	1st or 2nd line Anticonvulsants ^(b) (Gabapentin or Pregabalin) ^(b)	Gabapentin: 100mg HS up to a suggested maximum of 1200mg TID. Higher doses have been used Pregabalin: 75 to 300mg BID; may need to start @ 25mg for elderly or sensitive patients.	Significant renal impairment requires dose adjustment. Slower titration required for pregabalin.	Sedation, dizziness and other CNS side effects.	Occasional renal function tests
	3rd or 4th line SNRIs ^(d)	30 to 60mg QD 37.5 to titration max 375mg/day	Significant renal impairment requires dose adjustment. Do not stop abruptly.	Dizziness, headache, insomnia or sedation, gastrointestinal complaints.	Possible weight loss (esp. venlafaxine) Venlafaxine more activating.
	3rd or 4th line - Add opioids ^(d) or tramadol ^(d)	See opioids or tramadol, above.	See opioids or tramadol, above.	See opioids or tramadol, above.	See opioids or tramadol, above.
	Sleep disturbance accompanying chronic pain^{19,26}	Amiripryline Nortriptyline Trazodone	10 to 100mg take 2+ hours before bed time. 25 to 100mg HS	Start low & go slow; dosing should be individualized and concurrent mood disturbances treated.	Drowsiness, anti-cholinergic effects. Drowsiness, dizziness.

(a) Sequence is based on the GDG expert opinion of common usage and potential risks/side effects; (b) Requires special authorization for Blue Cross coverage: COX-2 Inhibitors (i.e., celecoxib) for patients with a history of severe complications; Duloxetine covered only for diabetic peripheral neuropathic pain; Fentanyl patch for patients unable to tolerate at least two of the following: morphine, hydromorphone, oxycodone. (c) There is insufficient evidence to recommend for or against use but opioids are occasionally used for more severe acute LBP; (d) See Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain, available at: <http://nationalpaincentre.mcmaster.ca/opioid/>; (e) Not currently covered by Alberta Blue Cross; (f) On occasion other agents are successfully used (e.g. topiramate) but no SRs were identified for LBP; (g) Recommended based on GDG expert opinion, no evidence (SR) was found to support recommending the use of SNRIs (venlafaxine, duloxetine) for patients with chronic LBP.

Injection Therapies

(Source: EO(GDG))

Injections therapies, including Prolotherapy, Facet Joint Blocks, Medial Branch Blocks and Neurotomy are areas of active research and the clinical factors that predict their optimum use remain undetermined at present. Nonetheless, clinically, there appears to be reason to support their use in carefully selected patients. At present they are recommended only for patients selected by a clinician with training and experience in evaluating the physical examination findings that the receiving physician has agreed are predictive of successful intervention. The evaluating clinician may be another physician with an interest in these treatment modalities, or a similarly qualified physiotherapist, chiropractor. This requires a degree of local co-operation to establish the appropriate referral networks, which is not feasible in all settings.

Physical examination findings predictive of facet joint origin for low back pain:

While published research suggests a significant degree of inter-examiner variability in interpreting physical examination findings, the following are considered by the authors to be suggestive of a facet joint origin for low back pain. Within the limitations noted above, such patients may be considered for referral for facet joint blocks as a confirmatory test:

- Pain is often of rapid onset.
- Pain is unilateral or bilateral at or above the belt-line. If radiation to the leg is present it tends to be to the buttocks or lateral thigh and rarely below the knee.
- Pain tends to be worse with low back extension, and may be relieved with flexion or sitting.
- Pain may be provoked with palpation over the paravertebral tissues in the area of the facet joints lateral to the midline, and often under several layers of muscle that may also be pain generators.
- Pain may be provoked by a “Facet Joint Loading Maneuvers” on physical examination, for example: while standing with feet pointing ahead at shoulder distance apart, the patient is asked to look over one shoulder, followed by trunk rotation to the same side, then lumbar extension. The resulting lumbar extension in combination with side-bending and rotation will cause facet joint loading on the same side. The examiner may need to help stabilize the patient to prevent a loss of balance.

Glossary

(Adapted from: 5, 29-39, G1, G5)

Acupuncture	An intervention consisting of the insertion of needles at specific acupuncture points.
Acute and subacute low back pain	Pain present for fewer than 3 months.
Back schools	An intervention consisting of education and a skills program, including exercise therapy, in which all lessons are given to groups of patients and supervised by a paramedical therapist or medical specialist.
Behaviour treatment (BT) & Cognitive behavioural treatment (CBT)	<p>BT: There are three behavioural treatment approaches: operant, cognitive, and respondent. Each of these focuses on the modification of one of the three response systems that characterize emotional experiences: behaviour, cognition, and physiological reactivity.</p> <p>CBT: A range of therapies based on psychological models of human cognition, learning and behaviour.</p>
Brief individualized educational interventions	Individualized assessment and education about low back pain problems without supervised exercise therapy or other specific interventions. Brief educational interventions differ from back schools because they do not involve group education or supervised exercise.
Chronic low back pain	Pain present for more than 3 months.
Exercise	<p>Therapeutic exercises are prescribed according to the results of an individual patient assessment, and recommendations are based on the specific impairments identified.</p> <p>Supervised exercise programs and formal home exercise regimens ranging from programs aimed at general physical fitness or aerobic exercise to programs aimed at muscle strengthening, flexibility, stretching, or different combinations of these elements.</p>
Functional restoration (also called physical conditioning, work hardening, or work conditioning)	An intervention that involves simulated or actual work tests in a supervised environment in order to enhance job performance skills and improve strength, endurance, flexibility, and cardiovascular fitness in injured workers.
Interdisciplinary rehabilitation (also called multidisciplinary therapy)	An intervention that combines and coordinates physical, vocational, and behavioural components and is provided by multiple health care professionals with different clinical backgrounds. The intensity and content of interdisciplinary therapy varies widely.

Interferential current therapy	The superficial application of a medium-frequency alternating current modulated to produce low frequencies up to 150 Hz. It is thought to increase blood flow to tissues and provide pain relief and is considered more comfortable for patients than transcutaneous electrical nerve stimulation.
Intramuscular stimulation	Uses very thin needles to 'dry needle' affected areas without the injection of any substance. IMS differs from acupuncture in its application because needle insertion is indicated by physical signs as opposed to the predetermined meridians of acupuncture. IMS is based on known scientific, neurophysiological principles.
Low-level laser therapy	The superficial application of lasers at wavelengths between 632 and 904 nm to the skin in order to apply electromagnetic energy to soft tissue. Optimal treatment parameters (wavelength, dosage, dose-intensity, and type of laser) are uncertain.
Lumbar provocation discography	Procedure that is used to characterize the pathoanatomy and architecture of the intervertebral disc and to determine if the intervertebral disc is a source of chronic low back pain.
Lumbar supports	External devices designed to reduce spinal mobility.
Massage	Soft tissue manipulation using the hands or a mechanical device through a variety of specific methods. The pressure and intensity used in different massage techniques vary widely.
Motorized traction	An intervention involving drawing or pulling in order to stretch the lumbar spine. Various methods are used, usually involving a harness around the lower rib cage and the iliac crest, with the pulling action done by using free weights and a pulley, motorized equipment, inversion techniques, or an overhead harness.
MRI	Magnetic resonance imaging; an imaging technique used to image internal structures of the body, particularly the soft tissues without use of radiation.
Multidisciplinary therapy (multidisciplinary treatment programs)	See Interdisciplinary rehabilitation.
Nonspecific low back pain	Pain occurring primarily in the back with no signs of a serious underlying condition (such as cancer, infection, or cauda equina syndrome), spinal stenosis or radiculopathy, or another specific spinal cause (such as vertebral compression fracture or ankylosing spondylitis). Degenerative changes on lumbar imaging are usually considered nonspecific, as they correlate poorly with symptoms.

Osteopathic physician	The training of osteopathic physicians incorporates the diagnosis, treatment, prevention and rehabilitation of musculoskeletal conditions. Osteopathic manual therapy, including manipulation, can be an important part of treatment.
Physiotherapy provided operant conditioning	Operant conditioning is defined as a time contingent, graduated increase in activity including goal setting and the education and reinforcement of positive pain behaviours with the ultimate aim of decreasing disability and increasing function.
Prevention of occurrence of low back pain	Reduction of the incidence (first-time onset) of low back pain or the risk of new cases appearing, i.e. primary prevention.
Prevention of recurrence of low back pain	Reduction of the occurrence of a new episode of low back pain after a symptom-free period in patients who have previously experienced low back pain, i.e., secondary prevention.
Progressive (muscle) relaxation	A technique which involves the deliberate tensing and relaxation of muscles, in order to facilitate the recognition and release of muscle tension.
Prolotherapy	Injections of irritant solutions to strengthen lumbosacral ligaments.
Proton pump inhibitor	A type of drug that reduces the production of acid in the stomach, and is used to treat indigestion and stomach ulcers.
Radiculopathy	Dysfunction of a nerve root associated with pain, sensory impairment, weakness, or diminished deep tendon reflexes in a nerve root distribution. The most common symptom of lumbar radiculopathy is sciatica. Sciatica is defined as pain radiating down the leg below the knee in the distribution of the sciatic nerve, suggesting nerve root compromise due to mechanical pressure or inflammation.
Red flags	Clinical (i.e. physical) features that may alert to the presence of serious but relatively uncommon conditions or diseases requiring evaluation. Such conditions include tumours, infection, fractures, and neurological damage/ disease.
Short-wave diathermy	Therapeutic elevation of the temperature of deep tissues by application of short-wave electromagnetic radiation with a frequency range from 10–100 MHz.
Spa therapy	An intervention involving several interventions, including mineral water bathing, usually with heated water, and other interventions such as massage and exercise, typically while staying at a spa resort.
Spinal care specialist	A physical therapist, chiropractor, osteopathic physician, or physician who specializes in musculoskeletal medicine.

Spinal fusion	A procedure that involves fusing together two or more vertebrae in the spine using either bone grafts or metal rods
Spinal manipulative therapy	Application of high-velocity, low-amplitude manual thrusts to the spinal joints slightly beyond the passive range of joint motion.
Spinal mobilization	Application of manual force to the spinal joints within the passive range of joint motion that does not involve a thrust.
TENS	Transcutaneous electrical nerve stimulation; use of a small, battery-operated device to provide continuous electrical impulses via surface electrodes, with the goal of providing symptomatic relief by modifying pain perception.
Therapeutic aquatic exercise	Active exercise in warm water; such as aqua-aerobics and aqua-jogging.
Therapeutic ultrasound	The use of, externally applied sound waves to generate heat within specific parts of the body.
Touch therapies	Touch therapies are defined as energy based complementary therapies including healing touch, therapeutic touch, and Reiki.
Yellow flags	Psychosocial and sociological factors that increase the risk of developing or perpetuating long-term disability and work loss associated with low back pain.
Yoga	<p>An intervention distinguished from traditional exercise therapy by the use of specific body positions, breathing techniques, and an emphasis on mental focus. Many styles of yoga are practiced, each emphasizing different postures and techniques. Iyengar yoga: A type of hatha yoga; make use of a variety of props so that perfect alignment is obtained regardless of physical limitations.</p> <p>Viniyoga: A type of hatha yoga customized by the practitioner for each individual.</p> <p>Other types of hatha yoga include: Ashtanga, Kripalu, Bikram, Anusara.</p>

The Evidence Source provides information on the “seed” guideline(s) that were used to develop the Alberta guideline recommendations and the design of the studies referenced by the seed guideline(s) in support of their recommendations.

The following evidence sources were considered:

- Systematic review (SR): as cited by the seed guideline(s) or identified from a supplementary literature search (IHE Database) required by the Ambassador Guideline Development Group (GDG). The literature search spanned from January 1996 to August 2007 for the first edition of this guideline and from January 2002 to December 2010 for the second edition.
- Randomized controlled trial (RCT): as cited by the seed guideline(s);
- Case series (CS): as cited by the seed guideline(s);
- Guideline (G): as cited by the seed guideline(s);
- Expert opinion (EO) as cited by the seed guideline(s): when no evidence was provided by the “seed” guideline(s) in support of the recommendation;
- EO (GDG): after examining other references nominated by GDG members (i.e. SRs or Gs which defined chronic pain as > 6 weeks’ duration) or when no evidence from SRs was found on an intervention, a new recommendation was drafted based on the collective EO of the Ambassador GDG.

For evidence cited by the seed guideline(s), only the highest level of evidence was listed. For example, when the evidence cited by a seed guideline was from SRs and studies of other design (i.e. RCT, CS, or G) only SR is listed as the source. When no SR was referenced in the seed guideline, the evidence source was indicated in the following order: RCT, CS, G, EO. The same classification for the evidence source was applied when multiple seed guidelines were used to inform one recommendation.

Each recommendation in the Alberta guideline came from one or more seed guidelines or SRs (IHE Database) was created by the GDG, based on their collective professional opinion and an analysis of relevant evidence.

Prevention of occurrence and recurrence of low back pain		
Lumbar supports (p.7)	Changed from “Do Not Know”	✘
Acute and subacute low back pain		
Diagnostic triage/Ankylosing spondylitis (p.8)	New recommendation	✓
Referral for MRI and possible surgical opinion for radiculopathy (p.9)	New recommendation	✓
Therapeutic ultrasound (p.12)	New recommendation	✘
Systemic steroids (p.13)	New recommendation	✘
Epidural steroids in the presence of radiculopathy (p.13)	Changed from “Do Not Do”	?
Narcotic analgesics (opioids) (p.13)	Changed from “Do”	?
Multidisciplinary treatment programs for acute low back pain (p.14)	Changed from “Do”	?
Adjuvant therapies: anticonvulsants (p.14)	New recommendation	?
Back schools (p.14)	Changed from “Do Not Do”	?
Herbal medicine (p.14)	New recommendation	?
Low-level laser therapy(p.14)	New recommendation	?
Massage therapy (p.14)	Changed from “Do Not Do”	?
Modified work duties for facilitating return to work (p.14)	New recommendation	?
Operant conditioning provided by a physiotherapist (p.14)	New recommendation	?
Short-wave diathermy (p.14)	New recommendation	?
Topical non-steroidal anti-inflammatory drugs (p.14)	New recommendation	?
Interferential current therapy (p.14)	New recommendation	?
Touch therapies (p.14)	New recommendation	?
Yoga therapy (p.14)	New recommendation	?
Chronic low back pain		
Therapeutic aquatic exercise (p.15)	New recommendation	✓
Yoga therapy (Viniyoga & Iyengar) (p.15)	New recommendation	✓
Non-steroidal anti-inflammatory drugs (p.17)	Added PPI recommendation	✓
Herbal medicine (p.18)	New recommendation	✓
Injection therapy (p.19)	New recommendation	✓
Referral for surgical opinion on spinal fusion (p.19)	New recommendation	✓
Selective serotonin reuptake inhibitors (p.19)	New recommendation	✘
Motorized traction (p.19)	New recommendation	✘
Prolotherapy* (p.20)	Changed from “Do”	✘/?
Transcutaneous electrical nerve stimulation* (p.20)	Changed from “Do”	✘/?
Lumbar discography as a diagnostic test (p.20)	New recommendation	?
Therapeutic ultrasound (p.20)	New recommendation	?
Buprenorphine transdermal system (p.21)	New recommendation	?
Low-level laser therapy (p.21)	New recommendation	?
Spa therapy (p.21)	New recommendation	?
Duloxetine (p.21)	New recommendation	?
Intramuscular stimulation (p.21)	New recommendation	?
Interferential current therapy (p.21)	New recommendation	?
Topical non-steroidal anti-inflammatory drugs (p.21)	New recommendation	?
Touch therapies (p.21)	New recommendation	?

*Changed to “Do Not Do” for sole treatment and “Do Not Know” for adjunct treatment.

✓Do; ✘Do Not Do; ? Do Not Know “Do Not Know” refers to lack of evidence or conflicting or equivocal results from published literature.; p: page.

The guidelines are not presented in any specific order. G1, G2, etc., are randomly assigned and for the purpose of organization only.

G1[‡] USA	Chou et al. Diagnosis and Treatment of Low Back Pain: A Joint Clinical Practice Guideline from the American College of Physicians and the American Pain Society. <i>Annals of Internal Medicine</i> 2007 Oct 2;147(7):478-91. Last accessed online July 8, 2010.
G2[‡] Minnesota USA	a. Institute for Clinical Systems Improvement (ICSI). Adult low back pain, 12 th edition. Bloomington (MN): INCSI: 2006 Sept. Last accessed online May 7, 2008. b. Institute for Clinical Systems Improvement (ICSI). Adult low back pain, 13 th edition. Bloomington (MN): INCSI: 2008 Nov. Last accessed online July 8, 2010.
G3 USA	U.S. Preventive Services Task Force. Primary care interventions to prevent low back pain: brief evidence update. Rockville, MD: Agency for Healthcare Research and Quality; February 2004. Last accessed online May 7, 2008.
G4 Europe	van Tulder M et al. on behalf of the COST B13 Working Group on Guidelines for the Management of Acute Low Back Pain in Primary Care. European guidelines for the management of acute nonspecific low back pain in primary care. Brussels: European Commission Research Directorate General; 2004. Last accessed online May 7, 2008.
G5 Europe	Burton AK et al., on behalf of the COST B13 Working Group on Guidelines for Prevention in Low Back Pain. European guidelines for prevention in low back pain. Brussels: European Commission Research Directorate General; 2004. Last accessed online May 7, 2008.
G6 Alberta Canada	Calgary Health Region. Chronic pain management: guidelines for primary care practice in the Calgary Health Region. Calgary (AB): Calgary Health Region; Oct. 2005. Regional Pain Program. Low back pain: evidence-based clinical practice guidelines for primary care practice in the Calgary Health Region – chronic pain services in the community: supporting primary care. 2006 Sept. Last accessed online May 7, 2008.
G7 Australia	Australian Acute Musculoskeletal Pain Group. Evidence-based management of acute musculoskeletal pain: acute low back pain. Chapters 4 and 9 Brisbane: Australian Academic Press Pty Ltd; 2003:25-62, 183-8. Last accessed online May 7, 2008.
G8[‡] Québec Canada	Bussieres AE et al. Diagnostic imaging practice guidelines for musculoskeletal complaints in adults-an evidence-based approach-part 3: spinal disorders. <i>Journal of Manipulative Physiology Therapy</i> 2008 Jan;31(1):33-88. Last accessed online July 8, 2010.

[‡] New “seed” guidelines used in this update.

This evidence-informed guideline is for non-specific, non-malignant low back pain in adults only

Red Flags help identify rare, but potentially serious conditions. They include:

- Features of Cauda Equina Syndrome including sudden onset of loss of bladder/bowel control, saddle anaesthesia (**emergency**)
- Severe worsening pain, especially at night or when lying down (**urgent**)
- Significant trauma (**urgent**)
- Weight loss, history of cancer, fever (**urgent**)
- Use of steroids or intravenous drugs (**urgent**)
- First episode of severe pain with patient over 50 years old, especially over 65 (**soon**)
- Widespread neurological signs (**soon**)

EMERGENCY - referral within hours

URGENT - referral within 24 - 48 hours

SOON - referral within weeks

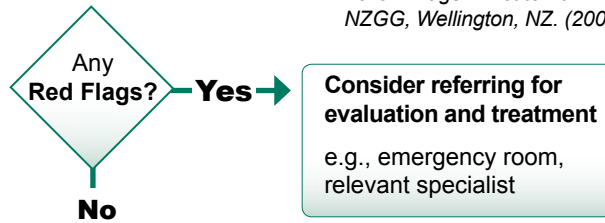
Conduct a full assessment

Including:

- history taking
- physical and neurological exam
- evaluation of **Red Flags**
- psychosocial risk factors/**Yellow Flags**

Yellow Flags indicate psychosocial barriers to recovery. They include:

- Belief that pain and activity are harmful
 - 'Sickness behaviours' (like extended rest)
 - Low or negative mood, social withdrawal
 - Treatment expectations that do not fit best practice
 - Problems with claim and compensation
 - History of back pain, time-off, other claims
 - Problems at work, poor job satisfaction
 - Heavy work, unsociable hours (shift work)
 - Overprotective family or lack of support
- Kendall et al. Guide to Assessing Psycho-social Yellow Flags in Acute Low Back Pain. ACC & NZGG, Wellington, NZ. (2004 Ed.).*



Consider referring for evaluation and treatment

e.g., emergency room, relevant specialist

Acute and Subacute

(within 12 weeks of pain onset)

Chronic

(more than 12 weeks since pain onset)

- **Educate patient** that low back pain typically resolves within a few weeks (refer to Patient Information Sheet)
- **Prescribe self-care strategies** including alternating cold and heat, continuation of usual activities as tolerated
- **Encourage early return to work**
- **Recommend physical activity and/or exercise**
- **Consider analgesics** in this order:
 - Acetaminophen
 - NSAIDs (consider PPI)
 - Short course muscle relaxants
 - Short-acting opioids (rarely, for severe pain)

1-6 Weeks

Reassess (including Red Flags) if patient is not returning to normal function or symptoms are worsening

Consider Referral

- Physical therapist
- Chiropractor
- Osteopathic physician
- Physician specializing in musculoskeletal medicine
- Spinal surgeon (for unresolving radicular symptoms)
- Multidisciplinary pain program (if not returning to work)

- **Prescribe physical or therapeutic exercise**
- **Analgesics Options**
 - Acetaminophen
 - NSAIDs (consider PPI)
 - Low dose tricyclic antidepressants
 - Short term cyclobenzaprine for flare-ups
- **Referral Options**
 - Community-based active rehabilitation program
 - Community-based self management/cognitive behavioural therapy program
- **Additional Options**
 - Progressive muscle relaxation
 - Acupuncture
 - Massage therapy, TENS as adjunct to active therapy
 - Aqua therapy and yoga

Moderate to Severe Pain

- **Opioids** (for appropriate patients: refer to the Canadian National Opioid Guideline endorsed by the College of Physicians and Surgeons of Alberta) See bottom of p.2 for link
- **Referral Options**
 - Multidisciplinary chronic pain program
 - Epidural steroids (for short-term relief of radicular pain)
 - Prolotherapy, facet joint injections and surgery in carefully selected patients.

Key Messages

- Do a full clinical assessment; rule out red flags
- In the absence of red flags, reassure the patient there is no reason to suspect a serious cause
- Reinforce that pain typically resolves in a few weeks without intervention
- Encourage patient to keep active
- Consider evidence-based management as per the guideline
- Recommend physical activity and/or exercise to prevent recurrence
- If pain continues beyond 6 weeks, reassess and consider additional treatment and referrals
- The goal of chronic pain management is improved quality of life
- Encourage and support pain self-management
- Monitor patient for relative benefit versus side effects

Contraindications

Evidence indicates these actions are ineffective or harmful

- Lab tests and diagnostic imaging in the absence of red flags
- Prolonged bed rest
- Traction (including motorized)
- Therapeutic ultrasound for acute and subacute pain
- Oral and systemic steroids
- Epidural steroid injections in the absence of radicular pain
- TENS for acute pain
- Massage, prolotherapy and TENS as sole treatments for chronic pain

Medication Table

Pain Type	Medication	Dosage range	
Acute and sub-acute low back pain or flare-up of chronic low back/spinal pain	1st line	Acetaminophen Up to 1000 mg QID (max of 3000 mg/day)	
	2nd line NSAIDs (consider PPIs if >45 years of age)	Ibuprofen Up to 800 mg TID (max of 800 mg QID)	
		Diclofenac Up to 50 mg TID	
	Add: Cyclobenzaprine for prominent muscle spasm		10 to 30 mg/day; Greatest benefit seen within one week; therapy up to 2 weeks may be justified
	If prescribing controlled release opioids: add a short-acting opioid or increase controlled release opioid by 20 to 25%		See opioids below
Chronic low back/spinal pain	1st and 2nd lines	See acute pain, above	
	3rd line Tricyclics (TCAs)	Amitriptyline 10 to 100 mg HS	
		Nortriptyline fewer adverse effects	
	3rd line Weak Opioids	Codeine 30 to 60 mg every 3 to 4 hours	
		Controlled release codeine 50 to 100 mg Q8h, may also be given Q12h	
	4th line Tramadol (<i>not currently covered by Alberta Blue Cross</i>)	Slow titration max 400mg/day. Note: Monitor total daily acetaminophen dose when using tramadol - acetaminophen combination	
	5th line Strong Opioids (controlled release)	Morphine sulfate 15 to 100 mg BID	
Hydromorphone HCl 3 to 24 mg BID			
Oxycodone HCl 10 to 40 mg BID -TID			
Fentanyl patch 25 to 50 mcg/hr Q3 days			

TRICYCLICS AND OPIOIDS

- This guideline was written to provide primary healthcare providers and patients with guidance about appropriate prevention, assessment and intervention strategies
- It was developed by a multidisciplinary team of Alberta clinicians and researchers
- This guideline is for adults 18 years of age or older with low back pain and is not applicable to pregnant women
- It is recognized that not all recommended treatment options are available in all communities
- See Canadian Guideline for Safe and Effective Use of Opioids for Chronic Non-Cancer Pain, available at: <http://nationalpaincentre.mcmaster.ca/opioid/>
- For further details on the recommendations, see the guideline and background document

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To Provide Feedback

The TOP Program encourages your feedback. If you need further information or if you have difficulty applying this guideline, please contact:

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